



# WETLAND IDENTIFICATION & DELINEATION AND PHASE 1 BOG TURTLE HABITAT ASSESSMENT REPORT

Eisenhower Drive Extension Project York and Adams Counties, Pennsylvania

JMT Project #: 02-0308-012

Submitted to: PennDOT District 8-0

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# I. EXECUTIVE SUMMARY

This report presents the results of a wetland identification and delineation study and Phase 1 bog turtle habitat assessment conducted by Johnson, Mirmiran, and Thompson (JMT) on behalf of PennDOT Engineering District 8-0, for the proposed extension of Eisenhower Drive in York and Adams Counties, Pennsylvania. The overall study area for the proposed project is located within Penn Township and Hanover Borough in York County, and McSherrystown Borough and Conewago, Mount Pleasant, and Union Townships in Adams County. This report presents the results of initial fieldwork conducted in the Plum Creek corridor in 2016, as well as fieldwork completed throughout additional portions of the overall study area in 2017. Delineations of streams initially identified during this work were conducted in 2018 along a more defined preferred alignment corridor. The purpose of the proposed project is to facilitate safe and efficient intermodal travel within the project study area to meet both current and future transportation needs, and to provide a functional and modern roadway that maximizes current design criteria and promotes multi-modal transportation alternatives.

The wetland identification and delineation was conducted in mid-November through December of 2016, November of 2017, and late October and December of 2018. Wetlands were delineated using a combination of secondary data analysis and field verification. Fieldwork for the wetland identification and delineation was conducted in accordance with the *U.S. Army Corps of Engineers Wetland Delineation Manual* (1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*: *Eastern Mountains and Piedmont Region* (2012). Seventeen palustrine wetlands (WET-1 through WET-17) and sixteen watercourses (WUS-1 through WUS-11, WUS-2A, WUS-3A, WUS-4A, WUS-8A, and WUS-8B) were identified within the study area. Both palustrine emergent (PEM) and palustrine forested (PFO) wetlands were identified. Hydrologic sources were variable and included groundwater springs and seeps, a seasonally high groundwater table, surface runoff from adjacent agricultural fields and other uplands, and high flows from adjacent watercourses. The wetlands vary in size and provide groundwater discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, streambank stabilization, and wildlife habitat functions.

Plum Creek (WUS-2) is a perennial stream classified as a Warm Water Fishery (WWF) and a Migratory Fishery (MF) by the Pennsylvania Department of Environmental Protection's (PADEP), PA Code Title 25, Chapter 93 *Water Quality Standards*. The unnamed tributaries to Plum Creek (WUS-1, WUS-2A, WUS-3, WUS-3A, WUS-4, and WUS-4A) identified within the study area are also considered WWFs and MFs. Plum Creek and its tributaries are located in the western and central portions of the study area. Three unnamed tributaries to the South Branch Conewago Creek (WUS-5 through WUS-7) were identified in the southwestern portion of the study area. The remainder of the streams (WUS-8 through WUS-11, WUS-8A, and WUS-8B) are unnamed tributaries to Slagles Run and are located in the eastern portion of the study area. All of the additional tributaries within the study area are also classified as WWFs and MFs. According to the Pennsylvania Fish and Boat Commission (PFBC), no stocked trout streams occur in the vicinity of the study area, and no streams are listed as Approved Trout Waters, Class A wild trout streams, or as streams supporting natural trout reproduction. No natural trout reproducing streams occur downstream of the project area. Therefore, no in-stream work restrictions related to fisheries are anticipated for the proposed project. Any impacts to wetlands and waters within the study area will require a permit from the Pennsylvania Department of Environmental Protection (PADEP) and the U.S. Army Corps of Engineers (USACE).





Because York and Adams Counties are known to support populations of the bog turtle (*Glyptemys muhlenbergii*), JMT also conducted a Phase 1 bog turtle habitat assessment in accordance with methodologies outlined in the U.S. Fish and Wildlife Service (USFWS) *Guidelines for Bog Turtle Surveys, Bog Turtle Northern Population Recovery Plan, April 2006.* The habitat assessment was conducted by a USFWS/PFBC-recognized PA Qualified Bog Turtle Surveyor. Two wetlands (WET-2, WET-8) identified within the study area were determined to consist of marginal potential bog turtle habitat; therefore, additional surveys (i.e., Phase 2) and/or avoidance of direct and indirect impacts to these wetlands will be required.





# II. INTRODUCTION

This Wetland Identification and Delineation and Phase 1 Bog Turtle Habitat Assessment Report has been prepared for engineering and environmental studies being performed for the extension of Eisenhower Drive in York and Adams Counties, Pennsylvania. The Pennsylvania Department of Transportation (PennDOT) Engineering District 8-0 has proposed the extension to facilitate safe and efficient intermodal travel within the project study area to meet both current and future transportation needs, and to provide a functional and modern roadway that maximizes current design criteria and promotes multi-modal transportation alternatives.

The overall study area for the proposed project is located within Penn Township and Hanover Borough in York County, and McSherrystown Borough and Conewago, Mount Pleasant, and Union Townships in Adams County. The study area occurs within the McSherrystown and Hanover, PA 7.5 Minute USGS Quadrangles (**Figure 1** in **Appendix B**), and is generally bordered by S.R. 116 to the south, Bender and Chapel Roads to the west, and Carlisle Street to the east. This report presents the results of initial fieldwork conducted in the Plum Creek corridor of Conewago Township in 2016, as well as field work completed throughout additional portions of the overall study area in 2017, which were based around alternative roadway alignment corridors. Delineations of streams initially identified during this work were conducted in 2018 along a more defined preferred alignment corridor.

The study area occurs within primarily rural portions of Adams County, with dominant surrounding land uses represented by agricultural fields and riparian woodlands. Concentrated areas of development occur in the southern and eastern portions of the study area, and include high-density residential, commercial, and industrial properties. The topography in the study area is generally flat with gentle slopes adjacent to the stream valleys.

Wetland delineation and habitat assessment fieldwork for the Eisenhower Drive Extension Project was completed in two periods. The first survey area was investigated in 2016 and consisted of the approximately one-mile long segment of Plum Creek located to the south of Chapel Road and north and east of Centennial Road, with a corridor spanning approximately 1,500 feet across along this length. Additional fieldwork was completed in 2017 within several alternative roadway alignment corridors in the study area. These alternate corridors were approximately 125 feet wide, with wetland surveys extending at least 300 feet from each side of the corridor in order to complete a Phase 1 Bog Turtle Habitat Survey. Finally, streams that were identified during preliminary fieldwork were delineated within the preferred alignment corridor in 2018.

# **III. WETLAND AND WATERCOURSE DELINEATION**

Investigations were conducted on November 17 and 18, December 7, 8, 21, and 27, 2016, November 8, 9, 13, and 14, 2017, and October 31 and December 21, 2018 by JMT, to identify and delineate the extent and location of jurisdictional waters and wetlands within the project study area pursuant to the federal Clean Water Act (Section 404), the PA Clean Streams Law, the PA Dam Safety and Encroachments Act, and the PA Flood Plain Management Act. The EPA/Corps of Engineers joint memorandum: *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in <u>Rapanos v. United States & Carabell v. United States</u> (December 02, 2008), Code of Federal Regulations (33 CFR Parts 320-330) and Chapter 105 of PA Code Title 25, Dam Safety and Waterway Management Rules and Regulations define wetlands and watercourses and provide regulatory jurisdictional guidance on water obstructions and encroachments. Jurisdictional wetlands are defined as those areas satisfying the technical criteria contained in the <i>Corps of* 





*Engineers Wetlands Delineation Manual*, Technical Report Y-87-1, United States Waterway Experiment Station, Vicksburg, Mississippi 1987 (Delineation Manual) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*, Technical Report (April 2012). Professional qualifications of the individuals involved in the preparation of this report are provided in **Appendix A**.

# A. METHODOLOGY

# a. RECORDS RESEARCH

Prior to conducting the field investigations, JMT requested a search of the Pennsylvania Natural Diversity Inventory (PNDI). The PNDI is a database that retains information on threatened and endangered species and their potential geographic locations. This information is accessed on the Pennsylvania Natural Heritage Partnership web site. This database will return any threatened or endangered species with the potential to occur within or near the project area. The database houses information supplied by the following agencies: the PA Department of Conservation & Natural Resources (PADCNR), Bureau of Forestry, the PA Fish & Boat Commission (PFBC), US Fish and Wildlife Service (USFWS) and the PA Game Commission (PGC). The PA Code Title 25, Chapter 93 *Water Quality Standards* was also investigated.

In addition to habitat information and in accordance with the Delineation Manual, the 7.5' USGS McSherrystown and Hanover-PA topographic quadrangles, the National Wetlands Inventory (NWI) webbased Interactive Mapper, FEMA flood maps, and the Web Soil Survey of Adams and York Counties (USDA, 2017) were reviewed to identify areas with topographical configurations, mapped wetlands and/or hydric soils, which may suggest the presence of wetlands. **Figure 2** in **Appendix B** shows the location of the study area on the Soil Survey, **Figures 3a-3b** in **Appendix B** details the location on NWI maps, and **Figures 4a-4e** in **Appendix B** show the study area on the FEMA flood map series.

Finally, historic aerial photographs obtained through the Penn Pilot program (PGS, 2016 and 2017) and Pennsylvania Spatial Data Access (PASDA, 2017) were compared with recent aerial imagery to track land cover and land use changes overtime within and adjacent to the study area. The historic aerials included photographs from 1937, 1957, and 1971 (see **Figures 5a-5e** in **Appendix B**), and were compared with Google Earth images from the early 1990's through present day.

#### b. FIELD INVESTIGATIONS

As mentioned above, fieldwork for the proposed project was completed in two periods. The overall project study area and the wetland survey areas investigated in 2016 and 2017 are depicted on **Figure 6** in **Appendix B**.

The on-site, "routine" level, wetland identification and delineation methodology, contained in the U.S. Army Corps of Engineers (USACE) Delineation Manual (USACE, 1987) was followed. The on-site field investigation involved inspection of the study area to identify areas that satisfy the three wetland parameters (i.e., criteria): a predominance of hydrophytic (wetland) vegetation, wetland hydrology, and hydric soils. In order to make a determination that an area is a wetland, the Delineation Manual requires that, under normal





(typical) circumstances, a minimum of one primary wetland indicator be confirmed for each of the three wetland parameters. A failure to confirm or account for all three parameters must result in a finding that the area under evaluation is a non-wetland under normal circumstances. When applicable, site characteristics were evaluated based on the potential for problematic wetland situations, as described in the *Eastern Mountains and Piedmont Regional Supplement*. Data from representative wetland and upland sample plots were recorded on Wetland Determination Data Forms (**Appendix C**). In accordance with the Delineation Manual, the following wetland delineation criteria and primary field indicators were used:

# 1. Hydrophytic Vegetation

Vegetation in the study area was initially characterized to plant community type based on guidance provided in the *Eastern Mountains and Piedmont Regional Supplement*. Within a plant community, sample plots were established. When possible, 30-foot radius circular sample plots for the tree and woody vine strata, 15-foot radius circular plots for the shrub/sapling stratum, and 5-foot radius circular plots for the herbaceous stratum were used. Larger or smaller plot sizes were used as conditions dictated.

Dominant plant species were then assigned a wetland indicator classification according to the *U.S. Army Corps of Engineers* (USACE) *National Wetland Plant List* (NWPL) (Lichvar et al., 2016). The indicator status is based on a species frequency of occurrence in wetlands. The wetland indicator rating and the corresponding frequency of occurrence are explained in **Table 1**.

OBL	Obligate Wetland	Plants that occur almost always (more than 99% of the time) in wetlands
FACW	Facultative Wetland	Plants that occur usually (67-99% of the time) in wetlands
FAC	Facultative	Plants with similar likelihood (34-66% of the time) of occurring in wetlands/non-wetlands
FACU	Facultative Upland	Plants that may occur (1-33% of the time) in wetlands, but are usually in non-wetlands
UPL	Obligate Upland	Plants that occur rarely (less than 1% of the time) in wetlands under natural conditions
NI	Not Included	Only genus information known and/or cannot assign accurate indicator status

# Table 1. Wetland Indicator Descriptions Under Natural Conditions.





Once the dominant plant species are determined, the procedure for using the hydrophytic vegetation indicators is as follows:

- Step 1: Apply Indicator 1 (Rapid Test for Hydrophytic Vegetation; if not met proceed to Step 2)
- Step 2: Apply Indicator 2 (Dominance Test, if not met proceed to Step 3),
- Step 3: Apply Indicator 3 (Prevalence Test; if not met proceed to Step 4),
- Step 4: Apply Indicator 4 (Morphological Adaptations).

When more than 50 percent of the dominant species in a plant community are determined to have an indicator status of OBL, FACW, and/or FAC, hydrophytic vegetation is determined to be present. If none of the indicators are satisfied, then hydrophytic vegetation is absent unless indicators of hydric soil and wetland hydrology are present and the site meets the requirements for a problematic wetland (see Chapter 5 of the *Eastern Mountains and Piedmont Regional Supplement*).

# 2. Wetland Hydrology

In each plant community, indicators of wetland hydrology and hydric soils were investigated following the *Eastern Mountain and Piedmont Regional Supplement*. Wetland hydrology means that water is present at or above the surface for a prolonged period (in consecutive days) during the growing season. Prolonged duration of seasonally inundated or saturated areas is longer than 12.5 percent of the growing season. Primary indicators of wetland hydrology include direct observation of inundation or saturation at the surface, recorded stream gauge data (where available); water marks or sediment deposits on objects and vegetation (i.e., water-stained leaves), water-carried debris drift lines, oxidized rhizospheres on living roots, etc. Secondary indicators of hydrology include drainage patterns, stressed plants, microtopographic relief, sparsely vegetated concave surfaces, etc. Some vegetative physiological adaptations, such as tree buttressing, shallow rooting, and multiple stems may also indicate wetland hydrology. Any observed wetland hydrologic field indicators were then noted on the data forms provided in **Appendix C**. Factors such as the depth of water or depth to free water in the soil excavation pit were also noted.

#### 3. Hydric Soils

Soils were investigated in the field using a soil auger and/or sharpshooter shovel. The exposed soils were divided into distinct layers based on color, mottling, and structural and textural differences. Color (chroma) was determined by comparison with standard soil color chips contained in the *Munsell Soil Color Charts* (Munsell, 2009). Since hydric soils are saturated to the surface for periods of sufficient duration during the growing season to create oxygen-free conditions in the upper layer, indicators of oxygen-free conditions develop. Following the guidelines outlined in the *Eastern Mountain and Piedmont Regional Supplement*, observations were made for hydric soil indicators (e.g., depleted or gleyed matrix, redox depletions or concentrations). Soil characteristics of each layer and any hydrologic indicators were recorded on the data forms provided in **Appendix C**.

#### 4. Watercourse Identification

Watercourses were identified as channels or surface water conveyances featuring defined bed and banks, natural or artificial, hydrologically sorted substrate material, and the presence of an Ordinary High Water

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Mark (OWM). These aquatic resources are regulated as Waters of the Commonwealth of Pennsylvania under Chapter 105 of the Pennsylvania Code Title 25, and as Waters of the U.S. (WUS) under the Federal Clean Water Act. The USACE in its Regulatory Guidance Letter 07-01, *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in <u>Rapanos v. United States & Carabell v. United States</u> (December 02, 2008), and <i>Corps and EPA Responses the Rapanos Decision* (December 02, 2008), established the basic guidance for determining what will be regulated as WUS.

Roadside ditches and other stormwater management features that either meet the definition of a wetland or possess an OHWM and are determined to be Relatively Permanent Waters (RPWs), which for the purposes of this report exhibit perennial or intermittent flow, are also regulated as Waters of the Commonwealth and WUS. For wetlands located in roadside ditches or stormwater management features to be regulated as WUS, they must either generate RPW flow or abut a regulated tributary. Typically, roadside ditches or other stormwater management features that satisfy the definitions of Waters of the Commonwealth and WUS, but were constructed in uplands and are not relocated natural watercourses, are eligible for PADEP Chapter 105 Waiver #6 and are non-reporting for the USACE under the PASPGP-5.

# c. FUNCTIONS AND VALUES ASSESSMENT

A functional assessment was conducted on each identified wetland habitat in the project area. The assessment, presented in narrative format, describes the biotic and abiotic functional parameters of the identified wetland habitats. The assessment was based on parameters as outlined in the USACE *The Highway Methodology Workbook Supplement: Wetland Functions and Values: A Descriptive Approach* (USACE, 1999). Abiotic parameters included the following wetland functions: groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, production export, and sediment/shoreline stabilization. Biotic wetland functions and values include fish and shellfish habitat, wildlife habitat, recreation, education/scientific value, uniqueness/heritage, visual quality/aesthetics, and endangered species habitat.

Each function was assessed in terms of its suitability within the wetland being evaluated. This assesses the effectiveness or the "physical or biological ability" of a wetland to perform a particular function or maintain a value. A list of rationales was given to surveyed wetlands for each suitable function and/or value recorded. Principal function(s)/value(s) were assigned to each wetland assessed. A Wetland Function-Value Evaluation Form and key is provided in **Appendix F**.

# **B. RESULTS OF INVESTIGATION**

# a. RECORDS RESEARCH

# 1. Threatened and Endangered Species

The PNDI search from March 18, 2018 revealed potential impacts to threatened or endangered and/or special concern species and resources within the study area (**see Appendix D**). A potential impact was identified for Shumard's oak (*Quercus shumardii*), a state endangered species under the jurisdiction of the PADCNR; therefore, additional coordination will be required to determine whether the proposed project may





impact this species. Since Adams and York Counties are known to support populations of the bog turtle, a Phase 1 Bog Turtle Habitat Assessment was completed, the results of which are presented later in this report.

# 2. Aquatic Resources

The study area lies within the Plum Creek-South Branch Conewago Creek and Headwaters South Branch Conewago Creek HUC-12 subwatersheds, both of which are subbasins of the Susquehanna River drainage basin. The NWI maps (**Figures 3a-3b** in **Appendix B**) revealed multiple riverine systems within the study area, including Plum Creek (R5UBH), and intermittent tributaries (R4SBC) to Plum Creek, the South Branch Conewago Creek, and Slagles Run. Several NWI-mapped palustrine wetlands were also identified along the main stream corridors in the study area, consisting of emergent (PEM5A) and forested (PFO1A, PFO1/SS1A) habitat types. The Plum Creek corridor occurs within a FEMA-designated 100-year floodplain (**Figures 4a-4b** in **Appendix B**) with base flood elevations ranging from approximately 518 to 524 feet. The northern-most portion of an unnamed tributary to Slagles Run in the eastern portion of the study area (**Figure 4d** in **Appendix B**) is within a FEMA-designated 100-year floodplain, with base flood elevations ranging from approximately 518 to 524 feet.

Plum Creek (WUS-2) is a perennial stream that flows from south to north within the western portion of the study area, and is designated as a Warm Water Fishery (WWF) and a Migratory Fishery (MF) in the Chapter 93 *Water Quality Standards*. Warm Water Fishery indicates "maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat." Migratory Fishery indicates "passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which ascend to flowing waters to complete their life cycle." All unnamed tributaries to Plum Creek within the study area are also considered WWFs and MFs.

Direct tributaries to the South Branch Conewago Creek were identified in the southwestern portion of the study area. An unnamed tributary to Slagles Run (WUS-8) is a perennial stream that flows in a northerly direction, forming another primary stream corridor within the eastern portion of the study area. All of these watercourses and their tributaries in the study area are designated as WWFs and MFs in the Chapter 93 *Water Quality Standards*.

According to the Pennsylvania Fish and Boat Commission (PFBC), no stocked trout streams occur in the vicinity of the study area, and no streams are listed as Approved Trout Waters, Class A wild trout streams, or as streams supporting natural trout reproduction. In addition, no natural trout reproducing streams occur downstream of this portion of the project area. Therefore, no in-stream restrictions based on trout designations are anticipated.

# 3. Historic Land Use

A review of historic aerial imagery revealed that agricultural land uses have dominated the majority of the study area and immediate vicinities since at least the 1930's; however, residential and commercial/industrial development has increased since that time (see **Figures 5a-5e** in **Appendix B**). Although the majority of lands near project alternatives remain in agricultural use today, residential properties and other developed lands have encroached into the study area in the last few decades. One of the most significant changes to the overall study area involves the growth of large commercial industries since the late 1950's; however,





these developed lands largely occur outside of the alternative alignment corridors. Following are analyses of land use changes in the study area. Aquatic resources that were delineated for the proposed project (e.g., WET-2, WUS-1) are discussed for reference.

Lands within and surrounding the Plum Creek corridor primarily include maintained agricultural fields, residential communities, and municipal/industrial properties that have existed since the early 1900's. The Sacred Heart Basilica, located in the northern portion of the Plum Creek corridor, has remained intact since the early 1900's. Residential communities to the east of the church are visible through imagery from as early as 1937 and appear unchanged. The south-central portion of the corridor, where present-day Tiffany Court and the surrounding residential communities are located, have experienced the most residential development in the direct vicinity of the Plum Creek corridor, as these lands were undeveloped until the early 1990's. Intermittent tributaries to Plum Creek (WUS-4 and WUS-4A) are likely man-made features that were altered following construction of the aforementioned residential developments. Although a few residential properties were located along the main roads in the southwestern portion of the corridor by 1971, construction of the larger residential developments to the east of the intersection of Centennial and Chapel Road did not progress until the early 1990's. A potential wetland and stream complex is visible in the 1937 and 1957 aerial imagery in the south-central portion of the project area east of Plum Creek, corresponding to the area where WET-2 was delineated during the field investigation (see Figures 5c-5d in Appendix B). The Hanover Wastewater Treatment Facility and Wilke Enginuity Inc. are now operating within the vicinity of this area, with WET-2 located slightly northwest of these facilities. Despite increased development and continued agricultural pressure, the overall flow and drainage patterns of Plum Creek have remained largely intact since the early 1930's.

In the southcentral and southwest portions of the study area, historic images reveal sparse vegetation along the edges of the agricultural fields and residential properties along Centennial Road and Sunday Drive; today, crop fields and maintained lawns dominate this portion of the study area. The present-day stream that bisects the agricultural fields in the south-central portion of the study area (WUS-1) was not observed until 1957, suggesting that this drainageway is man-made and has been altered over time. WET-7, in the southwest portion of the study area, may have been present since at least the 1930's, and the woods to the east of the wetland have remained unchanged. WUS-7, which feeds WET-7, is also visible on aerial imagery from 1937 and appears largely unchanged based on current field investigations.

In the central portion of the study area, Church Street and the surrounding agricultural lands appear largely unchanged over the last few decades. Large crop fields are present to the south of WUS-3 and to the east of WET-4 and extend east to Oxford Avenue; residential development has yet to encroach the central portion of the study area. A few residential properties along Church Street and the eastern end of Edgegrove Road have been present since the 1930's. The fenced pasture that surrounds WET-8 does not appear on historic imagery, so it was likely added in recent decades to protect the wetland area that surrounds the springhead system which flows west beneath Church Street to WUS-3. Large woodlands in the center of the study area appear to have remained intact since at least 1937, particularly surrounding stream corridors. The majority of the agricultural fields located to the east and west of Plum Creek still exist today, with minor increases in riparian and other vegetative buffer strips observed overtime.

In the eastern portion of the study area, review of historic imagery revealed large agricultural fields with little residential development until the 1990's, where small residential communities developed at the western





corner of Kindig Lane and Oxford Avenue. Today, there are a number of commercial lots present along Kindig Lane that were built throughout the 1980's and 1990's. Located at the center of Kindig Lane is the Clarks Distribution Center, one of the most prominent developed properties in the study area. The Clarks Building was built around 2011, and takes up a large portion of what was once maintained agricultural fields. Other small business have populated the southern side of Kindig Lane since the 1970's, but much of what is located to the north of the Clarks Building remains unchanged. WUS-8, the unnamed tributary to Slagles Run was observed in historic imagery and is visible from the 1930's as a mostly unchanged stream network. What was once large agricultural fields just to the east of WUS-8 are now used as recreational fields and have small facilities on-site. However, much of the land coverage to the north and northeast of the Clarks Distribution Center has preserved its agricultural use.

# b. SOIL CHARACTERISTICS

The project study area lies in the Piedmont Lowland Section of the Piedmont Province (W. D. Sevon, 2000). The dominant topographic forms of this section are broad, moderately dissected, karst valleys separated by broad, low hills. It is underlain primarily by Ordovician and Cambrian aged bedrock of the Conestoga Formation, which consists of limestone, shale, conglomeratic limestone, and phyllite. A large majority of the study area is underlain by Cambrian aged bedrock from the Kinzers Formation, which consists of shale, limestone, and sandy limestone. The predominant soils within the study area are described below as obtained from the *Web Soil Survey of Adams and York Counties* shown in **Figure 2** in **Appendix B**, and as provided in **Table 2**.





Table 2: Soils Series Units within the Eisenhower Drive Extension Project Study Area,	
Adams and York Counties, Pennsylvania	

Soil Mapping Symbol	Soil Mapping Unit	Hydric Status
CkA	Clarksburg silt loam, 0 to 3 percent slopes	Predominately Non-hydric (5% hydric inclusions)
CkB	Clarksburg silt loam, 3 to 8 percent slopes	Predominately Non-hydric (5% hydric inclusions)
CnA	Conestoga silt loam, 0 to 3 percent slopes	Not hydric
CnB	Conestoga silt loam, 3 to 8 percent slopes	Not hydric
CnC	Conestoga silt loam, 8 to 15 percent slopes	Not hydric
Dy	Dunning silty clay loam	Predominately Hydric (85% rating)
Ра	Penlaw silt loam	Not Hydric
ReB	Readington silt loam, 3 to 8 percent slopes	Not Hydric
Uc	Urban land	Not Hydric
UeB	Urban land-Conestoga complex, 0 to 8 percent slopes	Not Hydric

#### Clarksburg silt loams (CkA, CkB):

These soils feature moderate to high depths, are moderately well drained, and are typically found on valley flats. The soil is formed from residuum weathered from limestone. Depth to paralithic bedrock ranges from 60 to 99 inches and depth to a fragipan may range from 20 to 36 inches. Depth to the water table is typically 18 to 36 inches. Permeability is typically moderately low to moderately high and available water capacity is low. These soils are classified as containing hydric inclusions (hydric rating = 5%).

#### Conestoga silt loams (CnA, CnB, CnC):

These soils feature moderate to high depths, are well drained, and are typically found on convex slopes of hillsides. The soil is formed from residuum weathered from limestone and/or schist. Depth to paralithic bedrock is variable and may range from 60 to 99 inches. Depth to the water table is typically greater than





80 inches. Permeability is typically moderately high to high and available water capacity is moderate. All Conestoga silt loams within the project area are listed as non-hydric.

#### Dunning silty clay loams (Dy):

These soils are deep and very poorly drained, and are typically found on floodplains. The soil is formed from recent alluvium derived from limestone. Depth to the nearest restrictive feature is typically greater than 80 inches, and the depth to the water table is 0 to 6 inches. Permeability is moderately low to moderately high and available water capacity is high. These soils are listed as predominantly hydric (hydric rating = 85%).

#### Penlaw silt loams (Pa):

These soils feature moderate depths, are somewhat poorly drained, and are typically found in swale-type landforms. The soil is formed from colluvium derived from limestone, sandstone, and shale. Depth to a fragipan ranges from 15 to 30 inches, and depth to paralithic bedrock ranges from 40 to 72 inches. Depth to the water table is typically 6 to 18 inches. Permeability is moderately low to moderately high and available water capacity is low. These soils are classified as non-hydric.

#### Readington silt loams (ReB):

These soils feature moderate depths, are moderately well drained, and are typically found on hillslopes. The soil is formed from colluvium derived from shale and siltstone. Depth to a fragipan ranges from 20 to 36 inches, and depth to lithic bedrock ranges from 40 to 60 inches. Depth to the water table is typically 18 to 36 inches. Permeability is very low and available water capacity is moderate. These soils are classified as non-hydric.

#### Urban land (Uc):

Urban land substrates refer to pavement, buildings, and other artificially covered areas. These soils are classified as non-hydric.

#### Urban land-Conestoga complex (UeB):

These soils consist of a mix of Urban land components (e.g., man-made impervious surfaces) and Conestoga complex soils, which are deep, well drained soils that occur on hillsides. This soil is formed from residuum weathered from schist and/or limestone. Depth to lithic bedrock ranges from 60 to 99 inches. Depth to the water table is more than 80 inches. Permeability is moderately high to high and available water capacity is moderate. These soils are classified as non-hydric.

#### c. WATER AND WETLAND HABITAT DESCRIPTIONS

Study area wetlands found to be potentially jurisdictional were identified and delineated. For the purposes of the preliminary investigation, identified watercourses were mapped using a combination of PADEP eMapPA stream files and approximate centerlines noted in the field. Subsequent to advancements in the project design, watercourses were delineated in 2018 within an approximately 200-foot wide corridor along the preferred roadway alignment. Following are brief descriptions of each identified wetland and watercourse. Photographs are provided in **Appendix E**. The delineated wetland and watercourse boundaries, approximate stream centerlines (for non-delineated sections of watercourses), and photograph locations are shown on **Figures 7-12d** in **Appendix B**. Please see **Table 3** and **Table 4** below for summaries of the watercourses and wetlands, respectively.







#### **Watercourses**

# Table 3: Summary of Identified Watercourses within the Eisenhower Drive ExtensionProject Study Area, Adams and York Counties, Pennsylvania

Chucon	Project Study Area, Adams and Tork Counties, Pennsylvania							
Stream ID	Stream Name	Stream Type as per 25 PA Code §87.1	25 PA Code §93 Stream Designation	Primary Source	Average Width (ft)	Bank Height (ft)	Substrate	Latitude and Longitude (center of stream length in study area)
WUS-1	Trib to Plum Creek	Intermittent	WWF, MF	Surface Runoff/ Roadway Drainage	3-5	1-3	silt and gravels	39º48'18.6" N 77º02'13.9" W
WUS-2	Plum Creek	Perennial	WWF, MF	Natural Channel	20-25	3-5	silt, gravels, cobble rock, boulders	39º48'35.6" N 77º02'15.6" W
WUS-2A	Trib to Plum Creek	Intermittent	WWF, MF	Surface Runoff/ Constructed Channel	3	1-2	silt, gravels	39º48'30.0" N 77º02'11.8" W
WUS-3	Trib to Plum Creek	Intermittent	WWF, MF	Natural Channel	12-15	1-2	silt, gravels, and cobble rock	39º48'55.8" N 77º02'04.0" W
WUS-3A	Trib to Plum Creek	Intermittent	WWF, MF	Natural Channel	3-4	1	silt, pebble, and gravels	39º48'54.9" N 77º02'07.2" W
WUS-4	Trib to Plum Creek	Intermittent	WWF, MF	Surface Runoff	3-6	1	silt, gravels, and cobble rock	39º48'28.8" N 77º02'08.5" W
WUS-4A	Trib to Plum Creek	Intermittent	WWF, MF	Surface Runoff	1-3	1	sand, silt, gravels, and cobble rock	39º48'27.9" N 77º02'07.4" W
WUS-5	Trib to South Branch Conewago Creek	Intermittent	WWF, MF	Surface Runoff/ Roadway Drainage	2	0.5	silt, pebble, and gravels	39⁰47'54.1" N 77⁰03'11.7" W
WUS-6	Trib to South Branch Conewago Creek	Intermittent	WWF, MF	Surface Runoff/ Roadway Drainage	2.5	1	silt, pebble, and gravels	39º47'54.5" N 77º03'07.2" W
WUS-7	Trib to South Branch Conewago Creek	Intermittent	WWF, MF	Natural channel	5-7	2-3	silt, pebble, and gravels	39º48'06.6" N 77º02'47.7" W
WUS-8	Trib to Slagles Run	Perennial	WWF, MF	Natural Channel	12-15	2-4	silt, sand, gravels, and cobble rock	39º49'03.5" N 77º00'40.3" W
WUS-8A	Trib to Slagles Run	Intermittent	WWF, MF	Floodplain oxbow channel	5-6	0.5	silt, gravels, boulder (artificially placed)	39º48'45.3" N 77º00'17.1" W
WUS-8B	Trib to Slagles Run	Intermittent	WWF, MF	Natural Channel	4-6	2	silt/sand, gravels	39º48'58.9" N 77º00'31.1" W
WUS-9	Trib to Slagles Run	Perennial	WWF, MF	Natural Channel	10-12	1-2	silt, pebble, gravels, and cobble rock	39º48'43.9" N 77º00'18.9" W
WUS-10	Trib to Slagles Run	Intermittent	WWF, MF	Natural Channel	1-2	0.5	silt and gravels	39º48'51.8" N 77º00'22.3" W
WUS-11	Trib to Slagles Run	Intermittent	WWF, MF	Surface Runoff	5 to 8	2-4	silt	39º49'17.3" N 77º00'50.8" W

#### Waters of the U.S. 1 (WUS-1)

Waters of the U.S. 1 (WUS-1) is an unnamed tributary to Plum Creek located in the southwestern portion of the study area (see **Photos 1-4** in **Appendix E**; **Figures 8a**, **8f**, and **8g** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/5) crosses beneath Centennial Road in the southern portion of the







study area and flows north between agricultural fields, bisecting a PEM/PFO wetland (WET-1, see description below) before reaching its confluence with Plum Creek. Based on a review of historic aerial imagery (PennPilot), a large portion of WUS-1 appears to have been man-made between Centennial Road and the forested area to the north. The streambanks associated with WUS-1 were dominated by a variety of herbaceous and woody vegetation, including reed canarygrass (*Phalaris arundinacea*, FACW), ash-leaf maple (*Acer negundo*, FAC), silver maple (*Acer saccharinum*, FACW), northern red oak (*Quercus rubra*, FACU), ground ivy (*Glechoma hederacea*, FACU), giant foxtail (*Setaria faberi*, UPL), common milkweed (*Asclepias syriaca*, FACU), poison ivy (*Toxicodendron radicans*, FAC), Japanese honeysuckle (*Lonicera japonica*, FACU), multiflora rose (*Rosa multiflora*, FACU), and goldenrod (*Solidago* sp.). The canopy cover associated with WUS-1 was approximately 50 percent. The stream width was approximately 3 to 5 feet and the water depth observed during field investigations was 1 to 6 inches. The stream substrate was dominated by silt and gravels. A FEMA-designated 100-year floodplain encompasses the northern portion of WUS-1 within the forested area.

#### Waters of the U.S. 2 (WUS-2)

Waters of the U.S. 2 (WUS-2) is a perennial stream (Cowardin classification = R5UB1/3) that generally flows in a northerly direction through the western portion of the study area and is known as Plum Creek (see **Photos 5-7** in **Appendix E**; **Figures 8a-8f** in **Appendix B**). The streambanks associated with WUS-2 were dominated by a variety of herbaceous and woody vegetation, including red maple (*Acer rubrum*, FAC), Norway maple (*Acer platanoides*, UPL), black walnut (*Juglans nigra*, FACU), black cherry (*Prunus serotina*, FACU), northern red oak, ash-leaf maple, multiflora rose, poison ivy, Japanese honeysuckle, reed canarygrass, and nodding wild rye (*Elymus canadensis*, FACU). Overall, canopy cover was approximately 60 percent within the WUS-2 stream corridor. Portions of the streambanks were heavily incised within the stream corridor, and were lined with rip-rap in several areas. The stream width was approximately 20 to 25 feet and water depth ranged from 6 inches to over 2 feet in the stream corridor. The substrate was composed of a mix of silt, gravel, and cobble rock with occasional small boulders. Plum Creek is located within a FEMA designated 100-year floodplain.

#### Waters of the U.S. 2A (WUS-2A)

Waters of the U.S. 2A (WUS-2A) is a short, unnamed tributary to Plum Creek that drains into WUS-2 in the western portion of the study area (see **Photos 74-75** in **Appendix E**; **Figures 8a** and **8d** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows north and consists of a channel that connects an NPDES outfall pipe associated with the nearby water treatment plant to Plum Creek. The streambanks were approximately 1 to 2 feet in height, and a vegetated berm was observed between Plum Creek and WUS-2A. Overall, the canopy cover associated with WUS-2A was 20 percent. The stream width was approximately 8 feet at the outfall pipe and 3 feet in the remainder of the channel, and the water depth was approximately 2 to 6 inches. The stream substrate was dominated by silt and features sparse gravels. WUS-2A is located within a FEMA designated 100-year floodplain area.

#### Waters of the U.S. 3 (WUS-3)

Waters of the U.S. 3 (WUS-3) is an unnamed tributary to Plum Creek located in the northern portion of the study area (see **Photos 8-9** in **Appendix E**; **Figures 8a-8b** in **Appendix B**). This intermittent stream





(Cowardin classification = R4SB3/5) generally flows west and then north towards its confluence with Plum Creek. The streambanks associated with WUS-3 were dominated by a variety of herbaceous and woody vegetation, including ash-leaf maple, black walnut, ash (*Fraxinus* sp.), honey-locust (*Gleditsia triacanthos*, FAC), multiflora rose, ground ivy, Japanese honeysuckle, grape (*Vitis* sp.), garlic mustard (*Alliaria petiolata*, FACU), and grasses. Overall, the canopy cover associated with WUS-3 was approximately 85 percent. The stream width was approximately 12 to 15 feet and the water depth was approximately 2 to 8 inches. The stream substrate was dominated by silt, gravel, and cobble. WUS-3 is located within a FEMA designated 100-year floodplain area.

# Waters of the U.S. 3A (WUS-3A)

Waters of the U.S. 3A (WUS-3A) is an unnamed tributary to Plum Creek that drains into WUS-3 located in the northern portion of the study area (see **Photo 50** in **Appendix E**; **Figures 10** and **10a** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) generally flows northwest, connecting WET-9 to WUS-3. The streambanks associated with WUS-3A were dominated by a variety of herbaceous and woody vegetation, including multiflora rose and Japanese honeysuckle. Overall, the canopy cover associated with WUS-3A was 60 percent. The stream width was approximately 3 to 4 feet and the water depth was approximately 1 to 3 inches. The stream substrate was dominated by silt, pebble, and gravel. WUS-3A is located within a FEMA designated 100-year floodplain area.

#### Waters of the U.S. 4 (WUS-4)

Waters of the U.S. 4 (WUS-4) is an unnamed tributary to Plum Creek located in the western portion of the study area, to the north and west of Tiffany Court (see **Photos 10-11** in **Appendix E**; **Figures 8a** and **8d** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows in a westerly direction towards its confluence with Plum Creek. Stormwater runoff associated with the residential properties to the east and south is conveyed into WUS-4 through twin pipes at its eastern end. The streambanks associated with WUS-4 were dominated by a variety of herbaceous and woody vegetation, including ash-leaf maple, ash, multiflora rose, Japanese honeysuckle, grape, garlic mustard, and grasses. Overall, the canopy cover associated with WUS-4 was approximately 50 percent. The stream width was approximately 3 to 6 feet and the water depth ranged from approximately 2 to 6 inches. The stream substrate was dominated by silt, gravel, and cobble rock. A FEMA-designated 100-year floodplain encompasses the westernmost portion of WUS-4 within the vicinity of Plum Creek.

#### Waters of the U.S. 4A (WUS-4A)

Waters of the U.S. 4A (WUS-4A) is a small unnamed tributary to Plum Creek that drains into WUS-4 in the western portion of the study area (see **Photo 12** in **Appendix E**; **Figures 8a** and **8d** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows in a northwesterly direction towards its confluence with WUS-4, and is located to the west of the Tiffany Court residential area. The canopy cover was approximately 80 percent, and was primarily dominated by ash-leaf maple and green ash (*Fraxinus pennsylvanica*, FACW). The stream width was approximately 1 to 3 feet and the water depth ranged from approximately 1 to 3 inches. The stream substrate was a mix of sand, silt, gravel, and cobble rock. WUS-4A is located within a FEMA designated 100-year floodplain area.





#### Waters of the U.S. 5 (WUS-5)

Waters of the U.S. 5 (WUS-5) is an unnamed tributary to the South Branch Conewago Creek located in the southwestern portion of the study area, to the south of Hanover Road (Route 116) (see **Photo 39** in **Appendix E**; **Figures 9** and **9b** in **Appendix B**). This narrow intermittent stream (Cowardin classification = R4SB3/4) flows in a westerly direction towards its confluence with the South Branch Conewago Creek. The streambanks associated with WUS-5 were dominated by a variety of herbaceous and woody vegetation, including Japanese honeysuckle, Canada thistle (*Cirsium arvense*, FACU), and grasses. The stream width was approximately 2 feet and the water depth ranged from approximately 0.5 to 1 inch. The stream substrate was dominated by silt, pebble, and gravel. A FEMA-designated 100-year floodplain encompasses the westernmost portion of WUS-5 within the vicinity of the South Branch Conewago Creek.

#### Waters of the U.S. 6 (WUS-6)

Waters of the U.S. 6 (WUS-6) is an unnamed tributary to the South Branch Conewago Creek located in the southwestern portion of the study area, to the north of Hanover Road (see **Photos 40-41** in **Appendix E**; **Figures 9** and **9b** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows in a westerly direction towards its confluence with the South Branch Conewago Creek. WUS-6 emanates from a pipe on an adjacent residential property and an additional crosspipe from under Route 116 connects to WUS-6 at its western end. The streambanks associated with WUS-6 were dominated by a variety of herbaceous and woody vegetation, including Japanese honeysuckle, Fuller's teasel (*Dipsacus fullonum*, FACU), common milkweed, evening primrose (*Oenothera parviflora*, FACU), and Canada thistle. The stream width was approximately 2.5 feet and the water depth ranged from approximately 0.5 to 2 inches. The stream substrate was dominated by silt, pebble, and gravel. A FEMA-designated 100-year floodplain encompasses the westernmost portion of WUS-6 within the vicinity of the South Branch Conewago Creek.

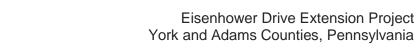
#### Waters of the U.S. 7 (WUS-7)

Waters of the U.S. 7 (WUS-7) is an unnamed tributary to the South Branch Conewago Creek located in the southwestern portion of the study area, to the west of Sunday Drive (see **Photo 42** in **Appendix E**; **Figures 9** and **9a** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows in a westerly direction through the north end of woodlands towards its confluence with the South Branch Conewago Creek and emanates from a pipe beneath Sunday Drive. WUS-7 continues west past WET-7 between large agricultural fields. The streambanks associated with WUS-7 were dominated by a variety of herbaceous and woody vegetation, including red oak and shagbark hickory (*Carya ovata*, FACU). Overall, the canopy cover associated with WUS-7 was approximately 15 percent. The stream width was approximately 5 to 7 feet and the water depth ranged from approximately 2 to 3 inches. The stream substrate was dominated by silt, pebble, and gravel. A FEMA-designated 100-year floodplain encompasses the westernmost portion of WUS-7 within the vicinity of the South Branch Conewago Creek.

#### Waters of the U.S. 8 (WUS-8)

Waters of the U.S. 8 (WUS-8) is an unnamed tributary to Slagles Run located in the eastern portion of the study area, to the north and south of Kindig Lane (see **Photos 53, 58, 64,** and **76** in **Appendix E**; **Figures 11, 11b-11c, 12,** and **12a-12c** in **Appendix B**). This perennial stream (Cowardin classification = R3SB3/4)







flows in a northerly direction towards its confluence with Slagles Run. Small fish were observed throughout WUS-8 during field investigations. Streambanks associated with WUS-8 were dominated by a variety of herbaceous and woody vegetation, including Morrow's honeysuckle (*Lonicera morrowii*, FACU), garlic mustard, Japanese hops (*Humulus japonicus*, FACU), ash-leaf maple, silver maple, Norway maple, and black cherry. Overall, the canopy cover associated with WUS-8 ranged from approximately 50 to 75 percent. The stream width was approximately 12 to 15 feet and the water depth ranged from approximately 6 to 12 inches. The stream substrate was dominated by silt, sand, gravel, and sparse cobble. The streambanks of WUS-8 are heavily eroded and are approximately 2 to 4 feet throughout. The northern portion of WUS-8 is located within a FEMA designated 100-year floodplain.

# Waters of the U.S. 8A (WUS-8A)

Waters of the U.S. 8A (WUS-8A) is an unnamed tributary to Slagles Run that drains into WUS-8 located in the eastern portion of the study area (see **Photos 55-56** in **Appendix E**; **Figures 11** and **11b** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) consists of a braided channel system in a low-lying area to the north of WUS-8. Several beaver dams and natural dams within WUS-8 and WUS-8A serve to divert flow into the system. The streambanks associated with WUS-8A were dominated by a variety of herbaceous and woody vegetation, including Morrow's honeysuckle, Japanese honeysuckle, ash-leaf maple, Eastern poison ivy (*Toxicodendron radicans*, FAC), and silver maple. Overall, the canopy cover associated with WUS-8A was approximately 75 percent. The stream width in the main channel was approximately 5 to 6 feet and the water depth ranged from approximately 1 to 4 inches. The stream substrate was dominated by silt and gravel, and has been stabilized by large boulders at its western end.

#### Waters of the U.S. 8B (WUS-8B)

Waters of the U.S. 8B (WUS-8B) is an unnamed tributary to Slagles Run that drains into WUS-8 located in the eastern portion of the study area (see Photos 76-77 in Appendix E; Figures 12 and 12b in Appendix B). This intermittent stream (Cowardin classification = R4SB3/4) consists of an oxbow channel in a low-lying area to the north of WUS-8 and north of the Clarks Building. Multiple beaver dams and natural debris dams were observed in WUS-8 that serve to divert flow into WUS-8B. The streambanks were moderately incised (bank heights of 2 feet) and were dominated by a variety of herbaceous and woody vegetation, including ash-leaf maple, Osage-orange (*Maclura pomifera*, UPL), multiflora rose, Japanese honeysuckle, and grasses. Overall, the canopy cover associated with WUS-8B was approximately 50 percent. The stream width averaged approximately 4 to 6 feet and the water depth was approximately 4 to 12 inches. The stream substrate was dominated by a mix of silt, sand, and gravels, with the upstream end choked with gravel deposition.

#### Waters of the U.S. 9 (WUS-9)

Waters of the U.S. 9 (WUS-9) is an unnamed tributary to Slagles Run that drains into WUS-8, and is located in the eastern portion of the study area to the north of Kindig Lane (see **Photos 57-58** in **Appendix E**; **Figures 11** and **11b** in **Appendix B**). This perennial stream (Cowardin classification = R2SB3/4) flows in a northerly direction towards its confluence with WUS-8. The streambanks associated with WUS-9 were dominated by a variety of herbaceous and woody vegetation, including Morrow's honeysuckle, Japanese honeysuckle, and silver maple. Overall, the canopy cover associated with WUS-9 was approximately 75





percent. The stream width was approximately 10 to 12 feet and the water depth ranged from approximately 2 to 5 inches. The stream substrate was dominated by silt, pebble, gravel, and cobble.

#### Waters of the U.S. 10 (WUS-10)

Waters of the U.S. 10 (WUS-10) is an unnamed tributary to Slagles Run that drains into WUS-8, and is located in the eastern portion of the study area to the west of recreational soccer fields (see **Photo 61** in **Appendix E**; **Figures 11** and **11c** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB3/4) flows in a westerly direction from WET-11 towards its confluence with WUS-8. The streambanks associated with WUS-10 were dominated by a variety of herbaceous and woody vegetation, including silver maple, ash-leaf maple, mulberry (*Morus* sp.), Japanese stiltgrass (*Microstegium vimineum,* FAC), and watercress (*Nasturtium officinale,* OBL). Overall, the canopy cover associated with WUS-10 was approximately 90 percent. The stream width was approximately 1 to 2 feet and the water depth ranged from approximately 0 to 3 inches. The stream substrate was dominated by silt and gravel.

#### Waters of the U.S. 11 (WUS-11)

Waters of the U.S. 11 (WUS-11) is an unnamed tributary to Slagles Run located in the eastern portion of the study area, along a narrow woodline located west of WUS-8 (see **Photo 70** in **Appendix E**; **Figures 12** and **12c** in **Appendix B**). This intermittent stream (Cowardin classification = R4SB4) flows in a northerly direction from the Whisler property. The streambanks associated with WUS-11 were dominated by a variety of herbaceous and woody vegetation, including Morrow's honeysuckle, Japanese privet (*Ligustrum japonicum,* UPL), garlic mustard, ash-leaf maple, and green ash. Overall, the canopy cover associated with WUS-11 was approximately 75 percent. The stream width was approximately 5 to 8 feet and the water depth ranged from approximately 5 to 8 inches. The stream substrate was dominated by silt. The streambanks of WUS-11 are heavily eroded and are approximately 2 to 4 feet in height throughout. WUS-11 is located within a FEMA designated 100-year floodplain.





# <u>Wetlands</u>

# Table 4: Summary of Delineated Wetlands within the Eisenhower Drive Extension Project StudyArea, Adams and York Counties, Pennsylvania

Wetland ID	Cowardin Class	Acreage Within Study Area	Primary Hydrology Sources	Dominant Vegetation <sup>1</sup>	Latitude and Longitude (wetland center)
WET-1	PFO/PEM	3.843 acres	high water table,reed canarygrass,surface runoff, highred maple, green ash, ash-leaf maple,flows from WUS-1Eastern poison ivy, skunk cabbage		39 <sup>0</sup> 48'27.7" N 77 <sup>0</sup> 02'17.0" W
WET-2	PFO/PEM	5.057 acres	groundwater seeps, surface runoff, piped drainage	reed canarygrass, ash-leaf maple, green ash, silky dogwood, multiflora rose	39º48'25.1" N 77º02'01.3" W
WET-3	PEM	0.047 acre	high water table, surface runoff, high flows from WUS-3	reed canarygrass, arrow-leaf tearthumb	39º49'05.6" N 77º02'20.2" W
WET-4	PEM	6.437 acres	high water table, surface runoff	reed canarygrass	39º48'45.4" N 77º02'13.9" W
WET-5	PEM	0.060 acre	small seep, surface runoff, high flows from Plum Creek	reed canarygrass	39º49'03.2" N 77º02'20.0" W
WET-6	PFO	8.229 acres	small seep, high water table, surface runoff	green ash, oaks, ash-leaf maple, multiflora rose, skunk cabbage	39º48'34.7" N 77º02'10.0" W
WET-7	PEM	0.352 acre	high water table, surface runoff, high flows from WUS-7	reed canarygrass	39º48'06.3" N 77º02'45.8" W
WET-8	PEM	0.144 acre	groundwater spring, surface runoff	reed canarygrass	39º48'58.0" N 77º01'49.5" W
WET-9	PEM	0.025 acre	small seep, surface runoff	reed canarygrass	39 <sup>0</sup> 48'54.5" N 77 <sup>0</sup> 02'07.0" W
WET-10	PEM	0.050 acre	high water table, surface runoff perched on clays	reed canarygrass	39º48'55.4" N 77º02'05.3" W
WET-11	PEM	0.026 acre	small seep, surface runoff	reed canarygrass	39º48'51.5" N 77º00'20.9" W
WET-12	PFO	0.184 acre	high water table, surface runoff	reed canarygrass, Japanese stiltgrass, green ash, black gum	39 <sup>0</sup> 48'54.2" N 77 <sup>0</sup> 00'24.4" W
WET-13	PEM	0.524 acre	high water table, surface runoff	reed canarygrass, broadleaf cattail	39º49'01.3" N 77º00'40.4" W
WET-14	PEM	0.012 acre	high water table, surface/roadway runoff	broadleaf cattail	39 <sup>0</sup> 48'39.6" N 77 <sup>0</sup> 00'49.9" W
WET-15	PEM	0.104 acre	high water table, surface runoff perched on clays	reed canarygrass	39º49'07.1" N 77º00'41.4" W
WET-16	PEM	0.051 acre	high water table, surface runoff perched on clays	reed canarygrass	39º49'03.0" N 77º00'36.8" W
WET-17	PEM	0.865 acre	high water table, surface runoff	reed canarygrass	39º49'18.4" N 77º00'18.2" W

<sup>1</sup> Species listed in this section were the dominant plants observed in each wetland as a whole, and did not always match exactly with dominant species on Wetland Determination Data Forms from the sample plots.





# Wetland 1 (WET-1)

Wetland 1 (WET-1) is located in the southwestern portion of the study area, and consists of a mixed PFO/PEM wetland approximately 3.84 acres in size (see Photos 13-17 in Appendix E; Figures 8a and 8f in Appendix B). The PEM portion of the wetland is approximately 0.34 acres and occurs within a silted-in portion of the WUS-1 channel embedded between agricultural fields to the east and west. WUS-1 continues to flow northward into the PFO wetland area, which is approximately 3.51 acres in size. A large portion of WET-1 corresponds to an NWI-mapped PFO1A wetland (Figure 3 in Appendix B). Hydrology is supplied by a seasonally high groundwater table, surface runoff, and flows conveyed by the intermittent WUS-1 channel.

The DP-1-WET sample plot was taken at the northern end of the PEM portion of WET-1. Vegetation within the DP-1-WET sample plot was dominated by reed canarygrass, and additional species observed included broad-leaf cattail (*Typha latifolia*, OBL), dark-green bulrush (*Scirpus atrovirens*, OBL), blue vervain (*Verbena hastata*, FACW), and goldenrod. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-1-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 0 and 6 inches in depth, and a 10 YR 5/2 matrix with 10 YR 6/8 redoxymorphic features between 6 and 18 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The PEM wetland area displayed indicators of high water table, saturation, drainage patterns, geomorphic position, and the FAC-Neutral Test, thus fulfilling the hydrology parameter. Based on these reasons, the emergent portion of WET-1 was delineated as a jurisdictional wetland.

The DP-1A-WET sample plot was taken within the PFO portion of WET-1. Vegetation within the DP-1A-WET sample plot was dominated by green ash, red maple, northern spicebush (*Lindera benzoin*, FAC), multiflora rose, smooth alder (*Alnus serrulata*, OBL), garlic mustard, jewelweed (*Impatiens capensis*, FACW), skunk cabbage (*Symplocarpus foetidus*, OBL), thyme-leaf speedwell (*Veronica serpyllifolia*, FAC), and Eastern poison ivy. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-1A-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorhpic features between 0 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). The PFO wetland area displayed hydrology indicators of surface water, surface soil cracks, drainage patterns, geomorphic position, and the FAC-Neutral Test, thus fulfilling the hydrology parameter. Based on these reasons, the forested portion of WET-1 was delineated as a jurisdictional wetland.

WET-1 has some effectiveness at performing the functions/values of floodflow alteration, sediment/toxicant retention, nutrient removal, sediment stabilization, and wildlife habitat. The principal functions/values performed by WET-1 are sediment/toxicant retention and nutrient removal. The main channel within the wetland and the hydric soils throughout can retain excessive stormwater and floodwaters prior to reaching Plum Creek. WET-1 also traps sediments and nutrients and filters pollutants from stormwater runoff associated with adjacent agricultural fields and residential development. Finally, the mix of emergent and forested habitats and associated stream provide moderate habitat for a variety of wildlife species. See the





Wetland Function-Value Evaluation Form for WET-1 in Appendix F.

# Wetland 2 (WET-2)

Wetland 2 (WET-2) is located in the southwestern portion of the study area, and consists of a mixed PFO/PEM wetland approximately 5.06 acres in size (see **Photos 18-23** in **Appendix E**; **Figures 8a** and **8d-8e** in **Appendix B**). The forested portion of the wetland is approximately 4.62 acres, while the emergent portion is a small (0.44 acre) area that cuts across the center of the wetland. A large portion of WET-2 corresponds to an NWI-mapped PFO1/SS1A wetland (**Figure 3** in **Appendix B**). Wetland hydrology is supplied by groundwater springs and seeps, conveyed drainage channels from up-slope properties, and surface runoff, generally flowing in a northwesterly direction through the wetland prior to draining into Plum Creek.

Vegetation within the DP-2-WET sample plot was dominated by ash-leaf maple, silky dogwood (*Cornus amomum*, FACW), multiflora rose, reed canarygrass, Virginia wild rye (*Elymus virginicus*, FACW), a grass species, and poison ivy. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-2-WET featured a 10 YR 4/2 matrix with 10 YR 4/6 redoxymorphic features between 0 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). WET-2 displayed hydrology indicators of surface water, water marks, water-stained leaves, drainage patterns, geomorphic position, and the FAC-Neutral Test, thus fulfilling the hydrology parameter. Based on these reasons, WET-2 was delineated as a jurisdictional wetland.

WET-2 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions/values performed by WET-2 are sediment/toxicant retention, nutrient removal, and wildlife habitat. This wetland can retain excessive stormwater and floodwaters prior to reaching Plum Creek. WET-2 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields, residential properties, and industrial development. Finally, the mix of emergent and forested habitats with both wet and dry areas provide moderate habitat for a variety of wildlife species. WET-2 also exhibits characteristics of marginal potential bog turtle habitat, which is discussed later in this report. See the Wetland Function-Value Evaluation Form for WET-2 in **Appendix F**.

# Wetland 3 (WET-3)

Wetland 3 (WET-3) is a small (0.05 acre) PEM wetland located in the northwestern portion of the study area (see **Photos 24-25** in **Appendix E**; **Figures 8a-8b** in **Appendix B**). WET-3 consists of a low-lying fringe wetland associated with an unnamed tributary to Plum Creek (WUS-3). Wetland hydrology is supplied by a seasonally high groundwater table, surface runoff, and high flows from WUS-3.

Vegetation within the DP-3-WET sample plot was dominated by reed canarygrass and arrow-leaf tearthumb (*Persicaria sagittata*, OBL). The hydrophytic vegetation parameter was met by the Rapid Test and since greater than 50% of the dominant plant species were FAC or wetter.





The soil sample from DP-3-WET featured a 10 YR 4/1 matrix with 5 YR 5/6 redoximorphic features between 3 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). WET-3 displayed hydrology indicators of surface water, high water table, saturation, drainage patterns, geomorphic position, and the FAC-Neutral Test, thus fulfilling the hydrology parameter. Based on these reasons, WET-3 was delineated as a jurisdictional wetland.

WET-3 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, sediment stabilization, and wildlife habitat. The principal functions/values performed by WET-3 are sediment/toxicant retention, nutrient removal, and sediment stabilization. Surface waters are slowed by dense vegetation within this wetland during storm events. WET-3 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and developed properties. The vegetated portion of the wetland channel provides minor streambank stabilization along WUS-3. The overall value of these functions is minor due to the small size of the wetland. See the Wetland Function-Value Evaluation Form for WET-3 in **Appendix F**.

#### Wetland 4 (WET-4)

Wetland 4 (WET-4) is located in the western portion of the study area, and consists of a large PEM wetland approximately 6.44 acres in size (see **Photos 26-29** in **Appendix E**; **Figures 8a-8d** in **Appendix B**). A large portion of WET-4 corresponds to an NWI-mapped PEM5A wetland (Figure 3 in Appendix B). Wetland hydrology is supplied by a seasonally high groundwater table, surface runoff, and occasional high flows from Plum Creek and its nearby tributaries. In addition, surface waters may become perched above a fine clay layer within a large portion of this wetland.

Vegetation within the DP-4-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met by the Rapid Test and since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-4-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 2 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). A fine clay layer was observed beginning below 12 inches in depth, which could act as an impermeable layer within the soil profile. Wetland hydrology indicators of surface water, drainage patterns, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-4 was delineated as a jurisdictional wetland.

WET-4 has some effectiveness at performing the functions of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-4 are sediment/toxicant retention, nutrient removal, and wildlife habitat. This wetland can retain excessive stormwater and floodwaters prior to reaching Plum Creek. WET-4 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and developed properties. Finally, the large emergent wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-4 in **Appendix F**.





# Wetland 5 (WET-5)

Wetland 5 (WET-5) is a small (0.06 acre) PEM wetland located in the western portion of the study area (see **Photos 30-32** in **Appendix E**; **Figures 8a-8b** in **Appendix B**). WET-5 consists of a depressional wetland adjacent to the western side of Plum Creek. Wetland hydrology is supplied by a small spring seep, seasonally high groundwater table, surface runoff, and high flows from Plum Creek.

Vegetation within the DP-5-WET sample plot was dominated by reed canarygrass, and also included broadleaf cattail and halberd-leaf tearthumb (*Persicaria arifolia*, OBL). The hydrophytic vegetation parameter was met by the Rapid Test and since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-5-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 6 and 18 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, drainage patterns, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-5 was delineated as a jurisdictional wetland.

WET-5 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, nutrient removal, sediment/toxicant retention, sediment stabilization, and minor wildlife habitat. The principal functions/values performed by WET-5 are groundwater discharge, sediment/toxicant retention, and nutrient removal. A small groundwater spring/seep is present adjacent to Plum Creek. Surface waters are slowed by dense vegetation within this wetland during storm events. WET-5 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and developed properties. Dense vegetation within WET-5 provides minor streambank stabilization. The overall value of these functions is minor due to the small size of the wetland. See the Wetland Function-Value Evaluation Form for WET-5 in **Appendix F**.

# Wetland 6 (WET-6)

Wetland 6 (WET-6) is located in the western portion of the study area, and consists of a large PFO wetland approximately 8.23 acres in size (see **Photos 33-36** in **Appendix E**; **Figures 8a** and **8c-8d** in **Appendix B**). This wetland is contiguous with the emergent WET-4 to the north. A large portion of WET-6 corresponds to an NWI-mapped PFO1A wetland (**Figure 3** in **Appendix B**). Wetland hydrology is supplied by a small groundwater spring seep, seasonally high groundwater table, surface runoff, and occasional high flows from Plum Creek and its nearby tributaries.

Vegetation within the DP-6-WET sample plot was dominated by green ash, burr oak (*Quercus macrocarpa*, FAC), ash-leaf maple, multiflora rose, silky dogwood, small-spike false nettle (*Boehmeria cylindrica*, FACW), skunk cabbage, and poison ivy. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-6-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 2 and 15 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, water marks, sediment deposits, water-stained leaves, drainage patterns, geomorphic position, microtopographic





relief, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-6 was delineated as a jurisdictional wetland.

WET-6 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-6 are sediment/toxicant retention and wildlife habitat. This wetland can retain excessive stormwater and floodwaters prior to reaching Plum Creek. WET-6 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and residential properties. Finally, the large forested wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-6 in **Appendix F**.

# Wetland 7 (WET-7)

Wetland 7 (WET-7) is located in the southwestern portion of the study area, and consists of a PEM wetland approximately 0.35 acre in size (see **Photos 43-44** in **Appendix E**; **Figures 9** and **9a** in **Appendix B**). This wetland is fed by WUS-7 from the east, and is situated within a vegetated portion of the WUS-7 channel and adjacent depressional area. Wetland hydrology is supplied by a seasonally high groundwater table, overland runoff and drainage from adjacent agricultural fields, and occasional high flows from WUS-7.

Vegetation within the DP-7-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-7-WET featured a 10 YR 3/2 matrix between 0 and 2 inches in depth, a 10 YR 5/1 matrix with 5 YR 4/6 redoxymorphic features between 2 and 14 inches in depth, and a 10 YR 5/2 matrix with 10 YR 5/6 redoxymorphic features between 14 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, drainage patterns, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-7 was delineated as a jurisdictional wetland.

WET-7 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, sediment/shoreline stabilization and wildlife habitat. The principal functions performed by WET-7 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to continuing down WUS-7. WET-7 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and residential properties. Finally, the emergent wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-7 in **Appendix F**.

# Wetland 8 (WET-8)

Wetland 8 (WET-8) is located in the central portion of the study area, and consists of a small PEM wetland approximately 0.15 acre in size (see **Photos 45-47** in **Appendix E**; **Figures 10** and **10b** in **Appendix B**). WET-8 consists of a depressional, spring-fed wetland surrounded by a fenced pasture. The wetland occurs just east of Church Street and drains directly into WUS-3, which flows beneath Church Street and continues further west. Wetland hydrology is primarily supplied by the groundwater spring system, and is supplemented





by overland runoff and drainage from adjacent agricultural fields.

Vegetation within the DP-8-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-8-WET featured a 10 YR 4/3 matrix 0 and 2 inches in depth, a 10 YR 5/1 matrix with 10 YR 4/6 redoxymorphic features between 2 and 10 inches in depth, and a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 10 and 18 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-8 was delineated as a jurisdictional wetland.

WET-8 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, nutrient removal, sediment/toxicant retention, wildlife habitat, and marginal potential endangered species habitat. This wetland is fed by a groundwater spring system. The principal functions performed by WET-8 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-3. WET-8 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and residential properties. The small wetland provides moderate habitat for a variety of wildlife species and includes marginal potential bog turtle habitat; however, the occurrence of the species in WET-8 is currently unknown. See the Wetland Function-Value Evaluation Form for WET-8 in **Appendix F**.

#### Wetland 9 (WET-9)

Wetland 9 (WET-9) is located in the north-central portion of the study area, and consists of a small PEM wetland approximately 0.02 acre in size (see **Photos 48-49** in **Appendix E**; **Figures 10** and **10a** in **Appendix B**). WET-9 consists of a depressional wetland along the southern side of WUS-3, draining into the stream via a small tributary (WUS-3A). Wetland hydrology is supplied by a small groundwater seep, seasonally high groundwater table, and overland runoff from adjacent agricultural fields.

Vegetation within the DP-9-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-9-WET featured a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 0 and 18 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-9 was delineated as a jurisdictional wetland.

WET-9 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-9 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-3 and WUS-3A. WET-9 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and residential





properties. Finally, the small wetland provides marginal habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-9 in **Appendix F**.

### Wetland 10 (WET-10)

Wetland 10 (WET-10) is located in the north-central portion of the study area, and consists of a small PEM wetland approximately 0.05 acre in size (see **Photos 51-52** in **Appendix E**; **Figures 10** and **10a** in **Appendix B**). WET-10 consists of a depressional wetland located just east of WET-9 and on the southern side of WUS-3. Wetland hydrology is supplied by a seasonally high groundwater table, overland runoff from adjacent agricultural fields, and occasional high flows from WUS-3. Episaturated soils were observed atop a dense clay-dominated soil layer within the wetland.

Vegetation within the DP-10-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-10-WET featured a 10 YR 4/3 matrix between 0 and 3 inches in depth and a 10 YR 5/1 matrix with 5 YR 4/6 redoxymorphic features between 3 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-10 was delineated as a jurisdictional wetland.

WET-10 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-10 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-3. WET-10 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields and residential properties. Finally, the small wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-10 in **Appendix F**.

#### Wetland 11 (WET-11)

Wetland 11 (WET-11) is located in the eastern portion of the study area, and consists of a small PEM wetland approximately 0.03 acre in size (see **Photos 59-61** in **Appendix E**; **Figures 11** and **11c** in **Appendix B**). WET-11 consists of a depressional wetland located east of WUS-8 and west of large, recreational fields. Wetland hydrology is supplied by a small seep and overland runoff.

Vegetation within the DP-11-WET sample plot was dominated by reed canarygrass and tussock sedge. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-11-WET featured a 10 YR 4/2 matrix with 5 YR 4/6 redoxymorphic features between 0 and 6 inches in depth and a 10 YR 5/1 matrix with 10 YR 6/6 redoxymorphic features between 6 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized





rhizospheres on living roots, geomorphic position, microtopographic relief, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-11 was delineated as a jurisdictional wetland.

WET-11 has some effectiveness at performing the functions/values of groundwater discharge, floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-11 are sediment/toxicant retention and nutrient removal. Hydrology for WET-11 is fed by a small seep within the wetland. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-8 and WUS-10. WET-11 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides marginal habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-11 in **Appendix F**.

#### Wetland 12 (WET-12)

Wetland 12 (WET-12) is located in the eastern portion of the study area, and consists of a small PFO wetland approximately 0.18 acre in size (see **Photos 62-63** in **Appendix E**; **Figures 11** and **11c** in **Appendix B**). WET-12 consists of a depressional wetland located east of WUS-8 and to the north of the Clarks building. Wetland hydrology is supplied by a seasonally high groundwater table, and overland runoff.

Vegetation within the DP-12-WET sample plot was dominated by green ash, dark-green bulrush, and Japanese stiltgrass (*Microstegium vimineum*, FAC). The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-12-WET featured a 10 YR 4/1 matrix between 0 and 5 inches in depth and a 10YR 4/1 matrix with 7.5 YR 4/6 redoxymorphic features between 5 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, microtopographic relief, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-12 was delineated as a jurisdictional wetland.

WET-12 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-12 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-8. WET-12 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-12 in **Appendix F**.

# Wetland 13 (WET-13)

Wetland 13 (WET-13) is located in the eastern portion of the study area, and consists of a small PEM wetland approximately 0.52 acre in size (see **Photos 65-66** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). WET-13 consists of a depressional wetland located west of WUS-8 and to the north of the Clarks building, and appears to be a former altered pond that has since silted in and established dense vegetation. Wetland





hydrology is supplied by a seasonally high groundwater table and overland runoff.

Vegetation within the DP-13-WET sample plot was dominated by reed canarygrass and ash-leaf maple. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-13-WET featured a 10 YR 4/2 matrix between 0 and 2 inches in depth and a 10 YR 4/1 matrix with 5 YR 4/6 redoxymorphic features between 2 and 16 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, microtopographic relief, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-13 was delineated as a jurisdictional wetland.

WET-13 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-13 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-8. WET-13 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-13 in **Appendix F**.

#### Wetland 14 (WET-14)

Wetland 14 (WET-14) is located in the southeastern portion of the study area, and consists of a small PEM wetland approximately 0.01 acre in size (see **Photo 67** in **Appendix E**; **Figures 11** and **11a** in **Appendix B**). WET-14 consists of a depressional wetland located west of the Clarks building at the corner of Oxford Avenue and Kindig Lane. Wetland hydrology is supplied by a seasonally high groundwater table and overland and roadway runoff.

Vegetation within the DP-14-WET sample plot was dominated by broad-leaf cattail and rice cut-grass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-14-WET featured a 10 YR 2/1 matrix between 0 and 2 inches in depth, a 10 YR 3/2 matrix with 7.5 YR 4/6 redoxymorphic features between 2 and 8 inches in depth, and a 10 YR 7/8 and 10 YR 4/1 matrix between 8 and 14 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F6 (Redox Dark Surface). Wetland hydrology indicators of surface water, high water table, saturation, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-14 was delineated as a jurisdictional wetland.

WET-14 has some effectiveness at performing the functions/values of sediment/toxicant retention and nutrient removal. The principal functions performed by WET-14 are sediment/toxicant retention and nutrient removal. WET-14 traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. See the Wetland Function-Value Evaluation Form for WET-14 in **Appendix F**.





# Wetland 15 (WET-15)

Wetland 15 (WET-15) is located in the eastern portion of the study area, and consists of a small PEM wetland approximately 0.10 acre in size (see **Photos 68-69** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). WET-15 consists of a depressional wetland located east of WUS-8, situated between a large agricultural field and a riparian woodland. Wetland hydrology is supplied by a seasonally high groundwater table and surface runoff perched atop a dense clay layer.

Vegetation within the DP-15-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-15-WET featured a 10 YR 4/2 matrix between 0 and 3 inches in depth, a 10 YR 4/2 matrix with 5 YR 4/6 redoxymorphic features between 3 and 6 inches in depth, and a 10 YR 4/2 matrix with 5YR 4/6 redoxymorphic features between 6 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, oxidized rhizospheres on living roots, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-15 was delineated as a jurisdictional wetland.

WET-15 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-15 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-8. WET-15 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-15 in Appendix F.

# Wetland 16 (WET-16)

Wetland 16 (WET-16) is located in the eastern portion of the study area, and consists of a small PEM wetland approximately 0.05 acre in size (see **Photos 71-72** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). WET-16 consists of a depressional wetland located east of WUS-8 and adjacent to a large agricultural field, just south of WET-15. Wetland hydrology is supplied by a seasonally high groundwater table and surface runoff perched atop a dense clay layer.

Vegetation within the DP-16-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-16-WET featured a 10 YR 4/2 matrix with 5 YR 4/6 redoxymorphic features between 0 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, high water table, saturation, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-16 was delineated as a jurisdictional wetland.







WET-16 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-16 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching WUS-8. WET-16 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-16 in **Appendix F**.

#### Wetland 17 (WET-17)

Wetland 17 (WET-17) is located in the eastern portion of the study area, and consists of a small PEM wetland approximately 0.87 acre in size (see **Photo 73** in **Appendix E**; **Figures 12** and **12d** in **Appendix B**). WET-17 consists of a depressional wetland channel located north of Radio Road and west of the Gettysburg Railroad (CSX) line. Wetland hydrology is supplied by a seasonally high groundwater table and runoff from the adjacent agricultural fields, and saturated soils perched atop a dense clay layer.

Vegetation within the DP-17-WET sample plot was dominated by reed canarygrass. The hydrophytic vegetation parameter was met since greater than 50% of the dominant plant species were FAC or wetter.

The soil sample from DP-17-WET featured a 10 YR 4/1 matrix between 0 and 6 inches in depth and a 10 YR 4/1 matrix with 10 YR 5/6 redoxymorphic features between 6 and 12 inches in depth. This soil characterization fulfills the hydric soil parameter as defined by Indicator F3 (Depleted Matrix). Wetland hydrology indicators of surface water, drainage patterns, geomorphic position, and the FAC-Neutral Test were observed, thus fulfilling the hydrology parameter. Based on these reasons, WET-17 was delineated as a jurisdictional wetland.

WET-17 has some effectiveness at performing the functions/values of floodflow alteration, nutrient removal, sediment/toxicant retention, and wildlife habitat. The principal functions performed by WET-17 are sediment/toxicant retention and nutrient removal. This wetland can retain excessive stormwater and floodwaters prior to reaching watercourses downstream. WET-17 also traps sediments and nutrients and filters potential pollutants from stormwater runoff associated with adjacent agricultural fields. Finally, the wetland provides moderate habitat for a variety of wildlife species. See the Wetland Function-Value Evaluation Form for WET-17 in **Appendix F**.

#### Stormwater Management Features

The study area contains several roadside drainage areas and other depressional stormwater features; however, with the exception of any aforementioned watercourses or wetlands, these features lack a continuous OHWM and RPW flow and do not meet the definition of a wetland. Aboveground stormwater features in the study area consist primarily of roadside grass swales and depressions with stormwater inlets.

#### <u>Uplands</u>

Upland habitats within the study area consisted of agricultural fields, maintained lawns, fallow fields, woodlands, and riparian areas. Vegetation within upland habitats in the study area was highly variable and







included ash-leaf maple, Norway maple, black walnut, black cherry, northern red oak, northern white oak (*Quercus alba*, FACU) shagbark hickory, multiflora rose, giant foxtail, goldenrod, giant ragweed (*Ambrosia trifida*, FAC), Fuller's teasel, garlic mustard, ground ivy, Japanese honeysuckle, and Eastern poison ivy. The underlying soils within the majority of the study area are mapped as Clarksburg silt loam (CkA), Conestoga silt loam (CnA, CnB), Dunning silty clay loam (Dy), Penlaw silt loam (Pa), and Urban land-Conestoga complex (UeB). The Dunning silty clay loams and Clarksburg silt loams are listed as predominantly hydric and as containing hydric inclusions, respectively, while the remainder of the soils are listed as non-hydric. Remnant hydric soil indicators were observed within some of the upland sample plots. Please see the attached Wetland Determination Data Forms in **Appendix C** for additional details on the upland sample plots associated with wetlands. Two additional sample plots (DP-A-UPL and DP-B-UPL) were recorded along the floodplain of Plum Creek and one additional plot in the floodplain of WUS-8 (DP-C-UPL), and were determined to occur in uplands.

# IV. PHASE 1 BOG TURTLE HABITAT ASSESSMENT

# A. PURPOSE OF STUDY

The bog turtle was listed as a federally threatened species on November 4, 1997 (USFWS, 1997), under the provisions of the Endangered Species Act of 1973, as amended, and the *Bog Turtle* (Clemmys muhlenbergii) *Northern Population Recovery Plan* was completed on May 15, 2001 (USFWS, 2001). This species is also classified as endangered in the state of Pennsylvania. Since this project is located within a county containing known populations of bog turtles, the USFWS requires that surveys for the bog turtle (Phase 1 Bog Turtle Habitat Survey) be completed to determine if potential habitat occurs in the vicinity of or within the proposed project limits.

# **B. SURVEY METHODOLOGY**

Analysis of aerial photography, the Web Soil Survey of York and Adams Counties and USFWS National Wetlands Inventory mapping were reviewed. In addition, the entire wetland survey area, as described earlier in this report, was also traversed on foot during the field investigations. Searches were conducted on foot to determine if there were any wetlands that could be classified as potential bog turtle habitats. The Phase 1 Bog Turtle Habitat Assessment was conducted by Craig Patterson Nein (JMT Environmental Scientist, PA Qualified Bog Turtle Surveyor). See **Table 3** below for a summary of the Phase 1 Bog Turtle Survey results. Copies of the USFWS/PFBC Bog Turtle Habitat Field Data Sheets are included in **Appendix D**.

# C. BOG TURTLE RANGE, HABITAT, AND ECOLOGY

The bog turtle is one of the smallest turtles in North America, and occurs in two geographically distinct populations. The northern population ranges from seven states in the eastern U.S. from Massachusetts south to Maryland (Conant, 1975; USFWS, 2001). In Pennsylvania, bog turtle populations are known to occur in Adams, Berks, Bucks, Carbon, Chester, Cumberland, Delaware, Franklin, Lancaster, Lebanon, Lehigh, Monroe, Montgomery, Northampton, Schuylkill, and York counties (USFWS, 2001; USACE, 2008a; USACE, 2008b). Historic populations in Crawford and Mercer Counties in the western portion of the state are believed to be extirpated. Major threats to the species include habitat loss, alteration, and fragmentation,





collection of animals for the illegal pet trade, and the succession of open-canopy areas and spread of nonnative and native invasive plant species (USFWS, 2001).

Bog turtles tend to occur in small populations in suitable wetland habitats, which typically include herbaceous sedge meadows and fens that may be bordered by shrubby or wooded components (Lee and Norden, 1996; USFWS, 2001). These wetlands are often small (< 1.0 ha) and may be impacted by both developmental and agricultural pressures (Chase et al., 1989; Lee and Norden, 1996). Occupied bog turtle wetlands typically feature spring-fed pockets of shallow water, a substrate of soft mud, dominant vegetation of low grasses and sedges, and interspersed wet and dry pockets of microhabitat (Chase et al., 1989). Bog turtles rely on this microhabitat diversity to support their varied life history functions, such as nesting, basking and thermoregulation, foraging, and overwintering (USFWS; 2001, Ernst and Lovich, 2009). Persistent groundwater-fed hydrology is a critical component of suitable bog turtle habitat, which in turn promotes the development of soft, mucky soil conditions preferred by the species (USFWS, 2001). Although bog turtles depend on open canopy habitat for many of their ecological functions, they also use more densely vegetated areas for overwintering and other functions, and have been observed in a variety of habitats, including upland locations, when dispersing between suitable wetlands (Carter et al., 1999, 2000; Morrow et al., 2001a, 2001b; Pittman and Dorcas, 2009). The use of stream corridors for movement by the species has also been reported (e.g., Somers et al., 2007); therefore, the spatial relationship of streams to adjacent wetlands should be considered in the design of projects that may potentially impact bog turtles.

Common vegetation in occupied wetlands includes cattails (*Typha latifolia, T. angustifolia*), tussock sedge (*Carex stricta*), other sedge species (*Carex* spp., *Cyperus* spp., *Dulichium* spp.), rushes (*Juncus* sp.), bulrushes (*Scirpus* spp.), spikerushes (*Eleocharis* spp.), spotted jewelweed (*Impatiens capensis*), alders (*Alnus* spp.), skunk cabbage (*Symplocarpus foetidus*), arrow-leaved tearthumb (*Persicaria sagittata*), rice cut-grass (*Leersia oryzoides*), and other open canopy wetland species (USFWS, 2001). Wetlands that support bog turtles may also be colonized aggressively by invasive native and non-native plants such as reed canarygrass (*Phalaris arundinacea*) and multiflora rose (*Rosa multiflora*) (USFWS, 2001).

Bog turtles are active during the warmer months (spring to fall), and they typically emerge from overwintering during March to late April, depending on the regional location. Mating may occur from spring emergence through June, egg-laying from June through July, with hatching from August through September (USFWS, 2001). In Pennsylvania, Ernst (1977) reported that bog turtles were active from late March through late September. According to a radiotelemetry and thermoregulation study by Pittman and Dorcas (2009), bog turtles tend to spend the majority of their active time in shallow mud conditions, often within 10 cm of the surface. In Pennsylvania and New Jersey, bog turtles typically enter an overwintering location between late September and October, where they stay until mid-April (Ernst et al., 1989; Shiels, 1998).

# D. RESULTS AND DISCUSSION

JMT's investigation determined that 17 palustrine wetlands exist within the wetland survey area. **Table 3** below gives a summary of the bog turtle Phase 1 survey results. The boundaries of the delineated wetlands and approximate centerlines of intermittent and perennial streams are depicted on mapping in **Appendix B** (**Figures 7-12c**).





# Wetland 1 (WET-1)

Wetland 1 (WET-1) is an approximately 3.84 acre PFO/PEM wetland located in the southwestern portion of the study area (see **Photos 13-17** in **Appendix E**; **Figures 8a** and **8f** in **Appendix B**). This wetland occurs to the west of Plum Creek, and is bordered by agricultural fields and riparian forests. The narrow PEM portion (0.34 acre) of WET-1 is situated within a vegetated segment of an intermittent stream (WUS-1), which flows north into the larger PFO (3.51 acres) wetland area. No persistent groundwater springs or seeps were observed in WET-1, as surface waters were restricted to flows within the intermittent stream channel at 1 to 5 inches in depth. Mucky soils were limited to a small portion of the PEM wetland area that had silted in within the main channel, and could be probed from 3 to 6 inches in depth. The remainder of the PEM area and the entire forested portion of the wetland featured hard-bottomed soils.

Vegetation in the PEM portion of WET-1 was dominated by reed canarygrass and also included sparse cattails and sedges, while the forested wetland area was dominated by green ash, red maple, ash-leaf maple, oaks (*Quercus* sp.), multiflora rose, skunk cabbage (florets observed at the surface), garlic mustard, and Japanese honeysuckle. Subsurface structural characteristics (e.g., tunnels, root mats) were not observed within the wetland. In addition, both potential nesting and overwintering habitat were highly limited. Due largely to the lack of persistent groundwater sources and limited mucky soil substrates, it was determined that WET-1 does not contain potential bog turtle habitat.

# Wetland 2 (WET-2)

Wetland 2 (WET-2) is an approximately 5.06 acre PFO/PEM wetland located in the southwestern portion of the study area (see **Photos 18-23** in **Appendix E**; **Figures 8a** and **8d-8e** in **Appendix B**). WET-2 is primarily bordered by fallow fields to the west and developed lands to the east and south. This wetland is situated to the east of Plum Creek, and consists of a man-made/altered drainage channel running along the southwestern portion of WET-2, as well as groundwater-fed areas. The main drainage channel emanates from a culvert conveying water from the Hanover Wastewater Treatment Facility to the south of the wetland. Groundwater spring seeps were observed within and immediately adjacent to the PEM portion (0.44 acre) of the wetland, which converges with the drainage channel in the center of the wetland and continues to flow northwest towards Plum Creek. Surface water was observed at a depth of 1 to 3 inches in small depressions and rivulets, and 2 to 6 inches in the main drainage channel. Approximately 35 percent of the PEM and 10 percent of the larger PFO wetland areas featured mucky soils at depths of 3 to 12 inches and 3 to 8 inches, respectively. The majority of WET-2 featured hard-bottomed soil substrates. Outside of the concentrated groundwater-fed/drainage areas, a large portion of WET-2 featured drier forest with scattered, hard-bottomed depressions that seasonally collect surface water (i.e., vernal pools).

Vegetation within WET-2 was dominated by reed canarygrass, silky dogwood, multiflora rose, green ash, ash-leaf maple, goldenrod, and bush honeysuckle (*Lonicera* sp.). Additional vegetation observed included broad-leaf cattail, shallow sedge (*Carex lurida*), New York ironweed (*Vernonia noveboracensis*), rice cutgrass (*Leersia oryzoides*), and red maple. Subsurface structural characteristics (e.g., tunnels, root mats) were concentrated within the PEM portion of the wetland and adjacent forested areas with groundwater hydrology components. For these reasons, WET-2 was determined to contain marginal potential bog turtle habitat. A Phase 2 Bog Turtle Survey is recommended for suitable habitat within WET-2 if the proposed project has the potential to impact this wetland. Based on the field investigation, JMT recommends inclusion





of approximately 1.91 acres of WET-2 in the Designated Survey Area (DSA) for potential Phase 2 Surveys (**Figure 13** in **Appendix B**).

#### Wetland 3 (WET-3)

Wetland 3 (WET-3) is an approximately 0.05 acre PEM wetland located in the northwestern portion of the study area (see **Photos 24-25** in **Appendix E**; **Figures 8a-8b** in **Appendix B**). This wetland is bordered primarily by riparian forests, agricultural fields, mowed fields, and developed lands. WET-3 is a low-lying fringe wetland associated with an unnamed tributary to Plum Creek (WUS-3). No persistent groundwater springs or seeps were observed. Surface water was restricted to the vegetated portion of the wetland within the intermittent stream channel at a depth of 1 to 4 inches. Mucky soils were limited to a small portion (5 percent) of the wetland, consisting of shallow mineral soil (3 to 5 inches) atop rocky substrate in the vicinity of the stream channel. The remainder of the wetland upslope from the tributary featured hard-bottomed soils.

Vegetation within WET-3 was dominated by reed canarygrass and arrow-leaf tearthumb, and also included sparse rushes (*Juncus* sp.). Subsurface structural characteristics (e.g., tunnels, root mats) were highly limited within this small wetland. Due largely to the lack of persistent groundwater sources and limited mucky soil substrates, it was determined that WET-3 does not contain potential bog turtle habitat.

#### Wetland 4 (WET-4)

Wetland 4 (WET-4) is an approximately 6.44 acre PEM wetland located in the western portion of the study area to the east of Plum Creek (see **Photos 26-29** in **Appendix E**; **Figures 8a-8d** in **Appendix B**). This wetland is bordered by agricultural fields to the north and east, the Plum Creek corridor to the west, and woodlands to the south. The southern portion of WET-4 is contiguous with a forested wetland (WET-6). A hard-bottomed, excavated drainage ditch runs along the western side of WET-4, which has impacted the hydrology within the wetland. No persistent groundwater springs or seeps were observed. The wetland contains shallow drainage patterns that flow north towards an outlet into an intermittent tributary to Plum Creek (WUS-3). Surface water was observed at a depth of 2 to 8 inches within the excavated channel and 1 to 3 inches in small depressions and drainages. No mucky soils were observed; thus, the entire wetland was determined to be hard-bottomed. A fine clay layer was identified within the soil profile beginning at approximately 12 inches, which may contribute to wetland conditions by perching surface waters.

Vegetation within WET-4 was dominated by reed canarygrass, and also included goldenrod, giant ragweed, and very sparse sedges (*Carex* sp.) and rushes (*Juncus* sp.). Subsurface structural characteristics (e.g., tunnels, root mats) were highly limited within this wetland. Although this wetland includes a large area of open-canopy emergent habitat, persistent groundwater springs and seeps and mucky soils were absent in WET-4. For these reasons, it was determined that WET-4 does not contain potential bog turtle habitat.

#### Wetland 5 (WET-5)

Wetland 5 (WET-5) is an approximately 0.06 acre PEM wetland located in the western portion of the study area (see **Photos 30-32** in **Appendix E**; **Figures 8a-8b** in **Appendix B**). This small wetland lies adjacent to the western side of Plum Creek, and is bordered by agricultural fields and riparian forests. One small





spring seep discharges out of the base of the slope below the agricultural field to the west; however, this seep is immediately adjacent to Plum Creek, and only at a slightly higher elevation relative to the main stream channel. Surface water at a depth of 2 to 6 inches was observed in the small pool associated with the groundwater seep. Mucky soils were observed at a depth of 3 to 12 inches, and were limited to the groundwater seep area adjacent to the stream (approximately 15 percent of the wetland area). The remainder of the wetland upslope from the seep featured hard-bottomed mineral soils that could not be probed below the surface.

Vegetation within WET-5 was dominated by reed canarygrass, and also included a patch of broad-leaf cattail and halberd-leaf tearthumb within the groundwater seep area. A berm covered with giant ragweed and Japanese hops is located between the drier reed canarygrass-dominated portion of the wetland and Plum Creek. The majority of the wetland lacked subsurface structural features (e.g., tunnels, root mats), although the small groundwater seep area included mucky soil substrates. This small wetland features limited nesting habitat for bog turtles. Although WET-5 does contain one small groundwater seep with mucky soil substrates, this area is situated immediately adjacent to Plum Creek and is heavily influenced by stream flooding, creating an unstable hydrologic environment at the surface. For these reasons, it was determined that WET-5 does not contain potential bog turtle habitat.

#### Wetland 6 (WET-6)

Wetland 6 (WET-6) is an approximately 8.23 acre bottomland PFO wetland located in the western portion of the study area to the east of Plum Creek (see **Photos 33-36** in **Appendix E**; **Figures 8a** and **8c-8d** in **Appendix B**). This wetland is bordered by agricultural fields to the east, a residential development to the south, the Plum Creek riparian corridor to the west, and is contiguous with an emergent wetland (WET-4) to the north. One small groundwater spring seep area was observed in the southern portion of the wetland; however, the remainder of the surface water observed in WET-6 was characterized by scattered vernal pool features in depressional areas. Surface water was observed at a depth of 1 to 2 inches in small depressions and at a depth of 1 to 5 inches in larger vernal pools and drainages. Deep mucky soils were observed at a depth of 3 to 24 inches, but were only observed in the small area associated with the groundwater spring seep (less than 1 percent of the total wetland area). The upwelling from this spring drains northward along a low-lying channel that is entirely hard-bottomed. The remainder of this forested wetland featured hard-bottomed soils, including all other depressional areas that were holding water during the survey.

Vegetation within WET-6 was dominated by green ash, ash-leaf maple, oaks (*Quercus* sp.), poison ivy, multiflora rose, privet (*Ligustrum* sp.), and skunk cabbage (florets observed at soil surface). Additional species were sparsely scattered within the wetland and included sedges (*Carex* sp.), jewelweed (*Impatiens capensis*), silky dogwood, red maple, and sphagnum moss. Subsurface structural features (e.g., tunnels, rootmats) were lacking throughout the wetland. Although one small spring with mucky soils was observed, the vast majority of the wetland lacked the hydrology, soils, and vegetation suitable for bog turtles. For these reasons, it was determined that WET-6 does not contain potential bog turtle habitat.

#### Wetland 7 (WET-7)

Wetland 7 (WET-7) is an approximately 0.35-acre PEM wetland located in the western portion of the study area to the west of Sunday Drive (see **Photos 43-44** in **Appendix E**; **Figures 9** and **9a** in **Appendix B**).





This wetland is surrounded primarily by agricultural fields, with woodlands occurring further east. WET-7 is a depressional wetland that has formed within a drainage between two agricultural fields and a portion of an unnamed tributary to South Branch Conewago Creek (WUS-7). The high water table was affected by a recent rain event and overland runoff and drainage from the adjacent agricultural fields. Surface water was restricted to the main channel at a depth of 1 to 5 inches. Portions of the wetland featured stream baseflow, but contained no persistent groundwater springs or seeps. Mucky soils were limited to a small portion (5 percent) of the wetland, consisting of shallow mineral soils 3 to 5 inches in depth. The remainder of the wetland upslope from the tributary featured hard-bottomed soils.

Vegetation within WET-7 was dominated by reed canarygrass and false nettle. Additional vegetation observed included sparse cattails, sedges, and rushes. Subsurface structural features (e.g., tunnels, rootmats) that would provide overwintering habitat were lacking throughout the wetland. Although the vegetation criterion was met, the wetland lacked sources of perennial groundwater hydrology and mucky soil substrates were minimal. For these reasons, it was determined that WET-7 does not contain potential bog turtle habitat.

#### Wetland 8 (WET-8)

Wetland 8 (WET-8) is an approximately 0.15-acre PEM wetland located in the central portion of the study area (see **Photos 45-47** in **Appendix E**; **Figures 10** and **10b** in **Appendix B**). This small, spring-fed wetland lies east of Church Street and is bordered by a large, fenced pasture. This wetland feeds into WUS-3, which continues to the west of the wetland. A spring upwelling in the eastern portion of the wetland provides the primary hydrology within WET-8. Additional small groundwater springs and seeps converge with the main channel in the center of the wetland and continue west. Surface water was observed at a depth of 1 to 2 inches in small depressions and rivulets, and 2 to 6 inches in the spring upwelling. Mucky soils were observed at a depth of 3 to 20 inches (majority 6 to 8 inches) in approximately 35% of the wetland. The remainder of the wetland featured hard-bottomed soils.

Vegetation within WET-8 was dominated by reed canarygrass and also included watercress and sedges (*Carex* sp.). Although marginal, nesting and overwintering habitat occur within WET-8. Based primarily on the perennial groundwater spring and observed mucky substrates, WET-8 was determined to contain marginal potential bog turtle habitat. A Phase 2 Bog Turtle Survey is recommended for suitable habitat within WET-8 if the proposed project has the potential to impact this wetland. Because this wetland is small, JMT recommends inclusion of the entire wetland (approximately 0.15 acre) in the Designated Survey Area (DSA) for potential Phase 2 Surveys (**Figure 14** in **Appendix B**).

#### Wetland 9 (WET-9)

Wetland 9 (WET-9) is an approximately 0.02-acre PEM wetland located in the north-central portion of the study area adjacent to the riparian corridor of WUS-3 (see **Photos 48-49** in **Appendix E**; **Figures 10** and **10a** in **Appendix B**). Aside from the riparian woodlands, this small wetland is bordered by agricultural fields. WET-9 lies in a depression adjacent to the large agricultural field to the south and drains into an unnamed tributary to WUS-3 (WUS-3A). Surface water at a depth of 1 to 4 inches was observed within a small seep channel. Mucky soils were observed at a depth of 3 to 8 inches (majority 3 to 5 inches), and were limited to





the seep channel adjacent to the stream (approximately 15 percent of the wetland area). The remainder of the wetland featured hard-bottomed mineral soils.

Vegetation within WET-9 was dominated by reed canarygrass, Japanese honeysuckle, and blackberry (*Rubus* sp.), and also included sparse silky dogwood. The majority of the wetland lacked subsurface structural features (e.g., tunnels, root mats), and little to no suitable nesting habitat was observed. Although WET-9 does contain a small seep, mucky substrates were minimal, and the wetland lacked structural features for overwintering and nesting. For these reasons, it was determined that WET-9 does not contain potential bog turtle habitat.

#### Wetland 10 (WET-10)

Wetland 10 (WET-10) is an approximately 0.05-acre PEM wetland located in the north-central portion of the study area to the east of WET-9 and adjacent to the riparian corridor of WUS-3 (see **Photos 51-52** in **Appendix E**; **Figures 10** and **10a** in **Appendix B**). This small wetland is bordered by agricultural fields and the riparian woodland corridor. Surface water at a depth of 1 inch was observed within small depressions. This wetland contained hydrology perched atop a layer of clay-dominated soils. No persistent perennial groundwater springs or seeps were observed. No mucky soils were observed; thus, the entire wetland was determined to be hard-bottomed.

Vegetation within WET-10 was dominated by reed canarygrass, and also included silky dogwood and blackberry (*Rubus* sp.). Subsurface structural characteristics (e.g., tunnels, root mats) were not observed within the wetland. In addition, both potential nesting and overwintering habitat were highly limited. For these reasons, it was determined that WET-10 does not contain potential bog turtle habitat.

#### Wetland 11 (WET-11)

Wetland 11 (WET-11) is an approximately 0.03-acre PEM wetland located in the eastern portion of the project area to the east of WUS-8 (see **Photos 59-61** in **Appendix E**; **Figures 11** and **11c** in **Appendix B**). This wetland is bordered by recreational fields to the east and woodlands to the north, south, and west of WET-11 is a small seep wetland located at the headwaters of a narrow stream (WUS-10) that flows into the adjacent forested uplands and eventually to WUS-8. Surface water at a depth of 0 to 3 inches was observed within the seep channel. Shallow, mucky soils were limited to a small portion (5 percent) of the wetland at 3 to 5 inches in depth, and were underlain by hard-bottomed rocky substrate in the vicinity of the seep/stream channel. The remainder of the wetland upslope from the channel featured hard-bottomed soils.

Vegetation within the WET-11 sample plot was dominated by reed canarygrass and tussock sedge. Additional species within the wetland included thistle (*Cirsium sp.*), mountain mint (*Pycnanthemum sp.*), monkey flower (*Mimulus ringens*, OBL), and New York ironweed. Subsurface structural characteristics (e.g., tunnels, root mats) were highly limited within this wetland and mucky soil substrates were minimal. For these reasons, it was determined that WET-11 does not contain potential bog turtle habitat.





#### Wetland 12 (WET-12)

Wetland 12 (WET-12) is an approximately 0.18-acre PFO wetland located in the eastern portion of the project area to the east of WUS-8 (see **Photos 62-63** in **Appendix E**; **Figures 11** and **11c** in **Appendix B**). This wetland is embedded within forested lands to the east of the Clarks building. No persistent perennial groundwater springs or seeps were observed. Surface water was observed at a depth of 1 to 3 inches within small depressions and drainages. No mucky soils were observed; thus, the entire wetland was determined to be hard-bottomed.

Vegetation within WET-12 was dominated by Japanese stiltgrass, reed canarygrass, green ash, and black gum, and also included dark green bulrush and multiflora rose. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland, and overwintering and nesting habitat were lacking. For these reasons, it was determined that WET-12 does not contain potential bog turtle habitat.

#### Wetland 13 (WET-13)

Wetland 13 (WET-13) is an approximately 0.52-acre PEM wetland located in the eastern portion of the project area to the west of WUS-8 and north of the Clarks building (see **Photos 65-66** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). This wetland is bordered by agricultural fields to the west and south and riparian woodlands to the north and east. WET-13 appeared to be an altered pond basin with surface connection to WUS-8 from a channel flowing north. No persistent perennial groundwater springs or seeps were observed. Surface water was observed at a depth of 0 to 4 inches within the old basin. Shallow, mucky soils were limited to a small portion (1 percent) of the wetland and were only observed at a depth of 3 to 4 inches. The remainder of the wetland featured almost entirely hard-bottomed soils.

Vegetation within WET-13 was dominated by reed canarygrass, broad-leaf cattail, and box elder, and also included sparse sedges. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland. Little to no overwintering habitat and no ideal nesting habitat for bog turtles was present. For these reasons, it was determined that WET-13 does not contain potential bog turtle habitat.

#### Wetland 14 (WET-14)

Wetland 14 (WET-14) is an approximately 0.01-acre PEM wetland located in the eastern portion of the study area to the southwest of the Clarks building at the corner of Kindig Lane and Oxford Avenue (see Photo 67 in Appendix E; Figures 11 and 11a in Appendix B). This wetland runs along the toe of the roadway fill slope and is bordered by agricultural fields to the north and east and residential communities to the south and west. No persistent perennial groundwater springs or seeps were observed. Surface water was observed at a depth of 1 to 2 inches from small depressions within the wetland. No mucky soils were observed; thus, the entire wetland was determined to consist of hard-bottomed soils.

Vegetation within WET-14 was dominated by broad-leaf cattail and rice cutgrass. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland. Little to no overwintering habitat and no ideal nesting habitat for bog turtles was present within the wetland. For these reasons, it was determined that WET-14 does not contain potential bog turtle habitat.





#### Wetland 15 (WET-15)

Wetland 15 (WET-15) is an approximately 0.10 acre PEM wetland located in the eastern portion of the study area to the east of WUS-8, situated between a large agricultural field and a riparian woodland (see **Photos 68-69** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). No persistent perennial groundwater springs or seeps were observed. Surface water was observed at a depth of 1 to 2 inches from small depressions within the wetland. No mucky soils were observed; thus, the entire wetland was determined to consist of hard-bottomed soils. This wetland contained hydrology perched atop a layer of clay-dominated soils beginning at approximately 6 inches from the surface.

Vegetation within WET-15 was dominated by reed canarygrass and false nettle, and fringed by box elder, silver maple, and green ash. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland. Little to no overwintering habitat and no ideal nesting habitat for bog turtles was present within the wetland. For these reasons, it was determined that WET-15 does not contain potential bog turtle habitat.

#### Wetland 16 (WET-16)

Wetland 16 (WET-16) is an approximately 0.05 acre PEM wetland located in the eastern portion of the study area to the east of WUS-8, situated between a large agricultural field and a riparian woodland (see **Photos 71-72** in **Appendix E**; **Figures 12** and **12a** in **Appendix B**). No persistent perennial groundwater springs or seeps were observed. Surface water was observed at a depth of 1 to 2 inches from small depressions within the wetland. No mucky soils were observed; thus, the entire wetland was determined to consist of hard-bottomed soils. This wetland contained hydrology perched atop a layer of clay-dominated soils beginning at approximately 4 inches from the surface.

Vegetation within WET-16 was dominated by reed canarygrass and fringed by silver maple. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland. Little to no overwintering habitat and no ideal nesting habitat for bog turtles was present within the wetland. For these reasons, it was determined that WET-16 does not contain potential bog turtle habitat.

#### Wetland 17 (WET-17)

Wetland 17 (WET-17) is an approximately 0.87 acre wetland ditch located in the eastern portion of the project area to the north of Radio Road (see **Photo 73** in **Appendix E**; **Figures 12** and **12d** in **Appendix B**). This wetland is bordered by agricultural fields to the east and west. No persistent perennial groundwater-fed sources were observed. Surface water was observed at a depth of 0.5" inch from small puddles and depressions within the wetland. No mucky soils were observed; thus, the entire wetland was determined to consist of hard-bottomed soils. Evidence of flooding was observed from bent vegetation resulting from recent stormwater flows.

Vegetation within WET-17 was dominated by reed canary grass and also included blue vervain and sparse trees. No subsurface structural features (e.g., tunnels, root mats) were observed within this wetland. Little to no overwintering habitat and no ideal nesting habitat for bog turtles was present within the wetland. For these reasons, it was determined that WET-17 does not contain potential bog turtle habitat.





# Table 5: Summary of Phase 1 Bog Turtle Survey Results for the Eisenhower Drive ExtensionProject Study Area, Adams and York Counties, Pennsylvania

Wetland ID	Wetland Size (approximate acres)	Wetland Type and Amount (% or acres)	Extent of Mucky Soils (by Wetland Type)	Survey Effort (person- hours)	Potential Bog Turtle Habitat?
WET-1	3.843	PEM – 10% PFO – 90%	PEM – 5% PFO – 0%	4.5	No
WET-2	5.057	PEM – 10% PFO – 90%	PEM – 35% PFO – 10%	5.0	Yes
WET-3	0.047	PEM – 100%	PEM – 5%	0.5	No
WET-4	6.437	PEM – 100%	PEM – 0%	4.0	No
WET-5	0.060	PEM – 100%	PEM – 15%	1.0	No
WET-6	8.229	PFO – 100%	PFO – 1%	4.5	No
WET-7	0.352	PEM – 100%	PEM – 5%	0.5	No
WET-8	0.144	PEM – 100%	PEM- 35%	0.5	Yes
WET-9	0.025	PEM – 100%	PEM – 15%	0.5	No
WET-10	0.050	PEM – 100%	PEM – 0%	0.5	No
WET-11	0.026	PEM – 100%	PEM – 5%	0.5	No
WET-12	0.184	PFO – 100%	PFO – 0%	0.5	No
WET-13	0.524	PEM – 100%	PEM – 1%	1.0	No
WET-14	0.012	PEM – 100%	PEM – 0%	0.5	No
WET-15	0.104	PEM – 100%	PEM – 0%	0.5	No
WET-16	0.051	PEM – 100%	PEM – 0%	0.5	No
WET-17	0.865	PEM – 100%	PEM – 0%	1.0	No





A review of the PNDI Receipt obtained on March 18, 2018 did not identify any known conflicts with the bog turtle in the vicinity of the Eisenhower Drive Extension Project study area. However, two wetlands (WET-2, WET-8) within the wetland survey area were determined to contain potential bog turtle habitat. A Phase 2 Bog Turtle Survey is recommended if the proposed project has the potential to result in any direct or indirect impacts to either of these wetlands.

According to the USFWS Guidelines for Bog Turtle Surveys (USFWS, 2006), Phase 2 surveys should focus on the areas of the wetland that meet the soils, hydrology, and vegetation criteria for bog turtles. These areas are referred to as Designated Survey Areas (DSAs), and include portions of the wetland that encompass the three criteria for bog turtle habitat; thus, not all three criteria may be present in all portions of the DSA. Based on the field investigation and assessment of the potential habitat, JMT recommends inclusion of approximately 1.91 acres within the DSA of WET-2 (**Figure 13** in **Appendix B**) and the entirety of WET-8 (0.15 acre, **Figure 14** in **Appendix B**) for the purposes of Phase 2 Surveys. The remainder of the wetland area in WET-2 lacks all three criteria for suitable bog turtle habitat, and are dominated by hardbottomed forested lands.

#### V. SUMMARY

JMT has completed a wetland identification and delineation and Phase 1 bog turtle habitat assessment in the established wetland survey area for the proposed Eisenhower Drive Extension Project in Adams and York Counties, Pennsylvania. The overall wetland survey area consisted of locations investigated in two different periods. The first survey area was investigated in 2016 and consisted of the approximately one-mile long segment of Plum Creek located to the south of Chapel Road and north and east of Centennial Road, with a corridor spanning approximately 1,500 feet across along this length. Additional fieldwork was completed in 2017 within several alternative roadway alignment corridors in the study area. These alternate corridors were approximately 125 feet wide, with wetland surveys extending at least 300 feet from each side of the corridor in order to complete the Phase 1 Bog Turtle Habitat Survey. Seventeen (17) palustrine wetlands (WET-1 through WET-17) were identified and delineated within the study area. Any temporary or permanent impacts to these resources would require permits from the PADEP and USACE.

Sixteen (16) watercourses were also identified within the study area. Watercourses were initially identified during 2016 and 2017 fieldwork. Subsequent to advancements in the project design, watercourses were delineated in 2018 within an approximately 200-foot wide corridor along the preferred roadway alignment. Plum Creek (WUS-2) is a perennial stream classified as a Warm Water Fishery and Migratory Fishery by the PA Code Title 25, Chapter 93 *Water Quality Standards*. Six unnamed tributaries to Plum Creek (WUS-1, WUS-2A, WUS-3, WUS-3A, WUS-4, and WUS-4A) were also identified, all of which consist of intermittent stream channels. Three unnamed tributaries to the South Branch Conewago Creek (WUS-5, WUS-6, and WUS-7) were identified in the southwestern portion of the study area, and are also classified as WWFS and MFs. WUS-8 is an unnamed tributary to Slagles Run that forms another primary stream corridor in the eastern portion of the study area, and is a perennial stream also classified as a WWF and MF. Additional tributaries identified in the WUS-8 corridor included WUS-8A, WUS-8B, WUS-9, WUS-10, and WUS-11. Permits from the PADEP and USACE will be required for any temporary or permanent impacts to these watercourses.





According to the Pennsylvania Fish and Boat Commission (PFBC), no stocked trout streams occur in the vicinity of the study area, and no streams are listed as Approved Trout Waters, Class A wild trout streams, or as streams supporting natural trout reproduction. In addition, no natural trout reproducing streams occur downstream of this portion of the project area. Therefore, no in-stream restrictions based on trout designations are anticipated.

Activities conducted within jurisdictional waters including wetlands, require permits from state and federal regulatory agencies. Activities or obstructions to wetlands located within stormwater management facilities, qualify for a waiver from the PADEP under 105.12(a)(6). Activities or obstructions within streams or floodways (not including wetlands) with a drainage area of less than 100 acres qualify for a waiver from the PADEP under 105.12(a)(2). Due to the size of the drainage areas in the study area, no watercourses identified would qualify for a waiver from PADEP.

Wetland and waterways investigations of this type reflect the current state of conditions. The delineation is often based on professional judgment, experience and the information and techniques available. A determination of jurisdictional areas and their boundaries, especially in highly disturbed and variable conditions of a developed area, can only be conducted through a consultation with the USACE and/or PADEP.

The Phase 1 bog turtle habitat assessments for the seventeen delineated wetlands were completed on November 17 and 18, December 7, 8, 21, and 27, 2016, and on November 8, 9, 13, and 14, 2017 by a PA Qualified Bog Turtle Surveyor, during which it was determined that WET-2 and WET-8 contained marginal potential bog turtle habitat. All other wetlands lacked the combination of hydrology, soils, and vegetation to be considered potential bog turtle habitat, and/or were heavily prone to flooding from adjacent watercourses. A Phase 2 Bog Turtle Survey is recommended for WET-2 and WET-8 if the proposed project has the potential to result in direct or indirect impacts to either of these wetlands.





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# Appendix A Professional Qualifications



#### Pennsylvania Department of Transportation Consultant Qualifications Package Resumes



Please include a brief resume of k paste" capabilities of your word proce included with the submission)		-		•
Resume #				JOHNSON, MIRMIRAN & THOMPSON Engineering A Brighter Future®
Name Craig Patterson Nein		Title	Envir	onmental Scientist
Primary Responsibilities				
Resource Delineation, Endangered S	pecies, Permi	tting, NE	EPA Do	ocumentation
Years Experience:       With This Firm       3       With Other Firms       8				
Education				
Institution	Degree(s)	Y	ear	Specialization
University of Mary Washington	BS	2	004	Environmental Science
Towson University	MS	2	012	Biology
Active Registration				
Year first registered				
Disciplines				
Other Experience and Qualificatio	ns			

Mr. Nein has over eight years of experience in the natural resources field. He has held positions with the Maryland Department of Natural Resources, the Department of the Interior (US Fish & Wildlife Service), Towson University, and the Maryland Conservation Corps prior to joining JMT. His areas of expertise include wetlands, endangered species (specifically the bog turtle (*Glyptemys muhlenbergii*)), and habitat assessments. Mr. Nein also has experience in the preparation of environmental permit applications and NEPA documents, including Chapter 105/Section 404 permitting, NPDES permitting, and portions of environmental impact statements. Mr. Nein is recognized by state and federal agencies as a Qualified Bog Turtle Surveyor in the states of Pennsylvania and Maryland. Other experience includes assistance with Phase I archaeological investigations and ambient noise monitoring. Some of his project specific experience includes:

**PTC MP 53 – 57 Total Reconstruction, Allegheny County, PTC, Plum Borough and Monroeville, PA:** Environmental Scientist. Mr. Nein assisted with the delineation of wetlands and Waters of the U.S. along the 4 mile project corridor of the PA Turnpike. He prepared a complete Wetland Identification and Delineation Report that was accepted by PTC without comments. Mr. Nein compiled extensive environmental data and information on the project area and prepared an Environmental Overview Document (EOD). Mr. Nein also assisted with the collection of ambient noise measurements in the field and the preparation of a Preliminary Technical Noise Report.

**S.R. 0216, Section 015 Blooming Grove Road Bridge Replacement, PennDOT District 8-0, Codorus and Manheim Townships, PA:** Environmental Scientist. Responsible for the identification and delineation of all waters of the U.S. on site, including wetlands. He conducted a Phase 1 Bog Turtle Habitat Assessment for the delineated wetlands and prepared a Wetland Identification and Delineation Report and Phase 1 Bog Turtle Habitat Assessment Report. Mr. Nein also led a Phase 2 Bog Turtle Survey to determine the presence/probable absence of the species within wetlands with potential habitat in the vicinity of the project area, and submitted a Phase 2 Bog Turtle Survey Report to the USFWS in order to obtain project clearance. Mr. Nein is also assisting with the preparation of a CE BRPA document.

#### Pennsylvania Department of Transportation Consultant Qualifications Package Resumes



**S.R. 0216, Section 016 Sticks Road Bridge Replacement, PennDOT District 8-0, Codorus Township, PA:** Environmental Scientist. Responsible for the identification and delineation of all waters of the U.S. on site, including wetlands. He conducted a Phase 1 Bog Turtle Habitat Assessment for the delineated wetlands and prepared a Wetland Identification and Delineation Report and Phase 1 Bog Turtle Habitat Assessment Report. Mr. Nein also led a Phase 2 Bog Turtle Survey to determine the presence/probable absence of the species within wetlands with potential habitat in the vicinity of the project area, and submitted a Phase 2 Bog Turtle Survey Report to the USFWS in order to obtain project clearance. Mr. Nein also prepared a Joint Permit Application for impacts to waterways and wetlands.

**S.R. 2001, Section A15 Bunola River Road Bridge Replacement, PennDOT District 11-0, Forward, PA:** Environmental Scientist. Responsible for the identification and delineation of all waters of the U.S. on site, including wetlands. Mr. Nein assisted with the preparation of a Wetland Identification and Delineation Report. He also completed a GP-11 permit application for encroachments to Perry Mill Run.

**S.R. 2118, Section A02 Ripple Road Bridge Replacement, PennDOT District 11-0, White Oak, PA:** Environmental Scientist. Responsible for the identification and delineation of all waters of the U.S. on site, including wetlands. Mr. Nein assisted with the preparation of a Wetland Identification and Delineation Report. He also assisted with the completion of a GP-11 permit application for encroachments to Long Run and adjacent tributaries.

**Bog Turtle Construction Monitoring – Pipe Maintenance Project, Carroll County Dept. of Public Works, Union Mills, MD:** Environmental Scientist. Mr. Nein acted as the Qualified Bog Turtle Surveyor on site during a maintenance project that involved the re-grouting of a structurally deficient culvert in Carroll County, Maryland. He attended a Pre-Construction Meeting with county contractors and Maryland Department of Natural Resources (MD DNR) staff to discuss the nature of the project and to highlight the importance of the bog turtle monitoring activities. Mr. Nein provided bog turtle monitoring services during all phases of the project to ensure that no bog turtles were harmed as a result of the construction project. Following the completion of the project, Mr. Nein prepared a construction monitoring report for Carroll County to submit to MD DNR.

**RCN Ranavirus Study, Maryland Department of Natural Resources, MD:** Seasonal Biologist. Mr. Nein acted as the lead field biologist on a study investigating the distribution of *Ranavirus* in amphibian breeding ponds. Compiled known wood frog (*Lithobates sylvaticus*) breeding ponds in Maryland and conducted site randomization to select study ponds. Verified breeding at study ponds and assisted with collection of larval amphibian samples for disease analysis. Assisted with development of study protocol manual, permitting, site monitoring, GIS, and database management.

**Bog Turtle Site Prioritization Project, U.S. Fish and Wildlife Service (USFWS), MD:** Fish and Wildlife Biologist. Mr. Nein led an effort conducting a site prioritization project for bog turtle sites in Maryland. Compiled population and recruitment data for all known bog turtle sites in Maryland and ranked sites based on standardized criteria. Assisted USFWS staff with GIS work, reporting, and presentation of project methodology at regional recovery meeting. The results of the site prioritization are being used by state and federal personnel to help guide survey efforts, monitoring, management, and restoration at bog turtle sites in Maryland.

### Pennsylvania Department of Transportation Consultant Qualifications Package



Resumes

Please include a brief resume of paste" capabilities of your word pro included with the submission)		•		
Resume #			JOHNSON, MIRMIRAN & THOMPSON Engineering A Brighter Future®	
Name Grace Erisman		Title Enviro	onmental Scientist	
Primary Responsibilities				
Resource Delineation, Permitting, N	VEPA Document	ation		
Years Experience:         With This Firm         4 months         With Other Firms         None				
Education				
Institution	Degree(s)	Year	Specialization	
Salisbury University	BS	2015	Earth Science/Geography	
Active Registration				
Year first registered				
Disciplines				

#### Other Experience and Qualifications

Ms. Erisman has 4 months of experience in the natural resources field. She has also held positions with Salisbury University and participated in extensive research on Amazonian deforestation and coastal processes of the Eastern Shore prior to joining JMT. She has completed a variety of GIS projects, sedimentology and stratigraphy labs, environmental hazard reports, as well as participated in field studies research throughout Maryland, Pennsylvania, and the Colorado Plateau. Ms. Erisman also has experience in assisting with the delineation of wetlands and Waters of the U.S. as well as the preparation of environmental permit applications and NEPA documents. Some of her project-specific experience includes:

**Eisenhower Drive Extension Project, Conewago Township, Adams County, PA:** Environmental Scientist. Ms. Erisman assisted with the delineation of wetlands and waters along the proposed Eisenhower Drive Extension area and in preparing a complete Wetland Identification and Delineation Report. She also compiled extensive environmental data and information on the project area.

**S.R. 0001, Group 03S, Sections RC1 and RC2 Improvement Project, Bensalem and Middletown Townships, Bucks County, PA:** Environmental Scientist. Ms. Erisman assisted with the preparation of a CE Reevaluation. She has also assisted with the preparation of a JPA.

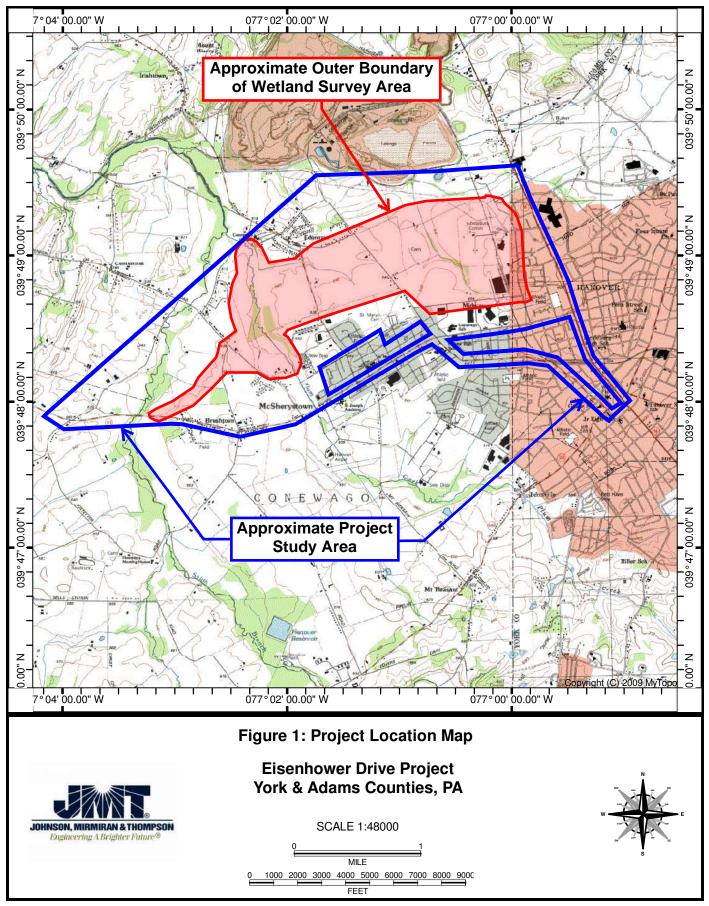
**S.R. 3023, Section 011 Bridge Rehabilitation Project, PennDOT District 8-0, Martic and Conestoga Townships, Lancaster County, PA:** Environmental Scientist. Ms. Erisman assisted with the preparation of a CE BRPA document. She also completed a Section 4(f) *De Minimis* Use Section 2002 No Adverse Use Historic Properties document.

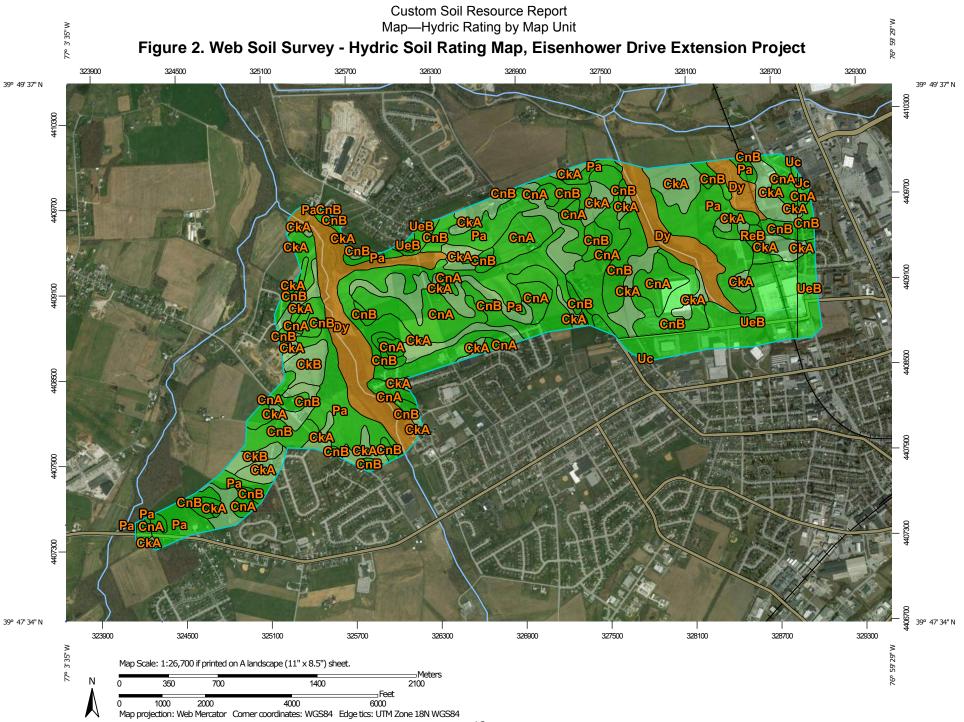
**S.R. 1003, Section 022 Bridge Replacement Project, PennDOT District 8-0, Jonestown Borough and Swatara Township, Lebanon County, PA:** Environmental Scientist. Ms. Erisman is assisting with the preparation of a CE BRPA document. She is also completing a Section 4(f) Applicability Involving Temporary Occupancy document.

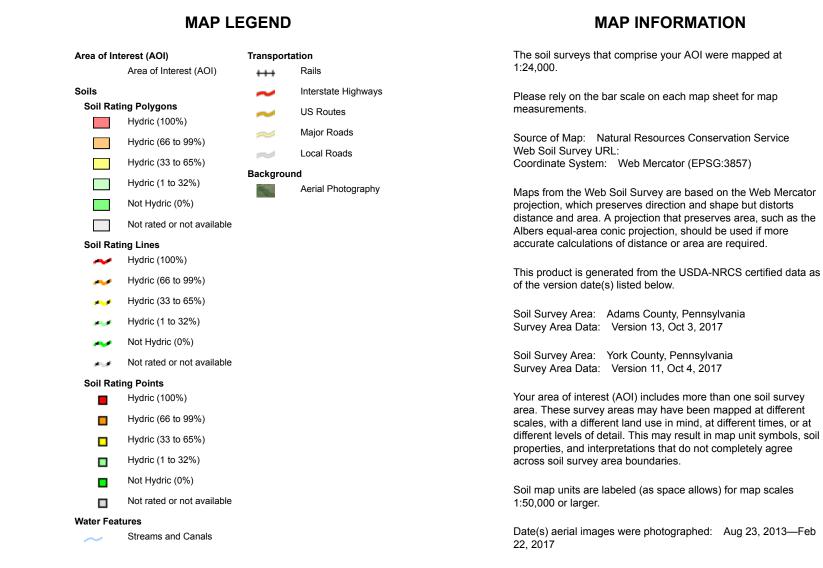


# Appendix B Figures









The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

#### MAP LEGEND

#### MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

#### Table—Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CkA	Clarksburg silt loam, 0 to 3 percent slopes	5	270.1	20.7%
CkB	Clarksburg silt loam, 3 to 5 8 percent slopes		25.8	2.0%
CnA	Conestoga silt loam, 0 to 3 percent slopes	0	217.2	16.6%
CnB	Conestoga silt loam, 3 to 8 percent slopes	0	219.6	16.8%
CnC	Conestoga silt loam, 8 to 15 percent slopes	0	3.3	0.3%
Dy	Dunning silty clay loam	85	160.1	12.2%
Pa	Penlaw silt loam	0	270.7	20.7%
ReB	Readington silt loam, 3 to 8 percent slopes	0	10.6	0.8%
Uc	Urban land	0	1.4	0.1%
UeB	Urban land-Conestoga complex, 0 to 8 percent slopes	0	94.1	7.2%
Subtotals for Soil Survey Area		1,272.8	97.4%	
Totals for Area of Interest			1,307.2	100.0%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CkA	Clarksburg silt loam, 0 to 3 percent slopes	5	2.2	0.2%
CnA	Conestoga silt loam, 0 to 3 percent slopes	0	2.6	0.2%
CnB	Conestoga silt loam, 3 to 8 percent slopes	0	6.5	0.5%
Uc	Urban land	0	1.0	0.1%
UeB	Urban land-Conestoga complex, 0 to 8 percent slopes	0	22.0	1.7%
Subtotals for Soil Surve	ey Area		34.4	2.6%
Totals for Area of Interest			1,307.2	100.0%

#### Rating Options—Hydric Rating by Map Unit

Aggregation Method: Percent Present Component Percent Cutoff: None Specified Tie-break Rule: Lower



### U.S. Fish and Wildlife Service **National Wetlands Inventory**

## Figure 3a. NWI Map

**Eisenhower Drive Extension Project** 



#### January 16, 2018

#### Wetlands

- Estuarine and Marine Wetland

Estuarine and Marine Deepwater

- Freshwater Forested/Shrub Wetland
  - **Freshwater Pond**

Freshwater Emergent Wetland

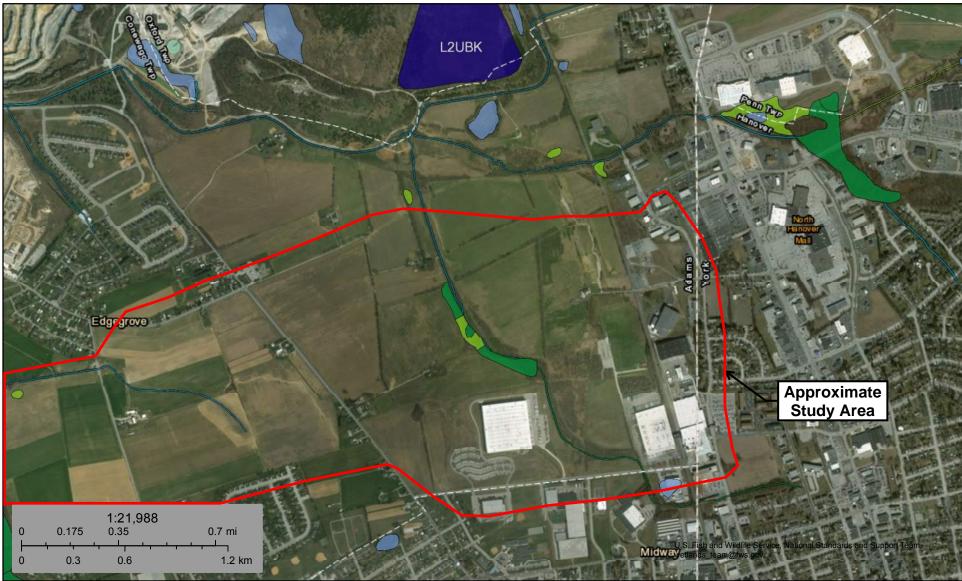
Lake Other Riverine This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.



### U.S. Fish and Wildlife Service **National Wetlands Inventory**

# Figure 3b. NWI Map

**Eisenhower Drive Extension Project** 



#### January 16, 2018

#### Wetlands

- Estuarine and Marine Wetland

Estuarine and Marine Deepwater

- **Freshwater Pond**

Freshwater Emergent Wetland

Freshwater Forested/Shrub Wetland

Lake Other Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

# Figure 4a. FEMA FIRM Map, Eisenhower Drive Extension Project

## NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Pennsylvania State Plane south zone (FIPSZONE 3702). The horizontal datum was NAD83. GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202

1315 East-West Highway Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the

National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in a digital format by the PAMAP Program, PA Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey. This information was photogrammetrically compiled at a scale of 1:2400 from aerial photography dated April 2003.

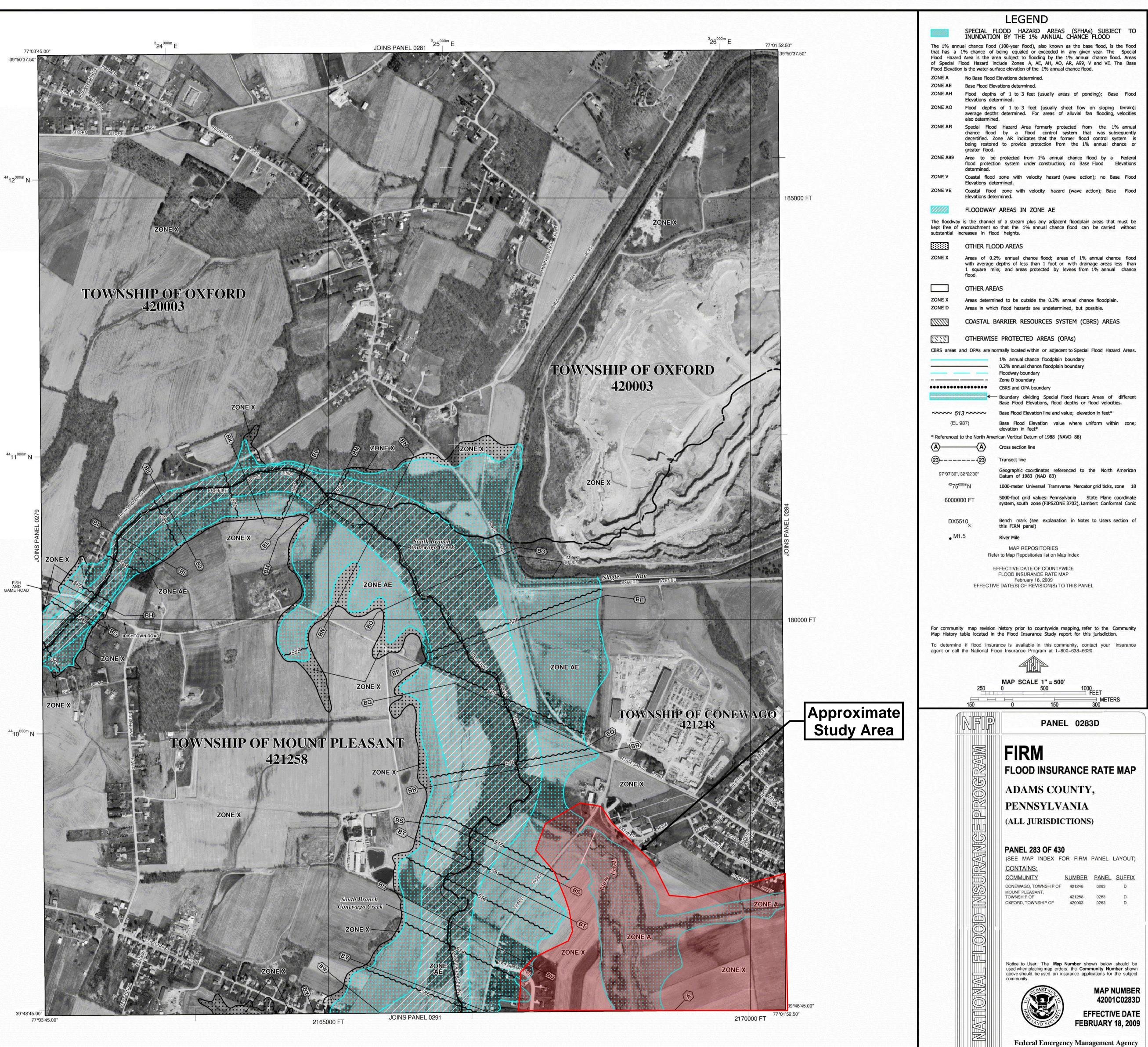
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1–877–FEMA MAP** (1–877–336–2627) or visit the FEMA website at http://www.fema.gov/.



# Figure 4b. FEMA FIRM Map, Eisenhower Drive Extension Project

## NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Pennsylvania State Plane south zone (FIPSZONE 3702). The horizontal datum was NAD83. GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

<sup>44</sup>08<sup>000m</sup>

NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202

1315 East-West Highway Silver Spring, MD 20910-3282

http://www.ngs.noaa.gov/.

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at

Base map information shown on this FIRM was provided in a digital format by the PAMAP Program, PA Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey. This information was photogrammetrically compiled at a scale of 1:2400 from aerial photography dated April 2003.

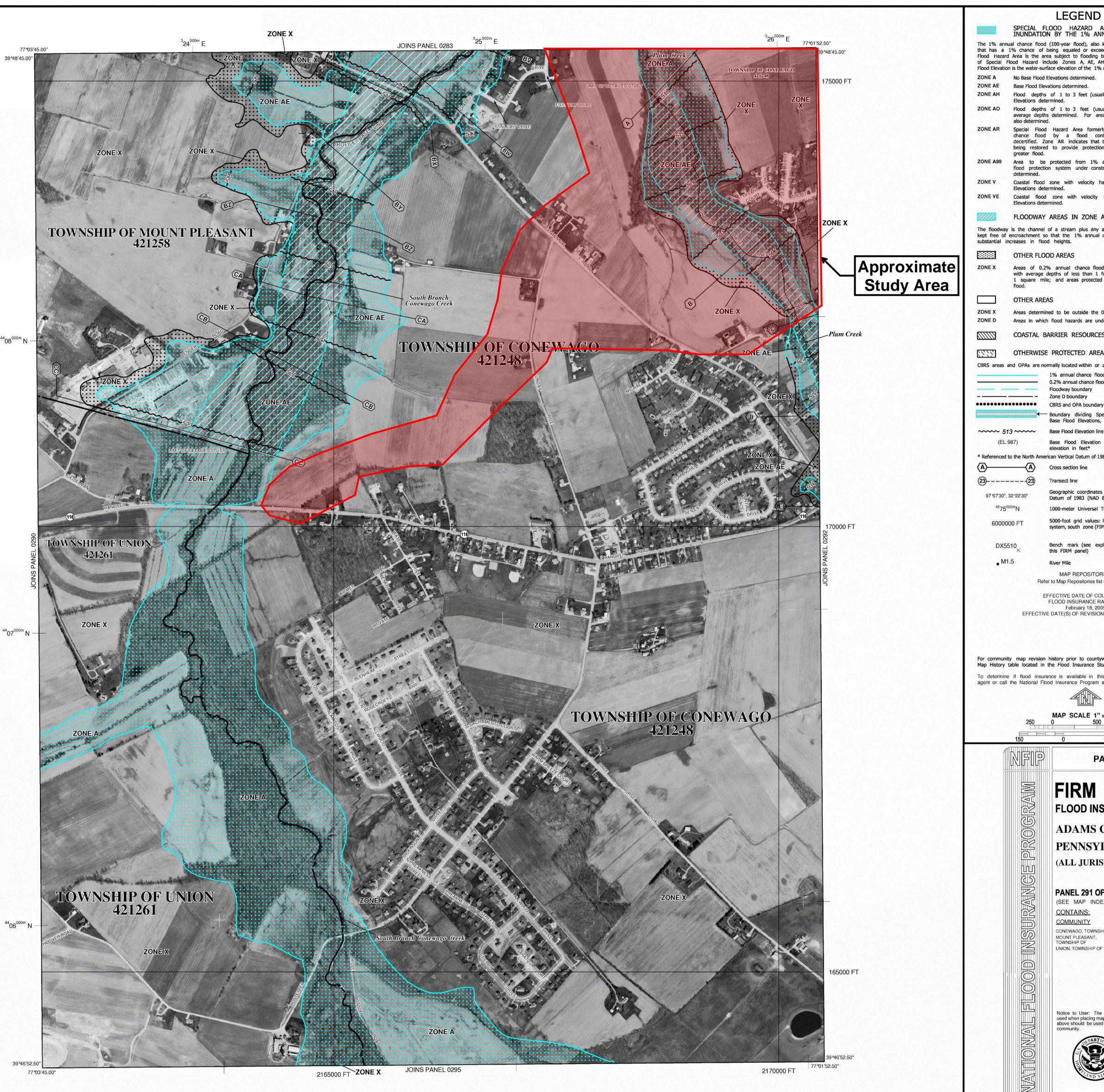
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1–877–FEMA MAP** (1–877–336–2627) or visit the FEMA website at http://www.fema.gov/.



### SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood. ZONE A No Base Flood Elevations determined Base Flood Elevations determined. Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations Coastal flood zone with velocity hazard (wave action); no Base Flood Coastal flood zone with velocity hazard (wave action); Base Flood FLOODWAY AREAS IN ZONE AE The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without OTHER FLOOD AREAS Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible. COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS OTHERWISE PROTECTED AREAS (OPAs) CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. 1% annual chance floodplain boundary 0.2% annual chance floodplain boundary Floodway boundary Zone D boundary CBRS and OPA boundary - Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities. Base Flood Elevation line and value; elevation in feet\* Base Flood Elevation value where uniform within zone; elevation in feet\* \* Referenced to the North American Vertical Datum of 1988 (NAVD 88) Cross section line Transect line Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) 1000-meter Universal Transverse Mercator grid ticks, zone 18 5000-foot grid values: Pennsylvania State Plane coordinate system, south zone (FIPSZONE 3702), Lambert Conformal Conic Bench mark (see explanation in Notes to Users section of this FIRM panel) **River Mile** MAP REPOSITORIES Refer to Map Repositories list on Map Index EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP February 18, 2009 EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620. MAP SCALE 1" = 500 FFFT B METERS PANEL 0291D FIRM FLOOD INSURANCE RATE MAP ADAMS COUNTY, PENNSYLVANIA (ALL JURISDICTIONS) PANEL 291 OF 430 (SEE MAP INDEX FOR FIRM PANEL LAYOUT) CONTAINS: COMMUNITY PANEL SUFFI CONEWAGO, TOWNSHIP OF 421248 MOUNT PLEASANT 421258 0291 TOWNSHIP OF UNION, TOWNSHIP OF 421261 0291 Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community. MAP NUMBER 42001C0291D **EFFECTIVE DATE FEBRUARY 18, 2009** AND SECO NM Federal Emergency Management Agency

# Figure 4c. FEMA FIRM Map, Eisenhower Drive Extension Project

## NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Pennsylvania State Plane south zone (FIPSZONE 3702). The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202 1315 East-West Highway

Silver Spring, MD 20910–3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713–3242, or visit its website at http://www.ngs.noaa.gov/.

**Base map** information shown on this FIRM was provided in a digital format by the PAMAP Program, PA Department of Conservation and Natural Resources, Bureau of Topographic and Geologic Survey. This information was photogrammetrically compiled at a scale of 1:2400 from aerial photography dated April 2003.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

**Corporate** limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1–800–358–9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1–800–358–9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1–877–FEMA MAP** (1–877–336–2627) or visit the FEMA website at http://www.fema.gov/.



			LEGEND
		SPECIAL F	FLOOD HAZARD AREAS (SFHAs) SUBJECT TO ON BY THE 1% ANNUAL CHANCE FLOOD
0'00.00" 39°48'45.00"	that has a Flood Hazard of Special F	ual chance floor 1% chance of I Area is the a flood Hazard i	d (100-year flood), also known as the base flood, is the flood being equaled or exceeded in any given year. The Special area subject to flooding by the 1% annual chance flood. Areas include Zones A, AE, AH, AO, AR, A99, V and VE. The Base urface elevation of the 1% annual chance flood.
	ZONE A ZONE AE	No Base Flood	Elevations determined.
175000 FT	ZONE AE ZONE AH		is of 1 to 3 feet (usually areas of ponding); Base Flood
	ZONE AO	Flood depth average depti also determine	is of 1 to 3 feet (usually sheet flow on sloping terrain); hs determined. For areas of alluvial fan flooding, velocities ed.
	ZONE AR	chance flood decertified. 2	d Hazard Area formerly protected from the 1% annual d by a flood control system that was subsequently Zone AR indicates that the former flood control system is ed to provide protection from the 1% annual chance or
	ZONE A99	Area to be flood protect	e protected from 1% annual chance flood by a Federal tion system under construction; no Base Flood Elevations
	ZONE V	determined. Coastal flood Elevations de	d zone with velocity hazard (wave action); no Base Flood termined.
	ZONE VE		d zone with velocity hazard (wave action); Base Flood
	The floodway		Y AREAS IN ZONE AE I of a stream plus any adjacent floodplain areas that must be
	kept free of	encroachment s acreases in flo	so that the 1% annual chance flood can be carried without
		OTHER FLC	
	ZONE X	with average	2% annual chance flood; areas of 1% annual chance flood depths of less than 1 foot or with drainage areas less than hile; and areas protected by levees from 1% annual chance
		OTHER ARE	EAS inned to be outside the 0.2% annual chance floodplain.
	ZONE X	Areas in which	ch flood hazards are undetermined, but possible.
			BARRIER RESOURCES SYSTEM (CBRS) AREAS
	CBRS areas a		E PROTECTED AREAS (OPAs) normally located within or adjacent to Special Flood Hazard Areas.
			1% annual chance floodplain boundary 0.2% annual chance floodplain boundary
			Floodway boundary Zone D boundary CBRS and OPA boundary
1			CBRS and OPA boundary — Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
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SMA	EL ؟ * Referenced t		Base Flood Elevation value where uniform within zone; elevation in feet* erican Vertical Datum of 1988 (NAVD 88)
	<b>A</b>	(A)	Cross section line
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X	97°07'30", : <sup>42</sup> 75 <sup>0</sup>		Datum of 1983 (NAD 83) 1000-meter Universal Transverse Mercator grid ticks, zone 18
န္ဗ် 170000 FT	60000	00 FT	5000-foot grid values: Pennsylvania State Plane coordinate system, south zone (FIPSZONE 3702), Lambert Conformal Conic
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OC			fer to Map Repositories list on Map Index
			EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP February 18, 2009
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	For communit	y map revision	n history prior to countywide mapping, refer to the Community 1 the Flood Insurance Study report for this jurisdiction.
	To determine	if flood insu	rance is available in this community, contact your insurance lood Insurance Program at 1–800–638–6620.
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			PENNSYLVANIA
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		MC	PANEL 292 OF 430
		TA A	(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
			CONTAINS: <u>COMMUNITY</u> <u>NUMBER</u> PANEL SUFFIX CONEWAGO TOWNSHIP OF 421248 0282 D
		SN	CONEWAGO, TOWNSHIP OF 421248 0292 D MCSHERRYSTOWN, BOROUGH OF 421245 0292 D
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			Notice to User: The <b>Map Number</b> shown below should be used when placing map orders; the <b>Community Number</b> shown
			above should be used on insurance applications for the subject community.
39°46'52.50"			MAP NUMBER
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# Figure 4d. FEMA FIRM Map, Eisenhower Drive Extension Project

### NOTES TO USERS

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NGS Information Services NOAA, N/NGS12 National Geodetic Survey SSMC-3, #9202

1315 East-West Highway Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov/.

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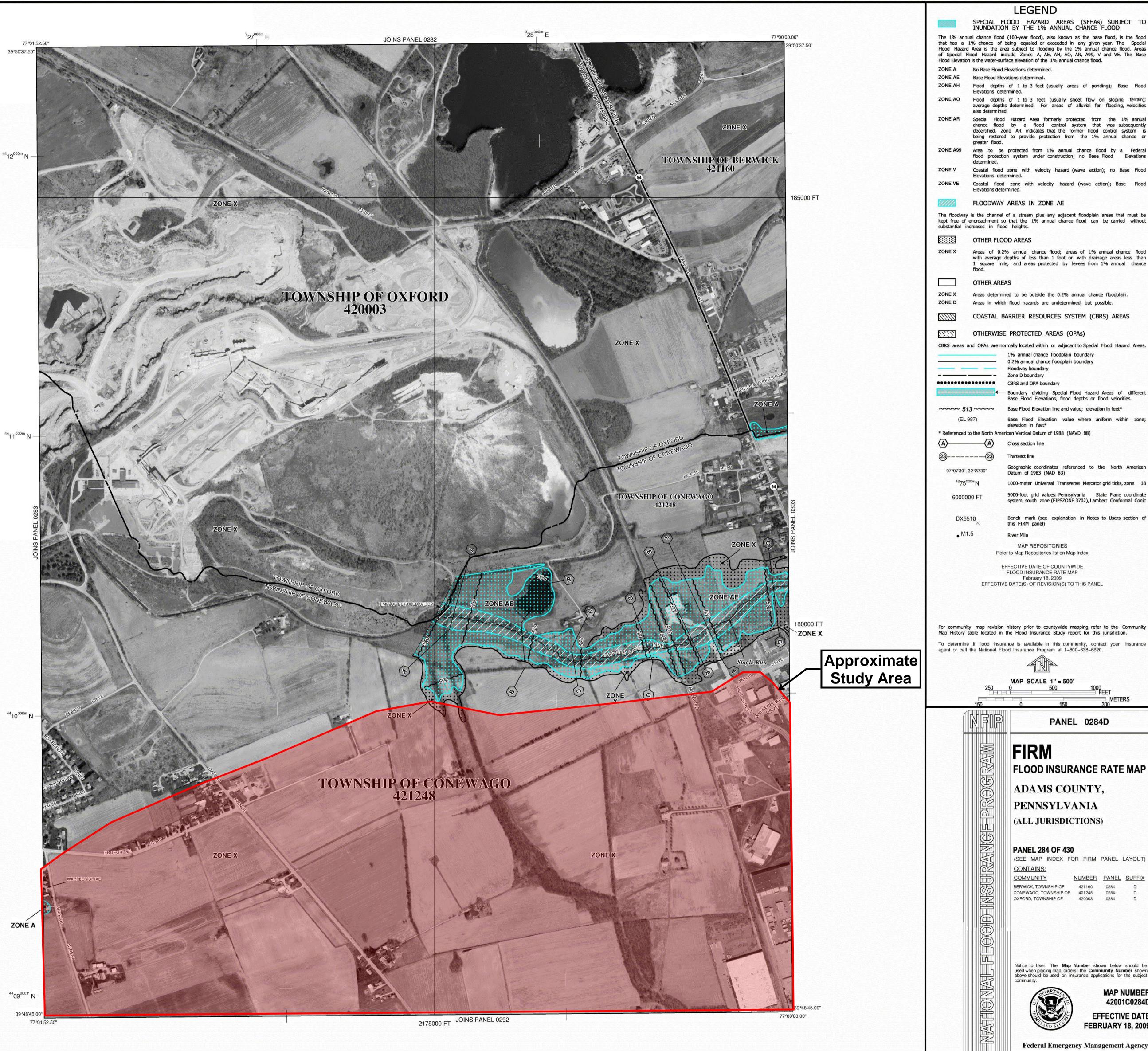
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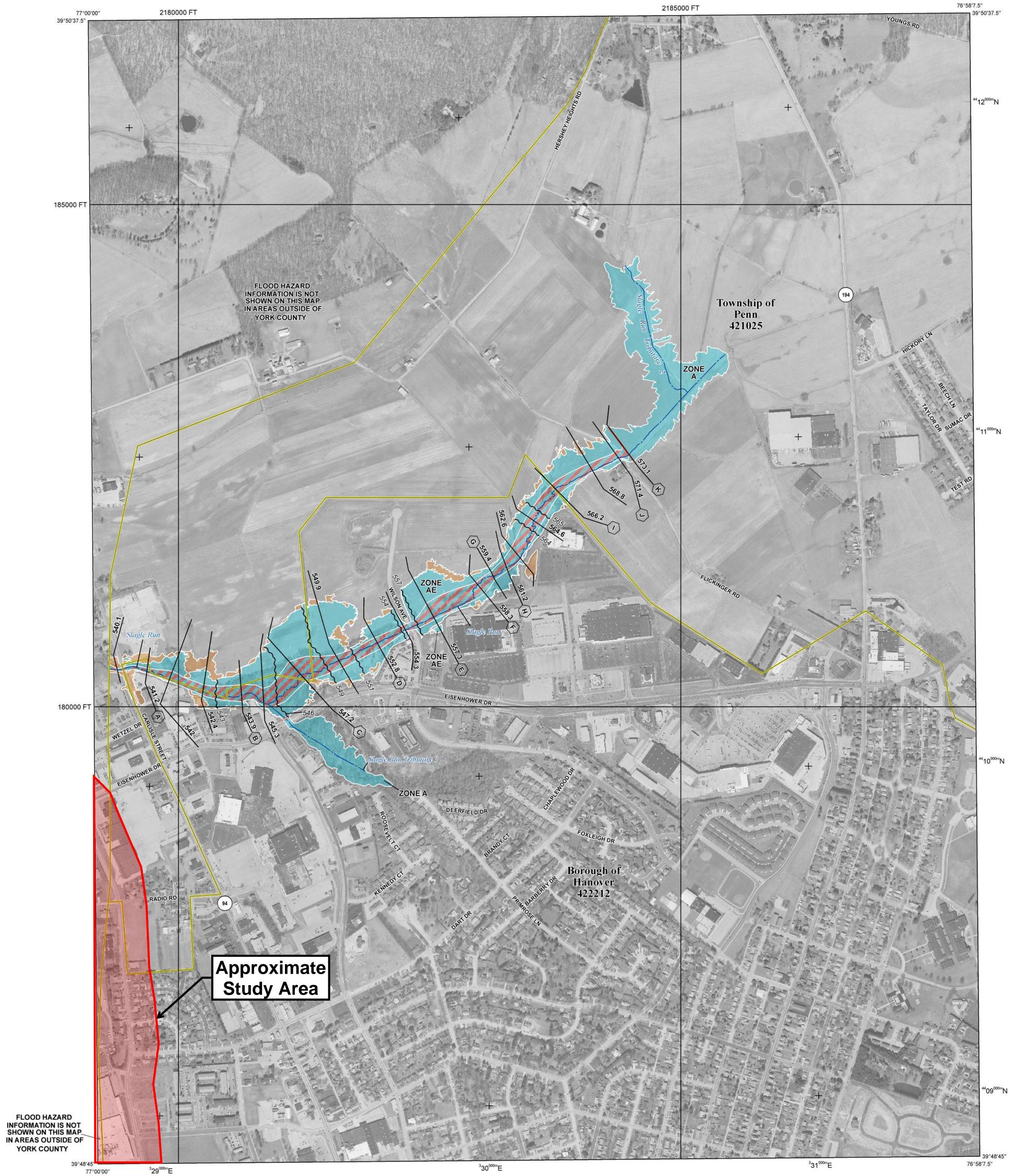
If you have questions about this map or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/.



# Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance of Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations hazard (wave action): Coastal flood zone with velocity hazard (wave action); Base Flood The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance Areas determined to be outside the 0.2% annual chance floodplain. Areas in which flood hazards are undetermined, but possible. COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas. 1% annual chance floodplain boundary 0.2% annual chance floodplain boundary Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities. Base Flood Elevation line and value; elevation in feet\* Base Flood Elevation value where uniform within zone; Geographic coordinates referenced to the North American 1000-meter Universal Transverse Mercator grid ticks, zone 18 5000-foot grid values: Pennsylvania State Plane coordinate system, south zone (FIPSZONE 3702), Lambert Conformal Conic Bench mark (see explanation in Notes to Users section of EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction. To determine if flood insurance is available in this community, contact your insurance FEET METERS PANEL 0284D FLOOD INSURANCE RATE MAP ADAMS COUNTY, PENNSYLVANIA (ALL JURISDICTIONS) (SEE MAP INDEX FOR FIRM PANEL LAYOUT) NUMBER PANEL SUFFIX BERWICK, TOWNSHIP OF 421160 0284 CONEWAGO, TOWNSHIP OF 421248 0284 OXFORD, TOWNSHIP OF 420003 0284 Notice to User: The Map Number shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject MAP NUMBER 42001C0284D EFFECTIVE DATE FEBRUARY 18, 2009

Federal Emergency Management Agency

# Figure 4e. FEMA FIRM Map, Eisenhower Drive Extension Project



<sup>3</sup>30<sup>000m</sup>E

## **FLOOD HAZARD INFORMATION**

## NOTES TO USERS

#### SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT THE INFORMATION DEPICTED ON THIS MAP AND SUPOPRTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT HTTP://MSC.FEMA.GOV



Without Base Flood Elevation (BFE) Zone A,V, A99 With BFE or Depth Zone AE, AO, AH, VE, AR

SPECIAL FLOOD HAZARD AREAS

11111 Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage

Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee

See Notes. Zone X

**OTHER AREAS OF** E BR FLOOD HAZARD

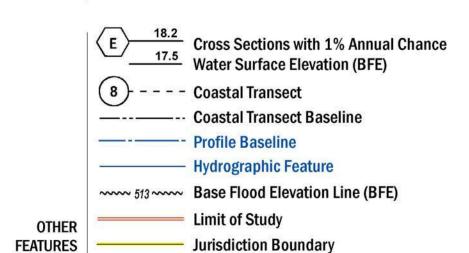
NO SCREEN Areas of Minimal Flood Hazard Zone X

OTHER AREAS



areas of less than one square mile Zone X

--- Channel, Culvert, or Storm Sewer GENERAL Levee, Dike, or Floodwall STRUCTURES



# For information and questions about this map, available products associated with this FIRM including

historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.

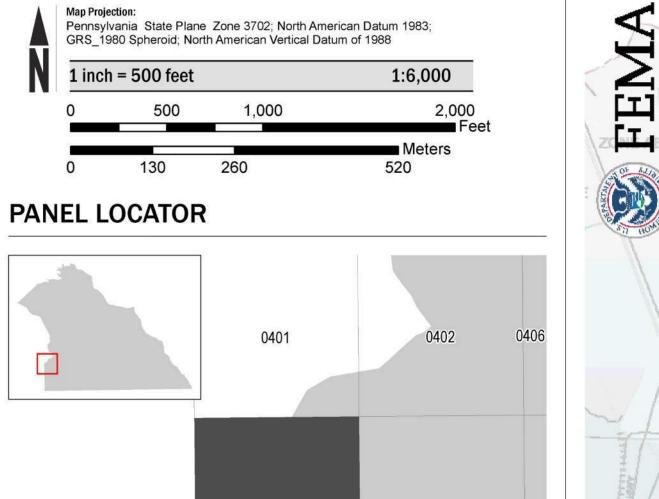
Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Map Service Center at the number listed above.

For community and countywide map dates refer to the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Base map information shown on this FIRM was provided in digital format by multiple agencies. York County Planning Commission provided digital format of base transportation and political boundaries, dated 2011. The United States Geological Survey (USGS) provided 7.5- Minute Series Topographic Maps, Dated 1989. Pennsylvania Department of Conservation and Natural Resources, PAMAP provided the ortho imagery for York County, dated 2008.





0403

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0404

0412

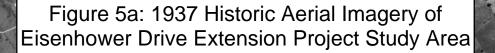


MAP REVISED **DECEMBER 16, 2015** 

2.3.2.2

F

F



Approximate Study Area

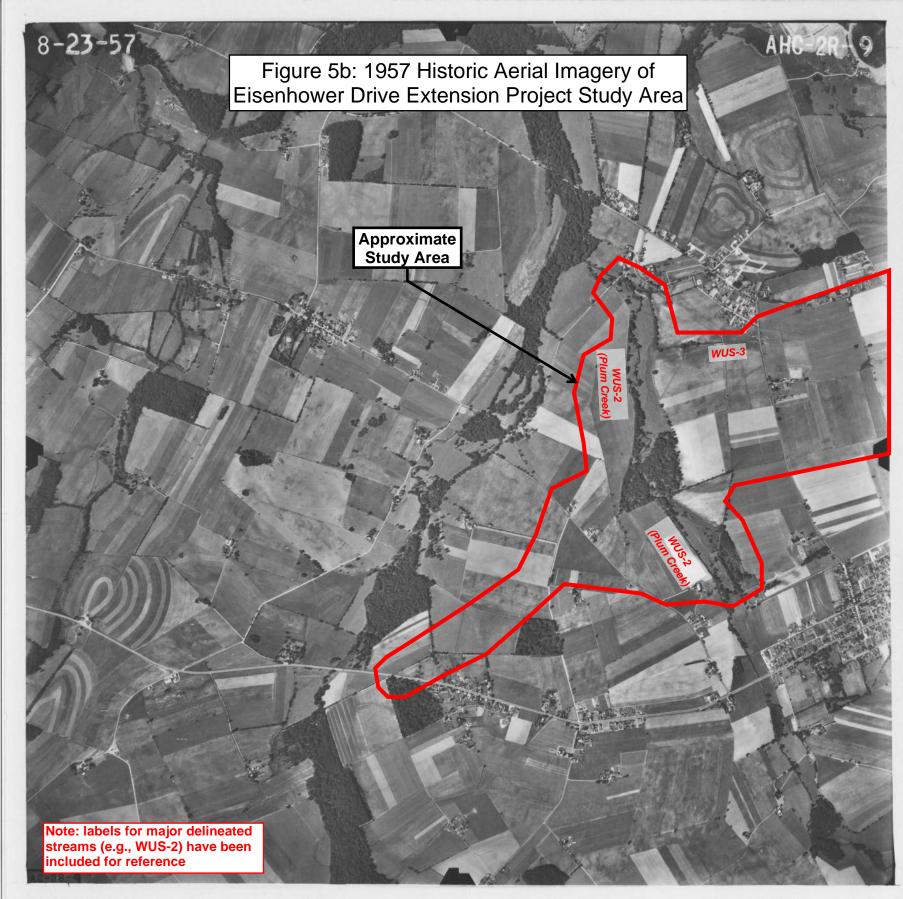
Note: labels for major delineated streams (e.g., WUS-2) have been included for reference

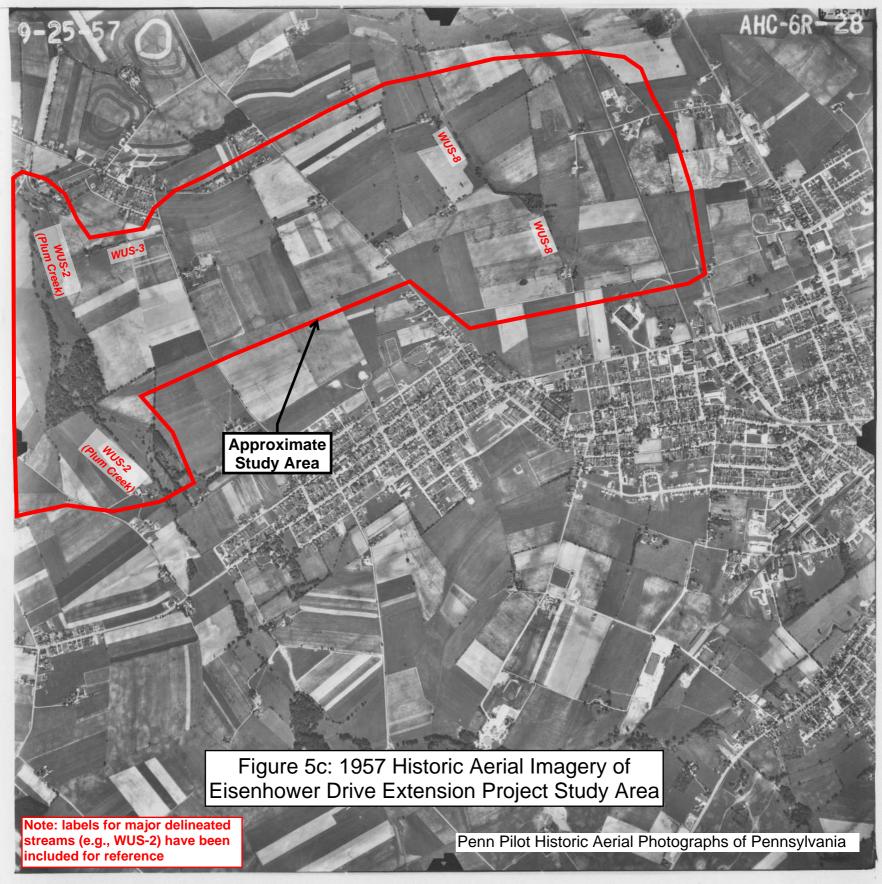
Penn Pilot Historic Aerial Photographs of Pennsylvania

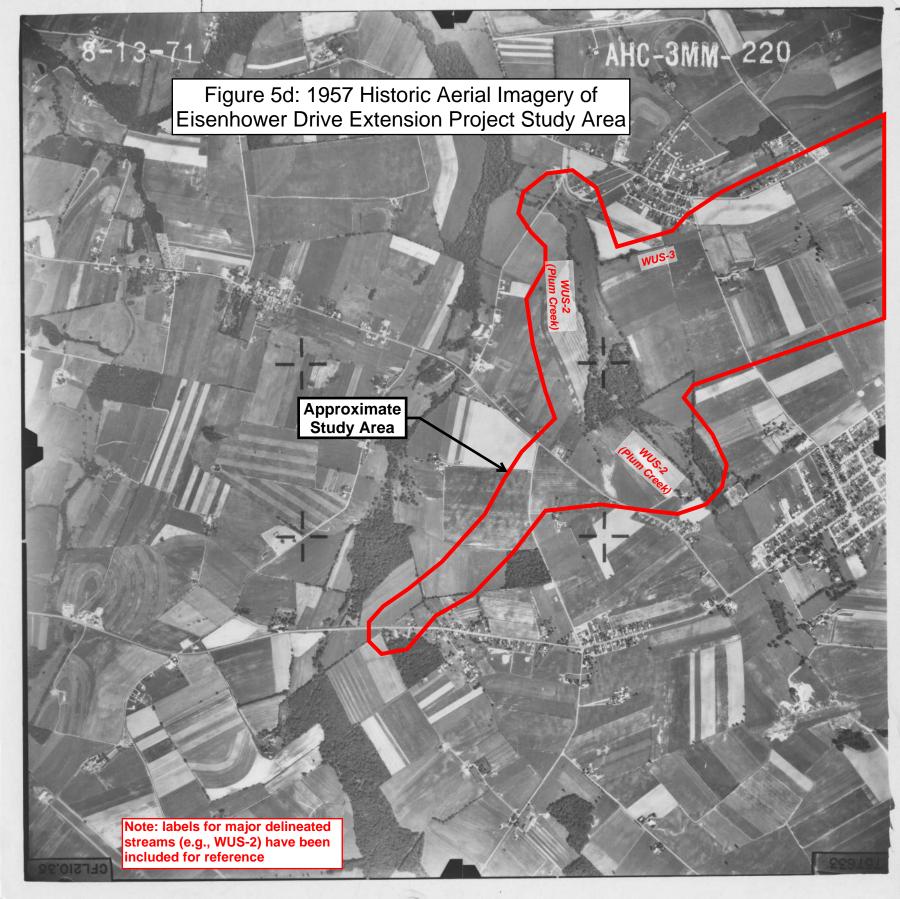
AHC 4

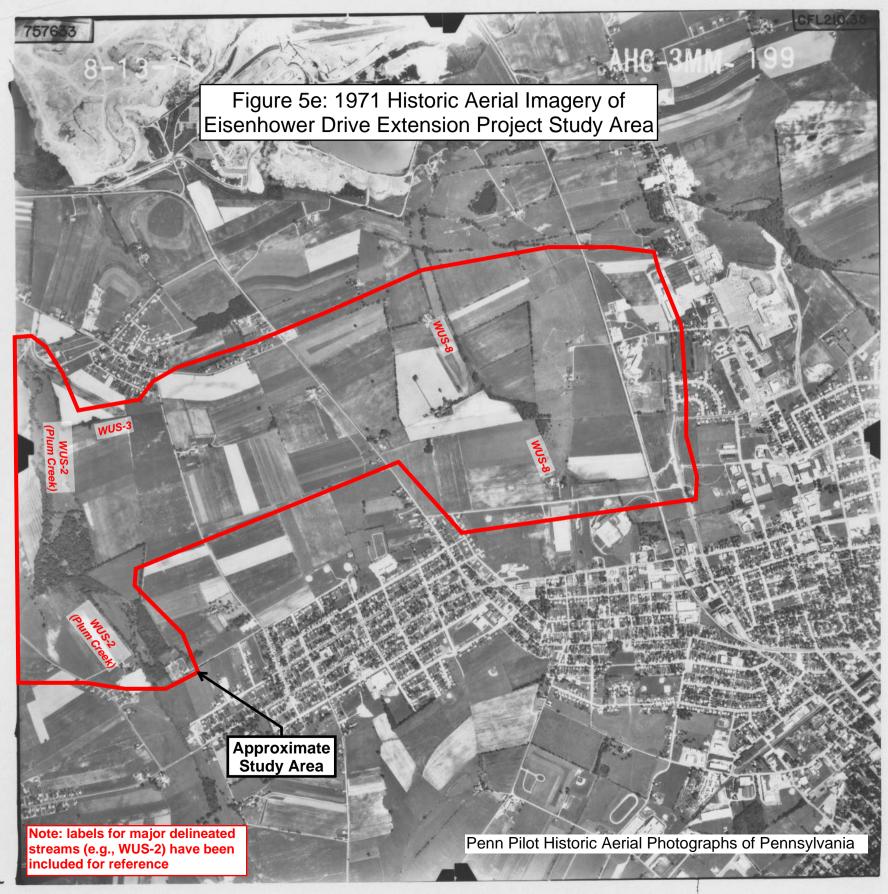
A PRODUCT

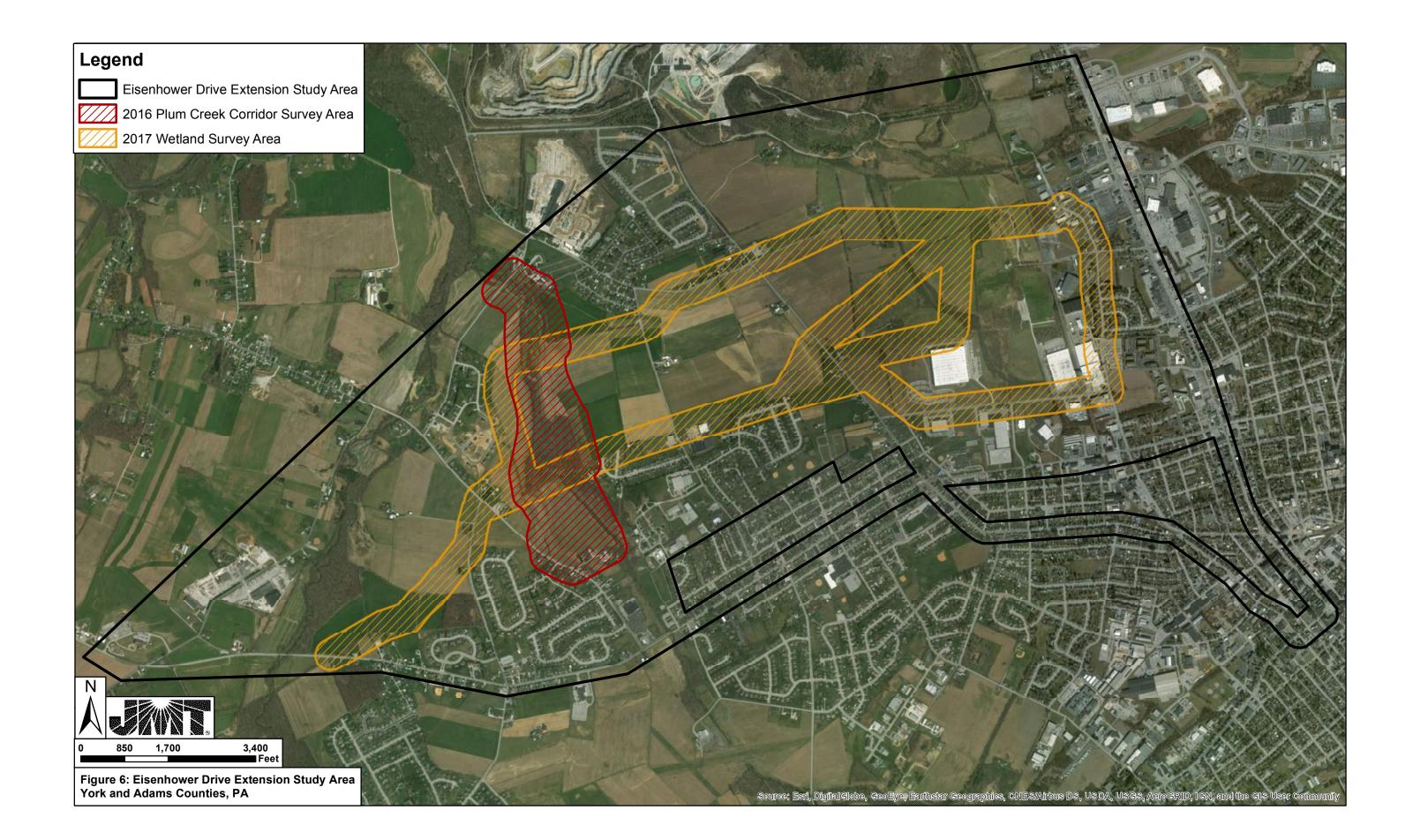
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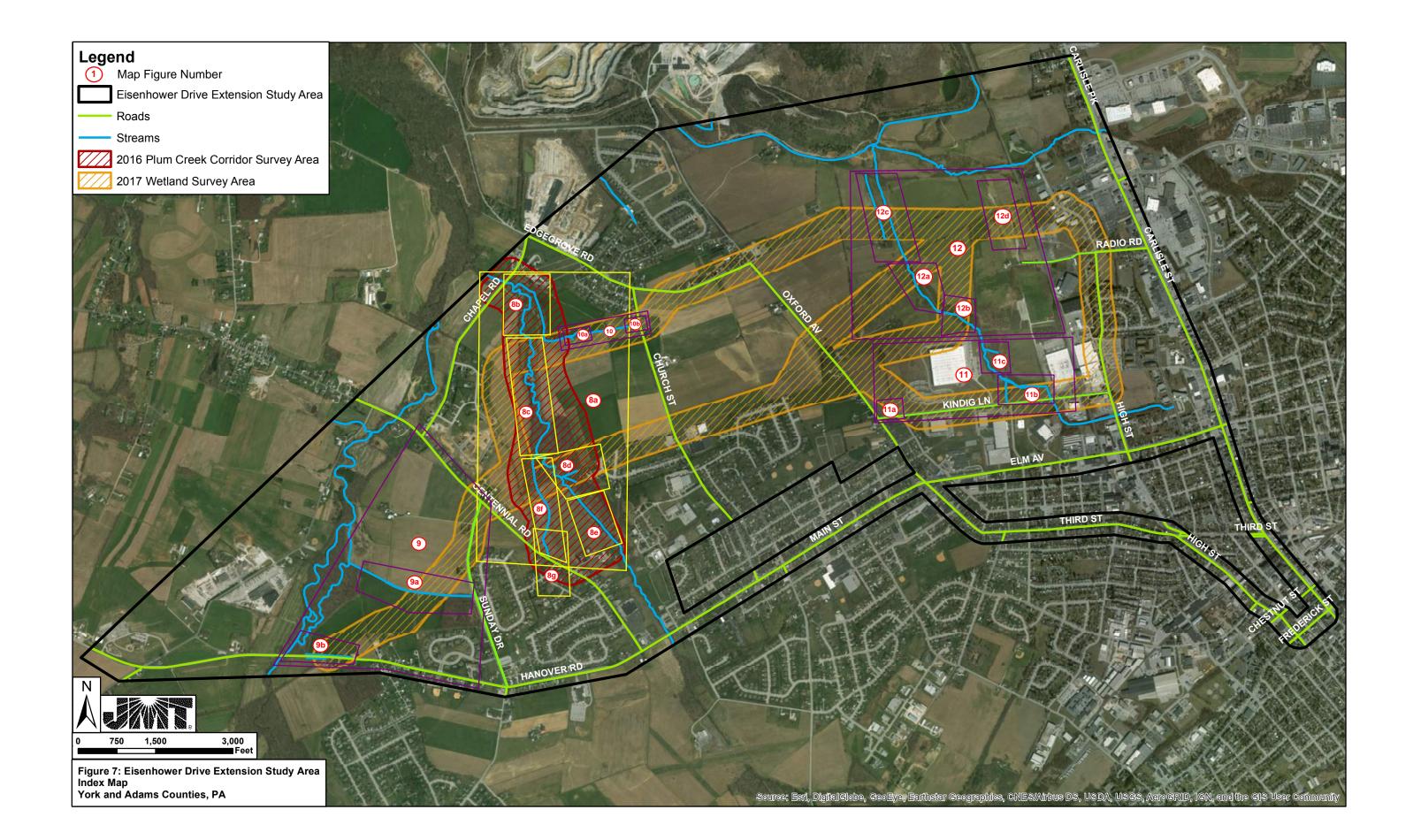


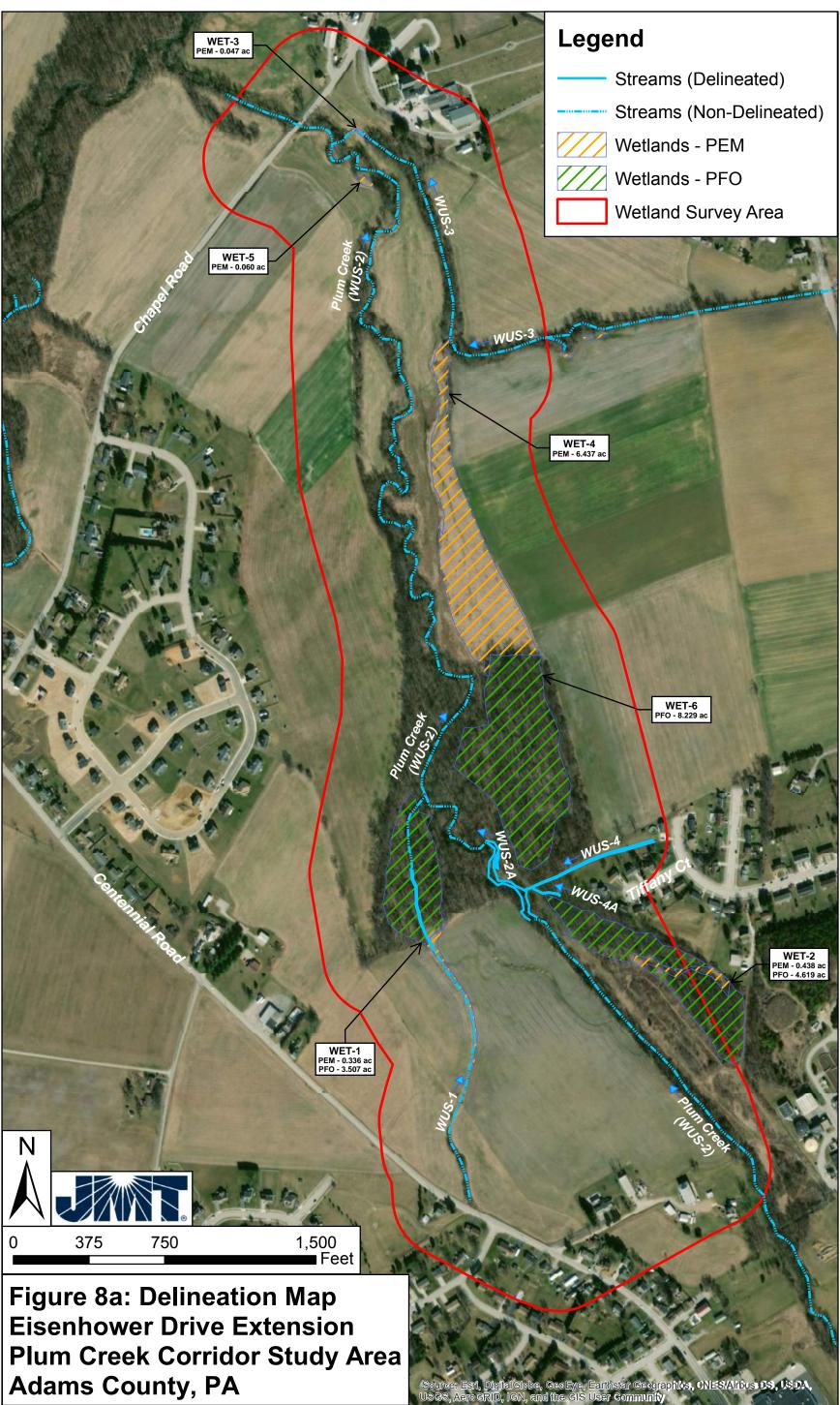


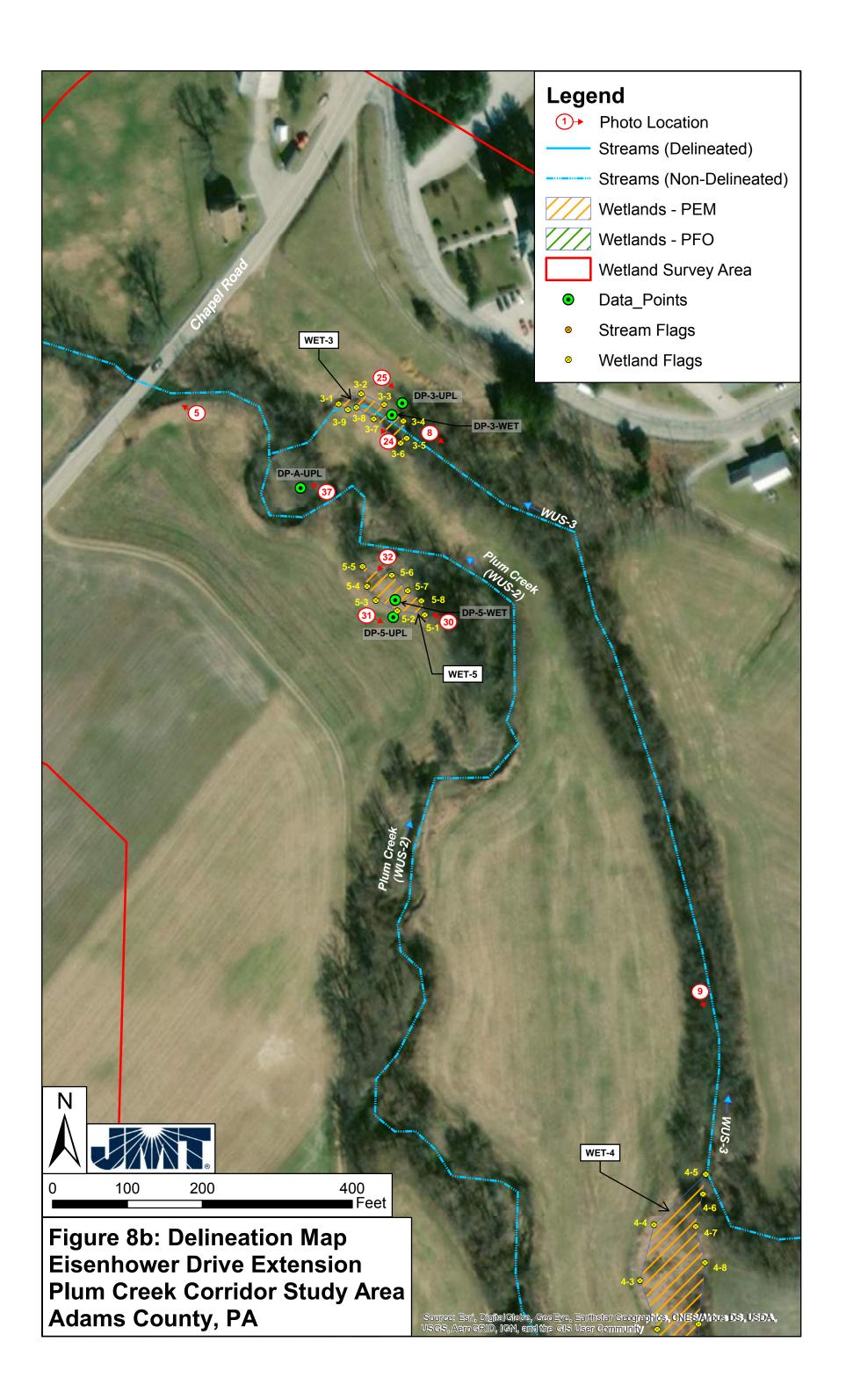


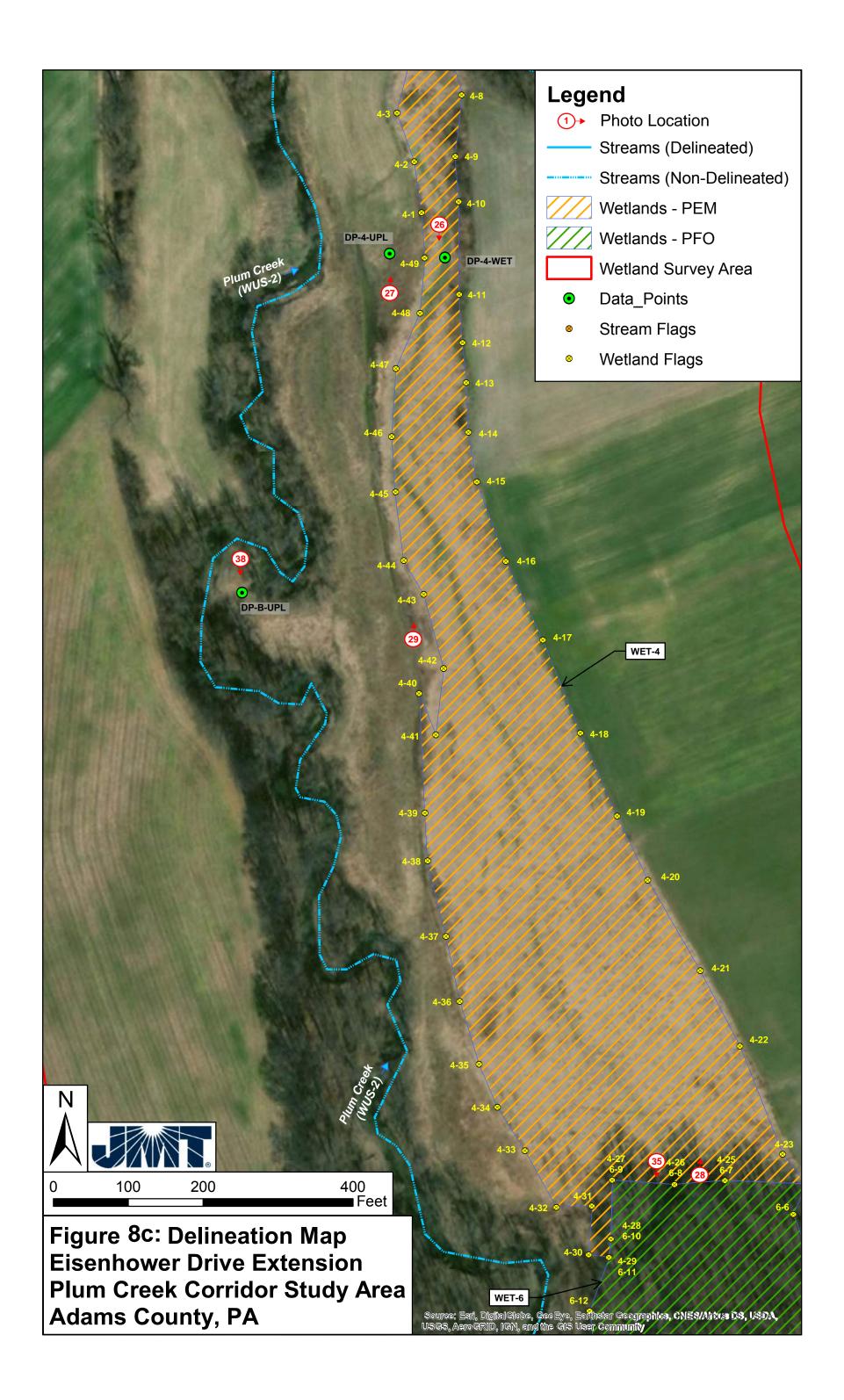


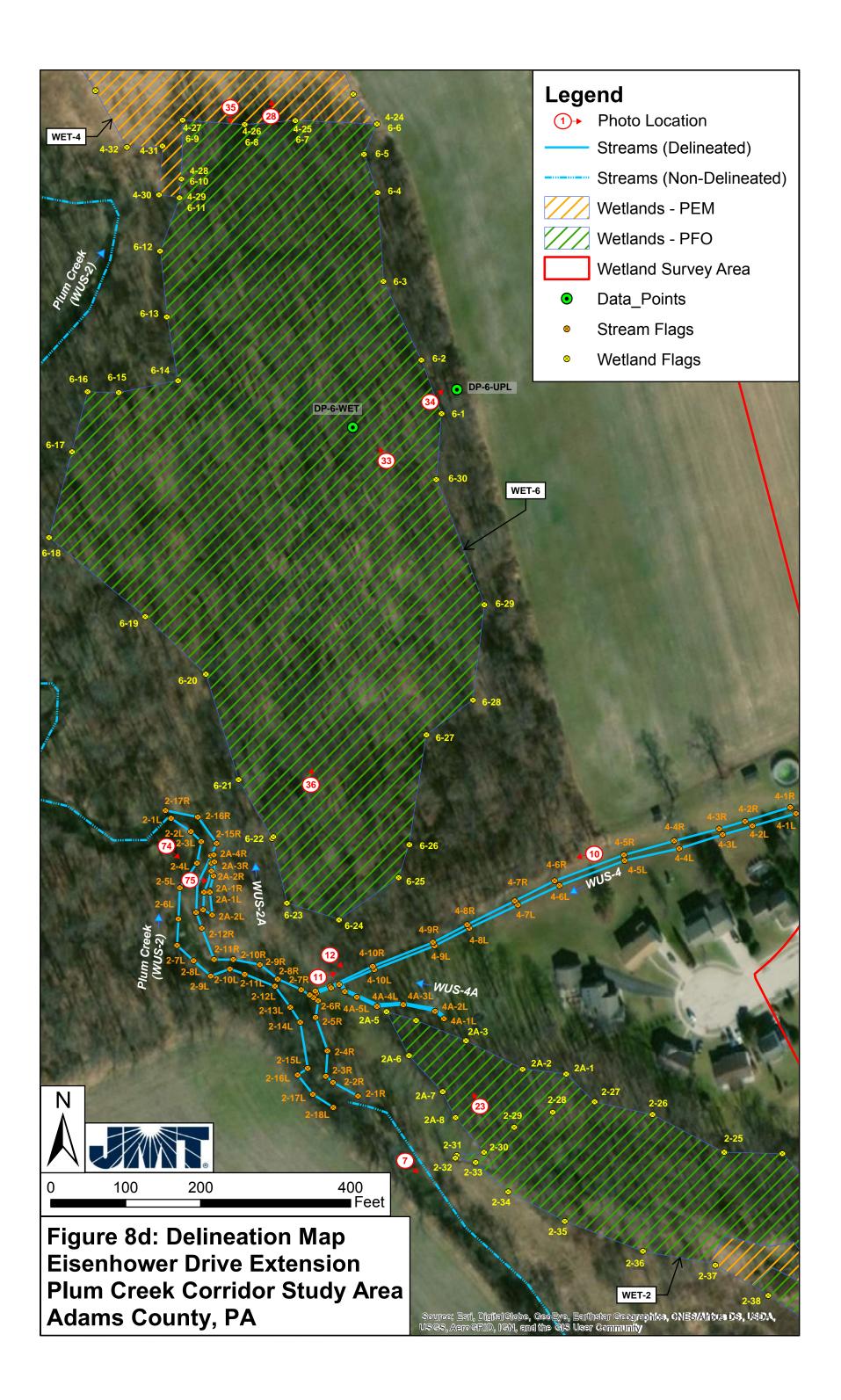


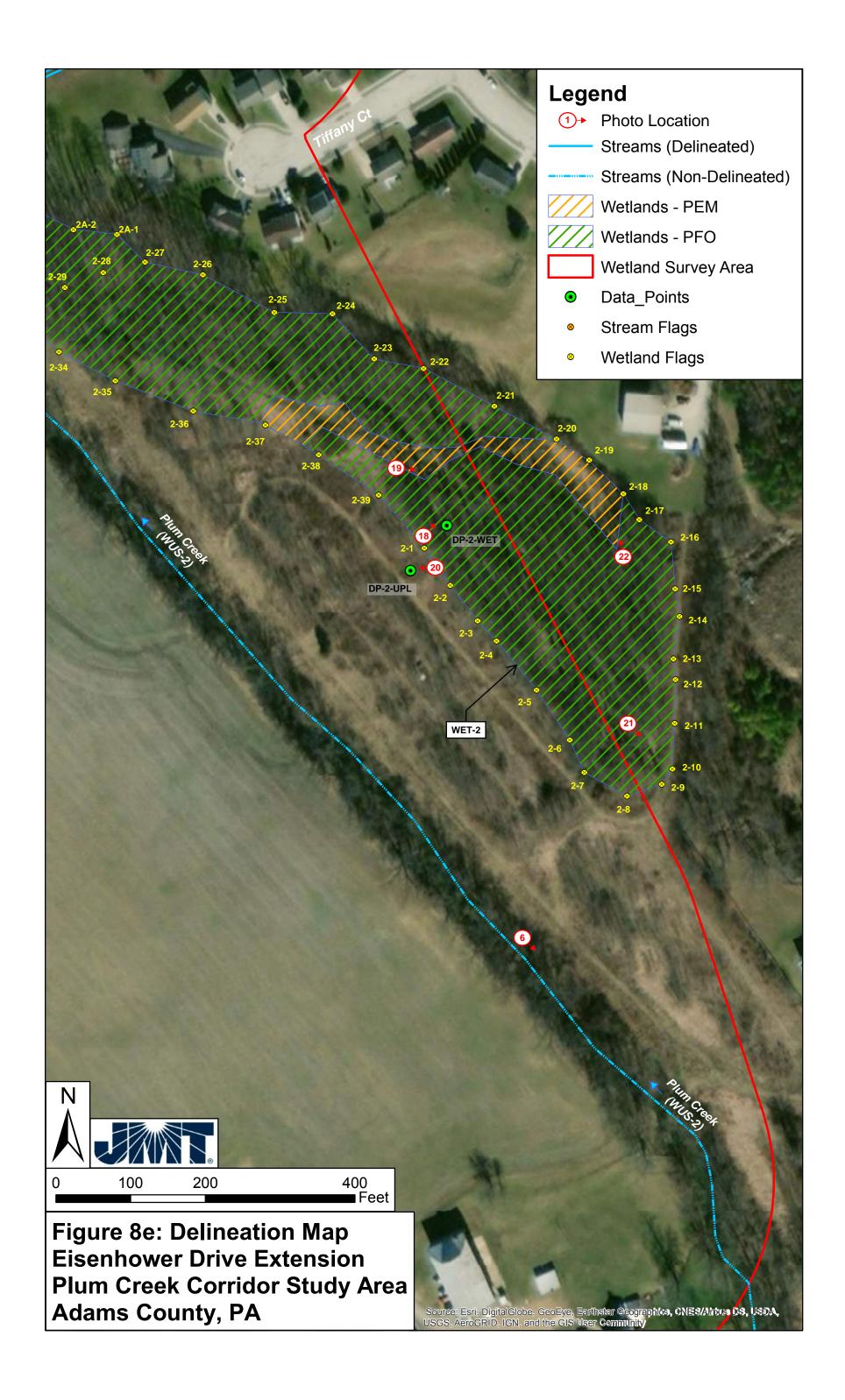


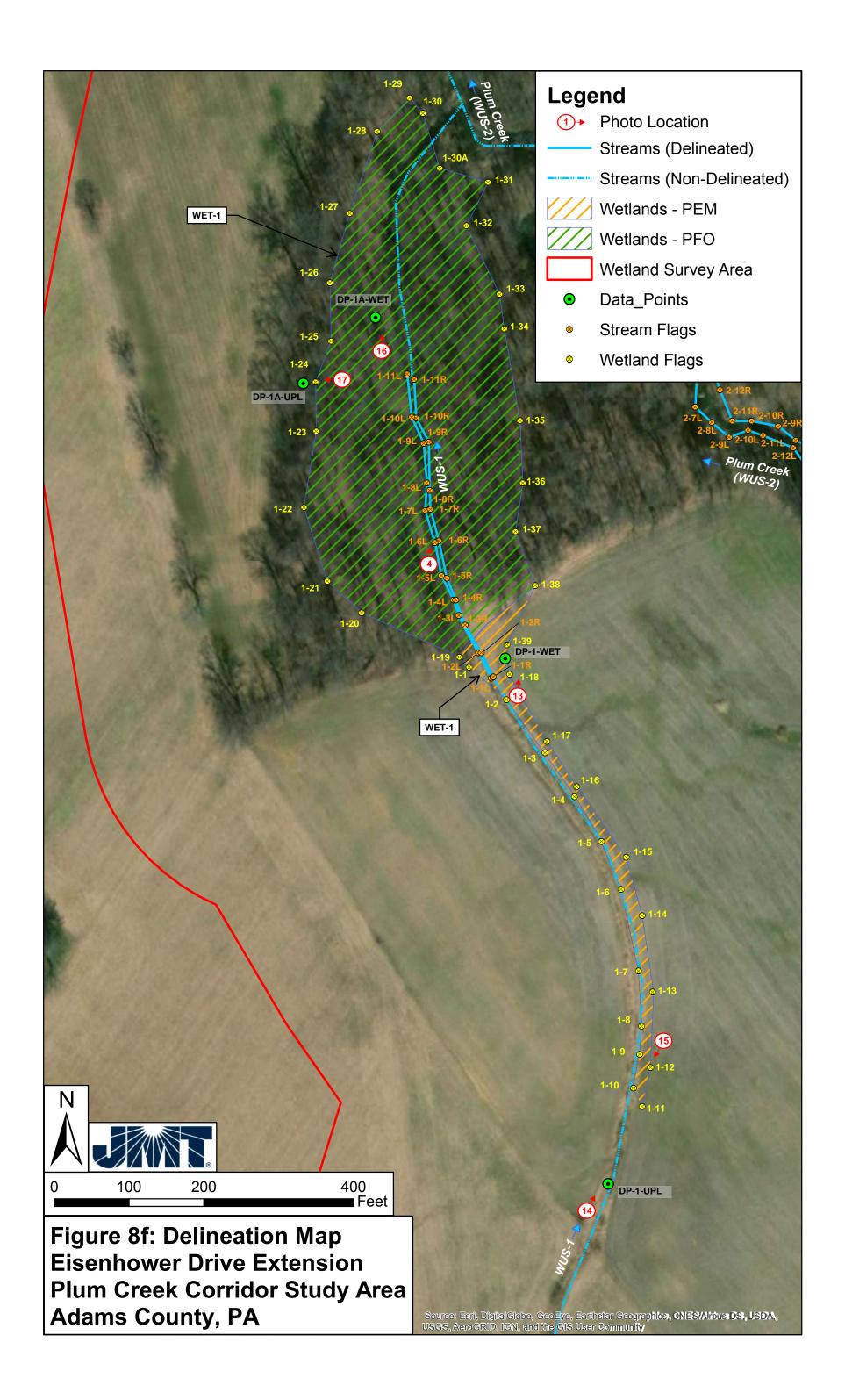


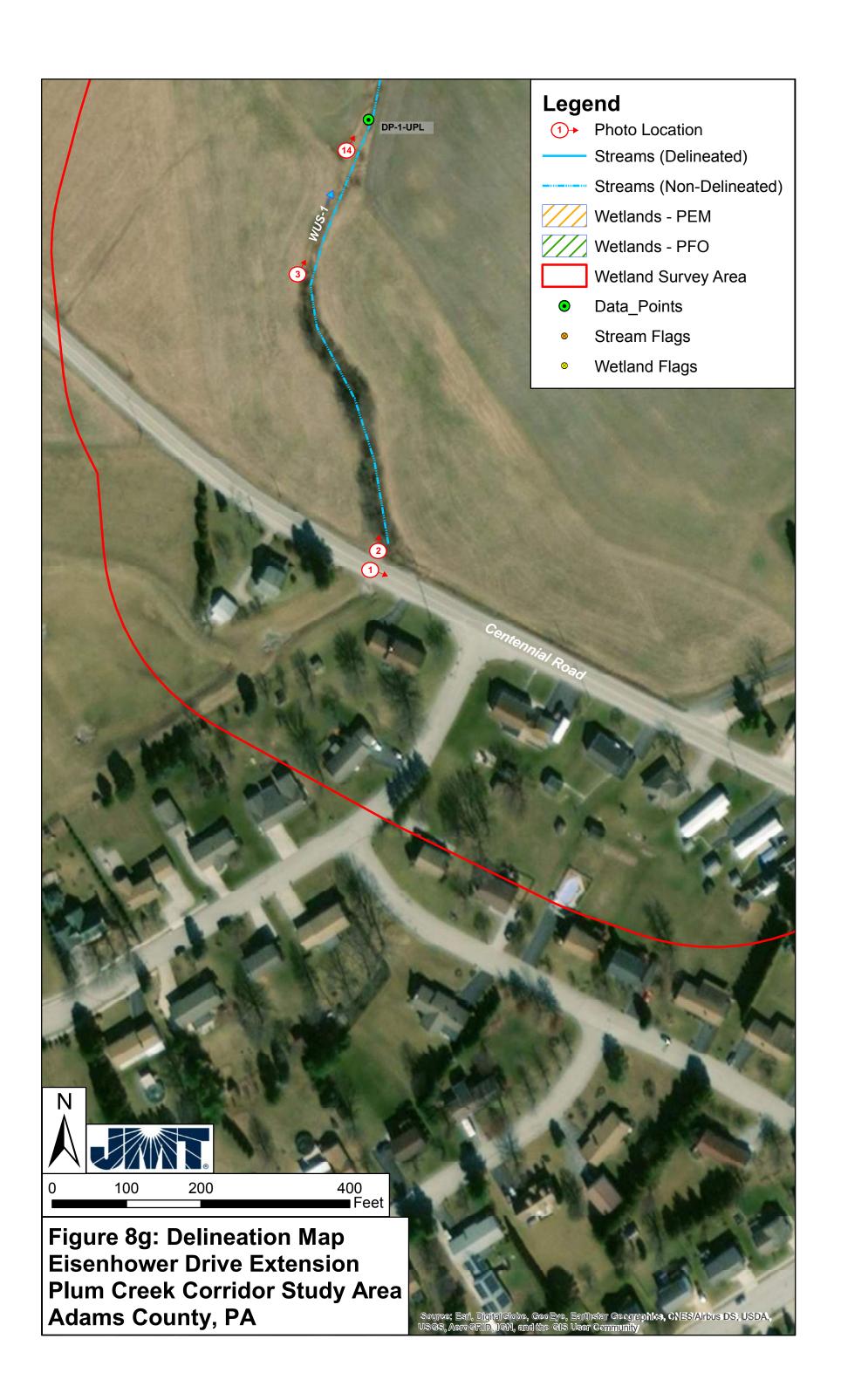




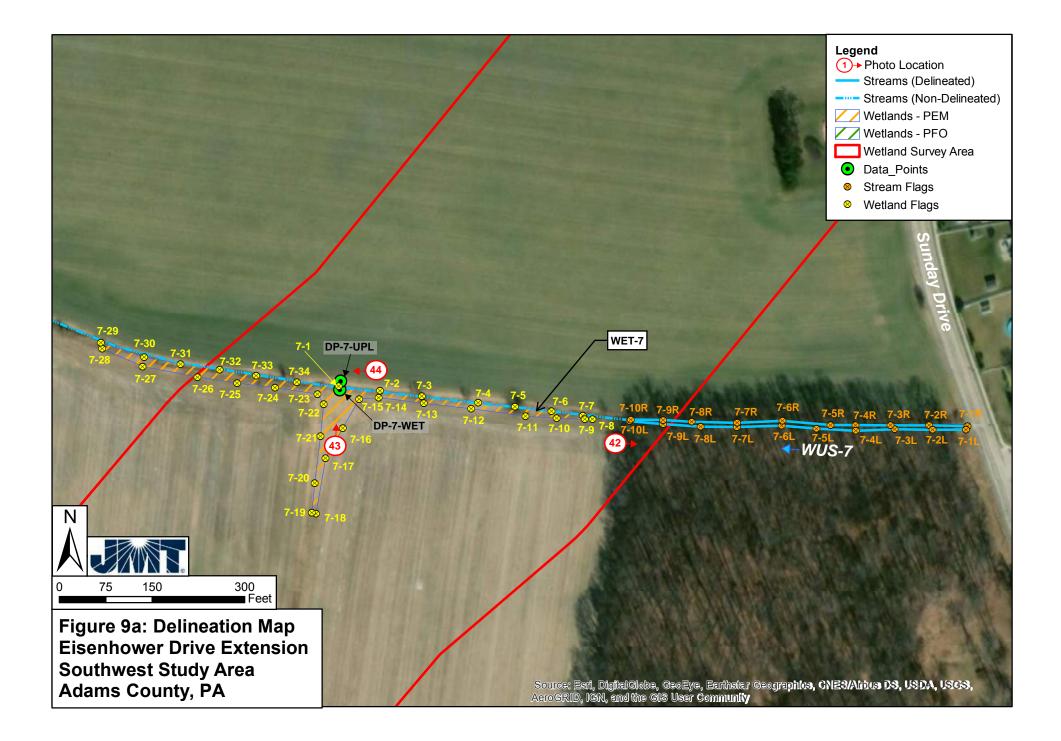


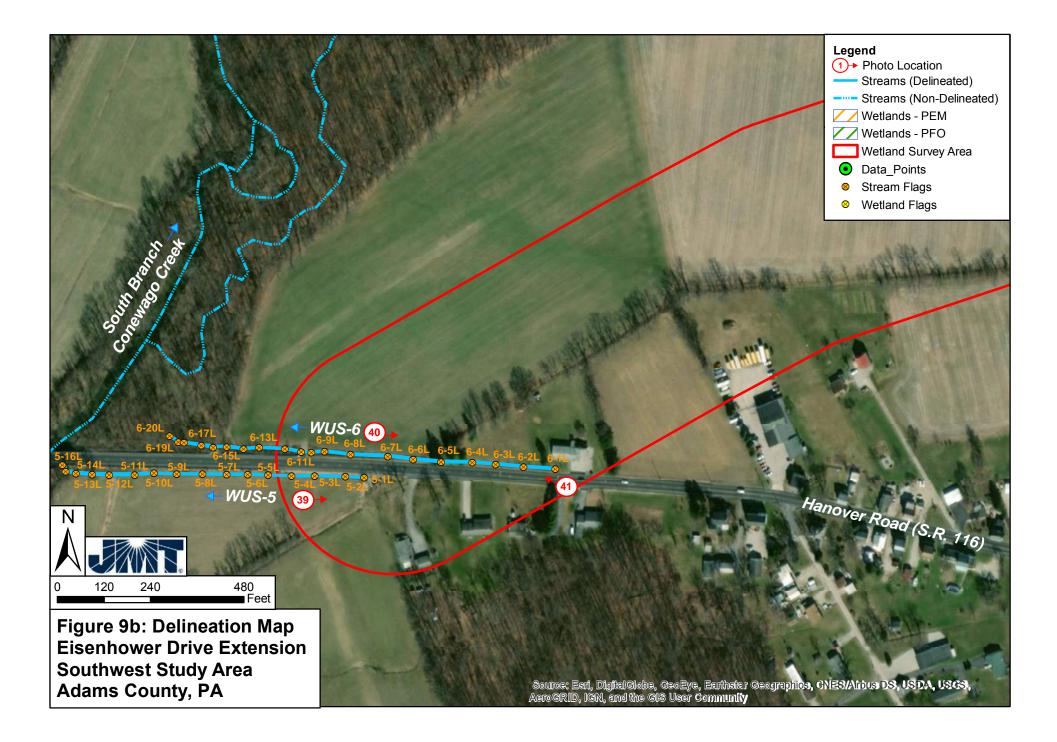


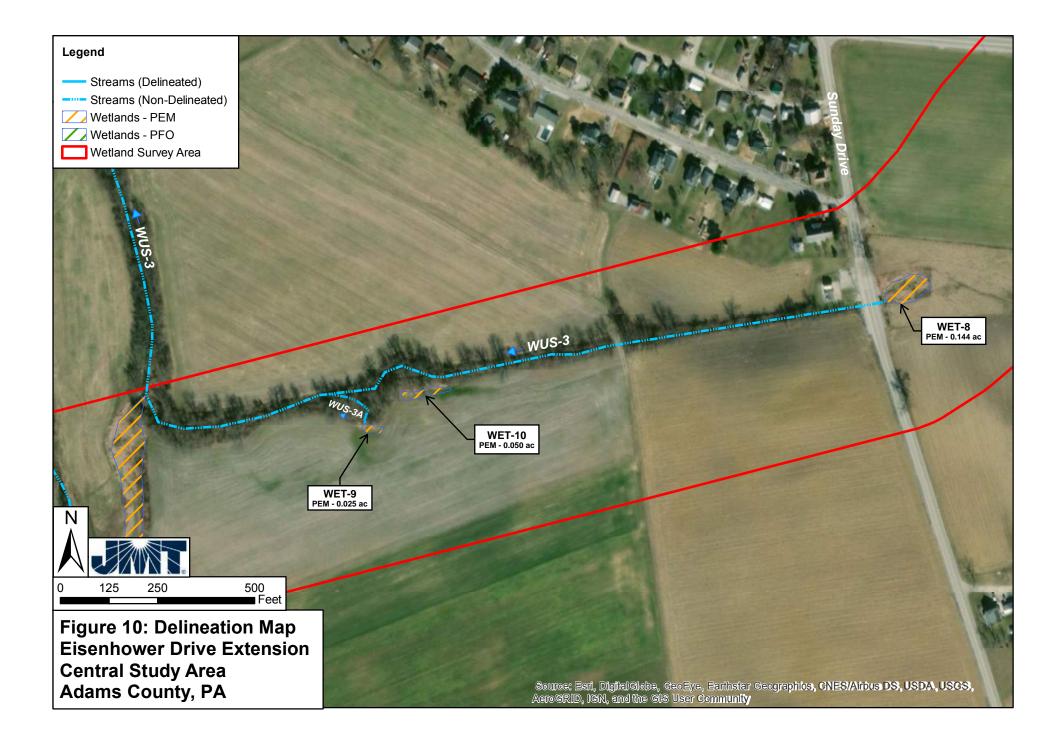


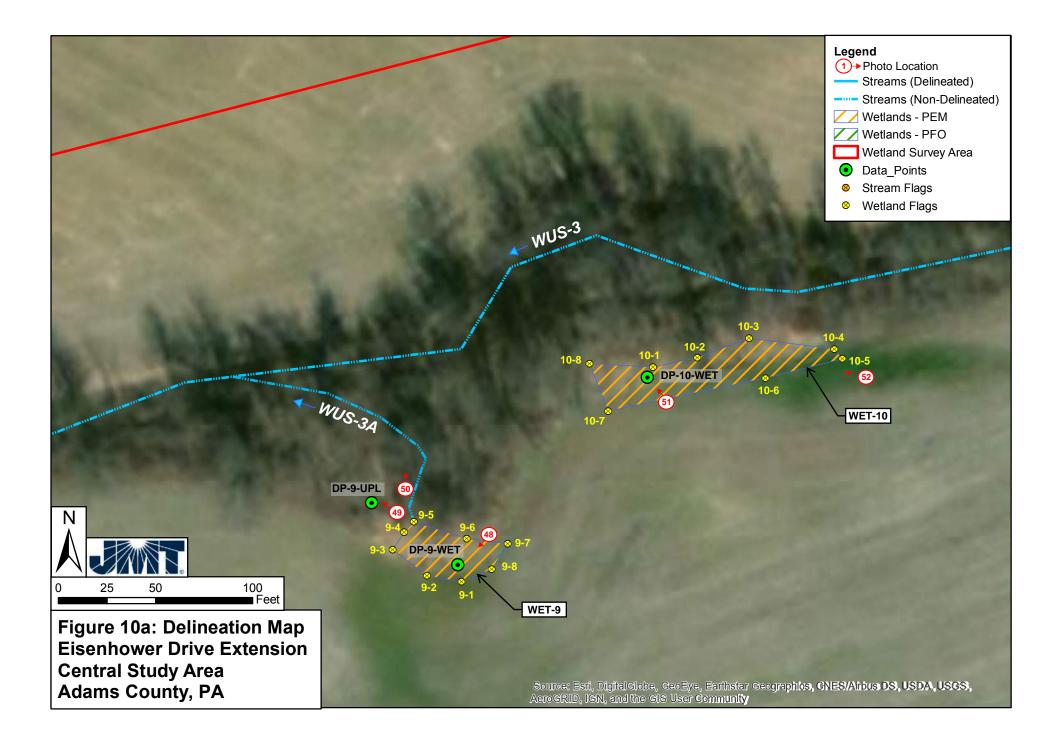


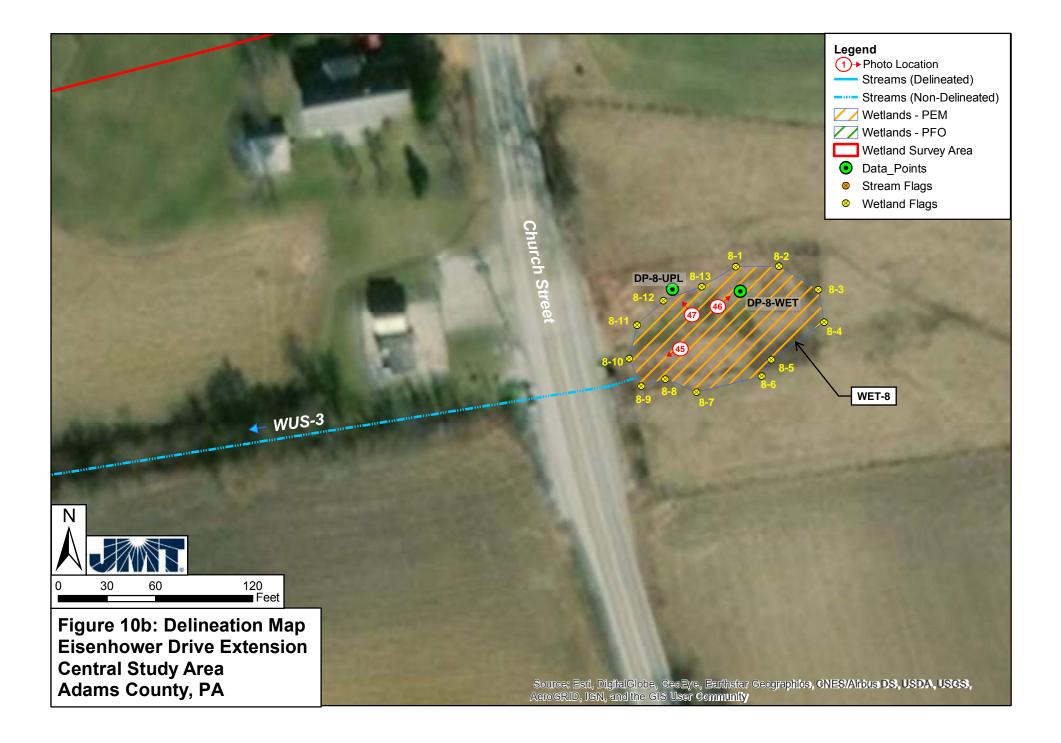


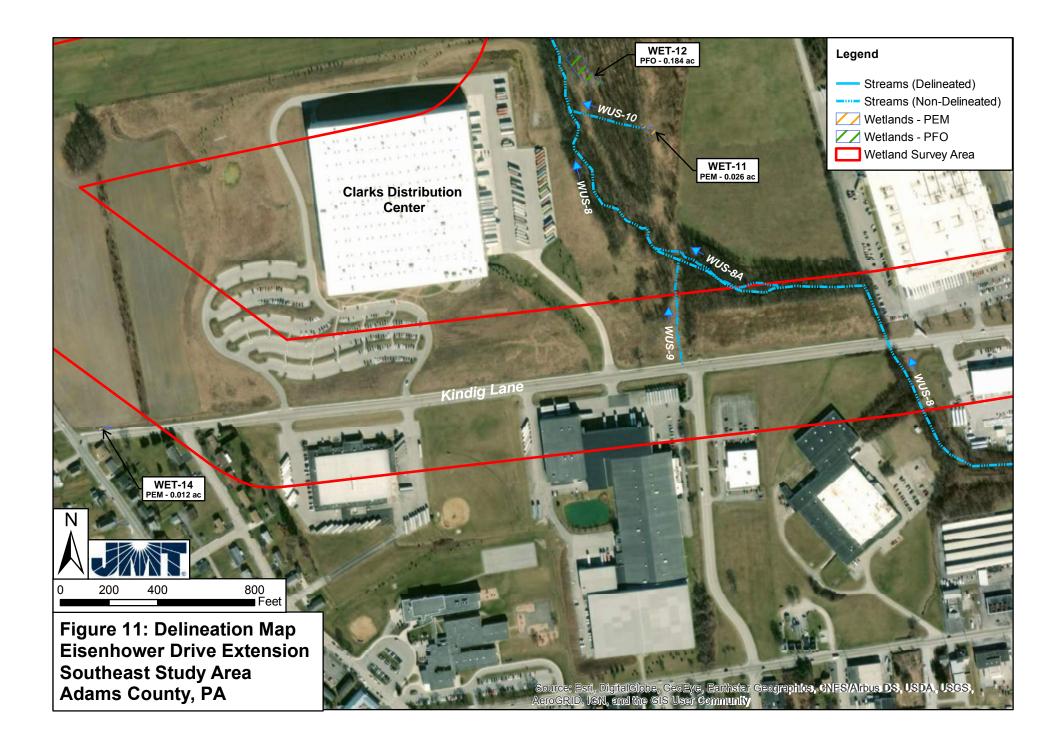




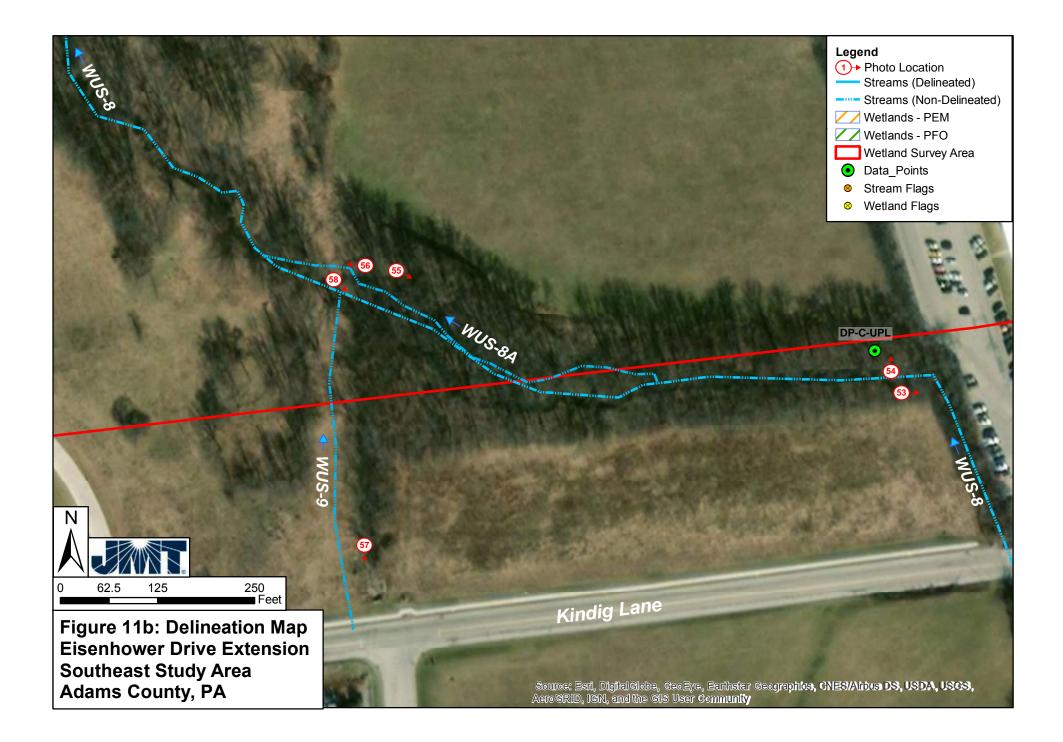


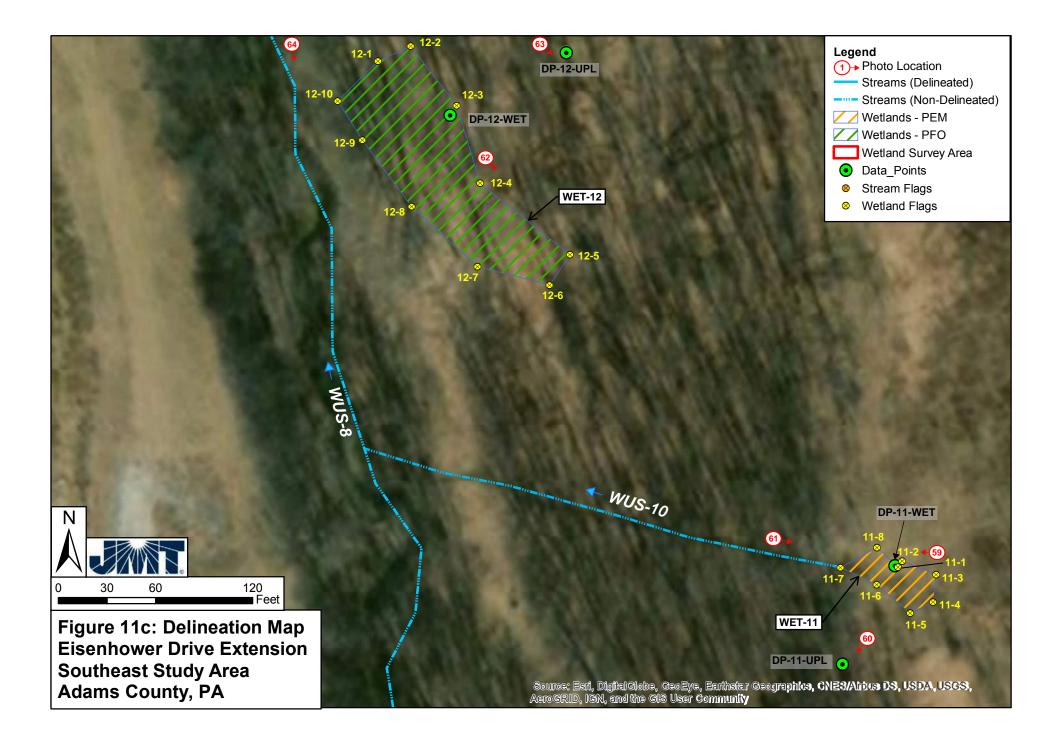


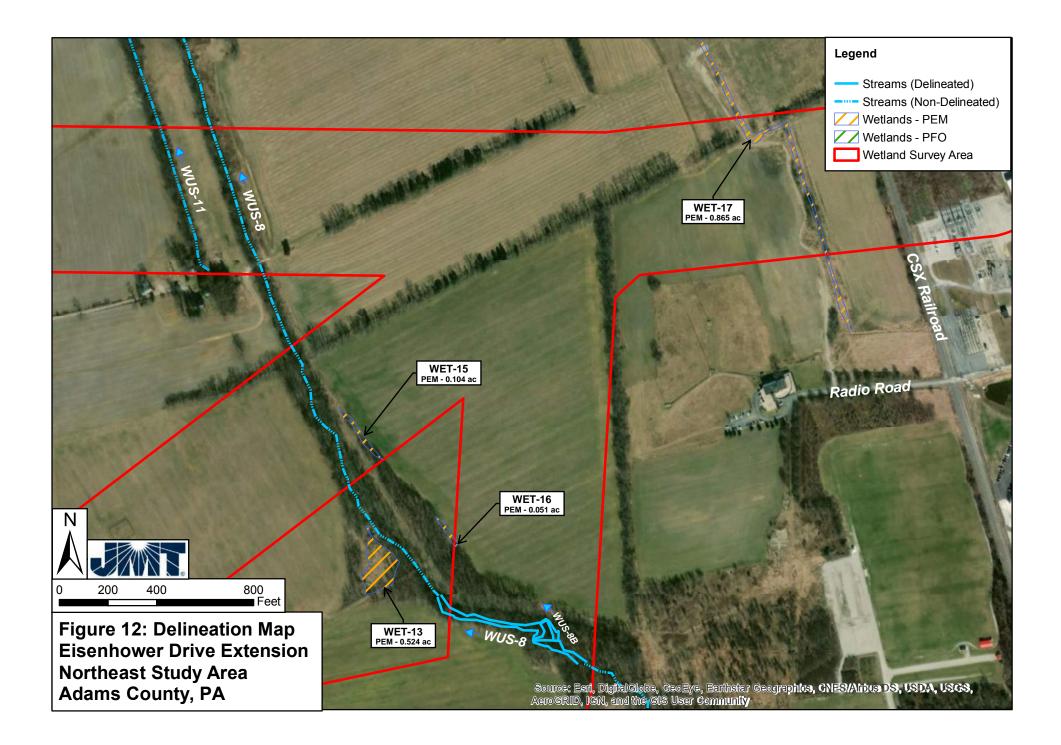


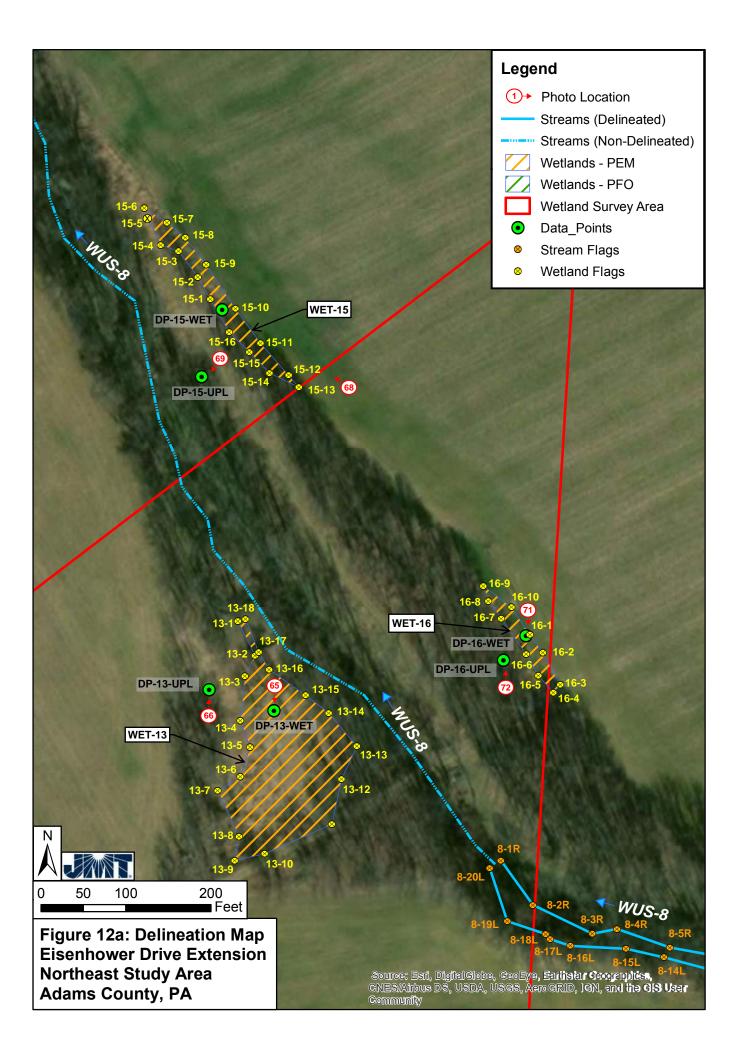


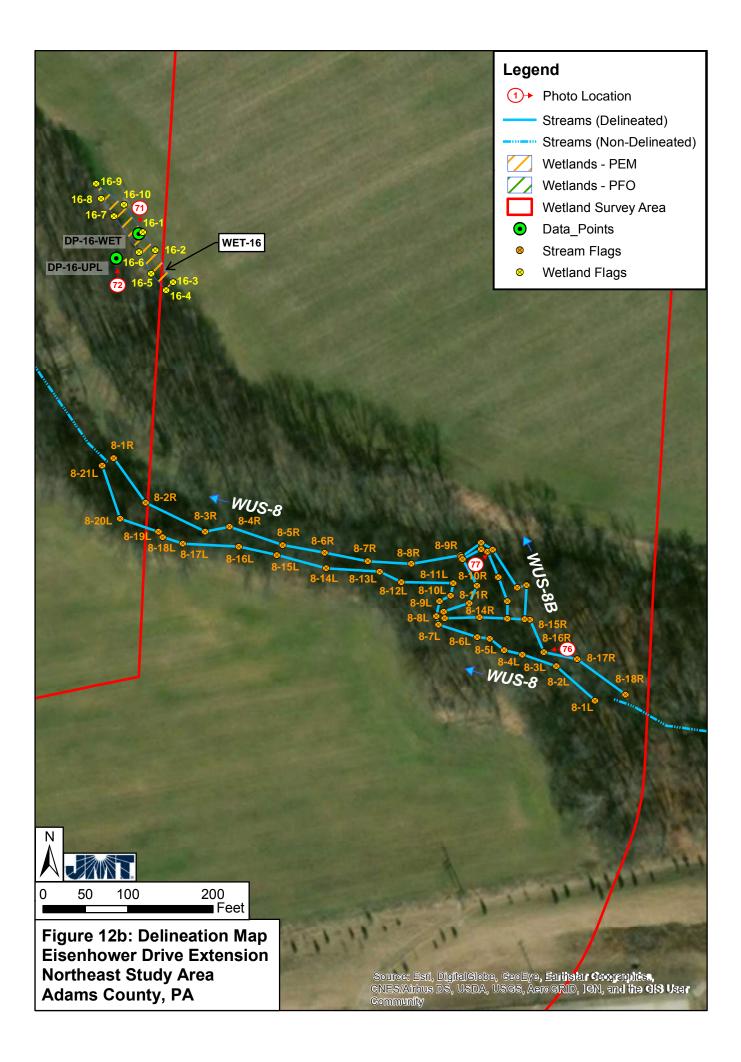


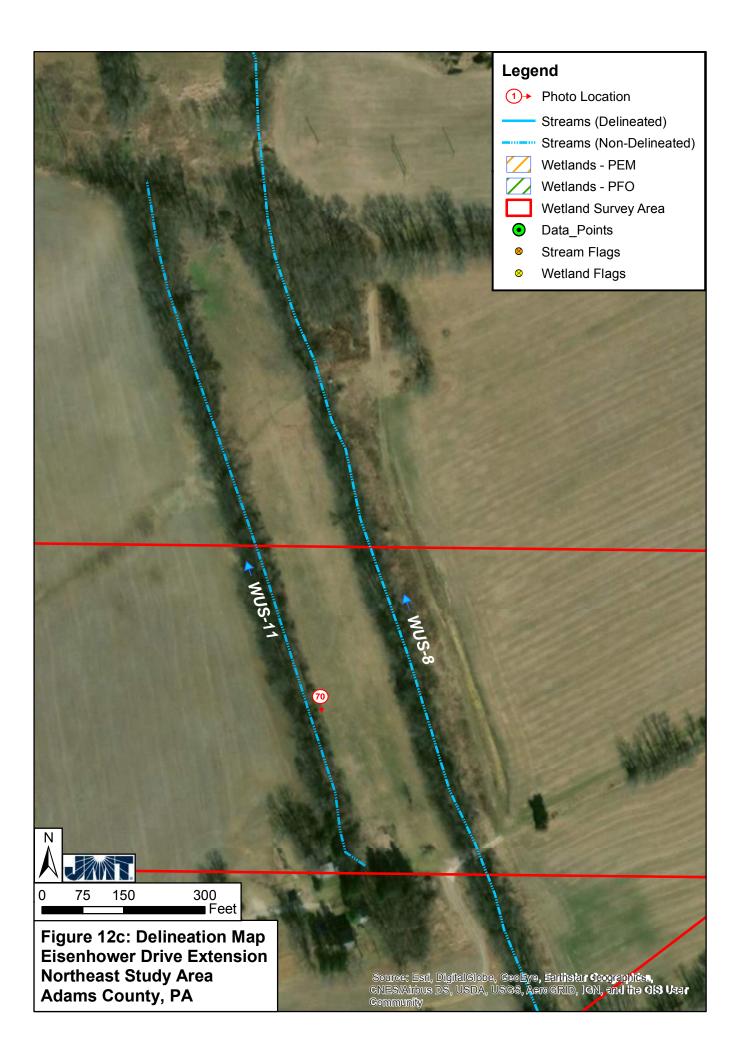






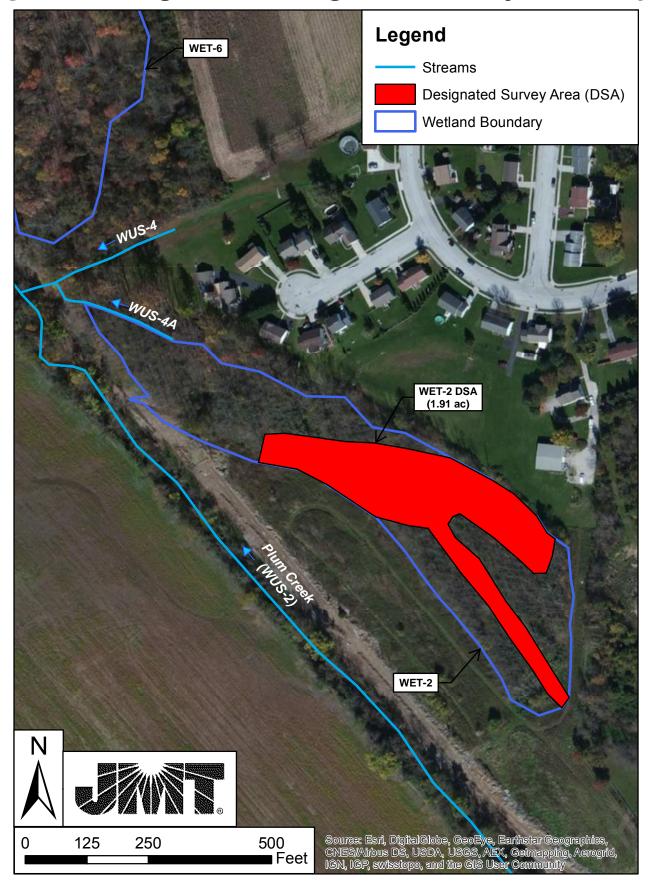




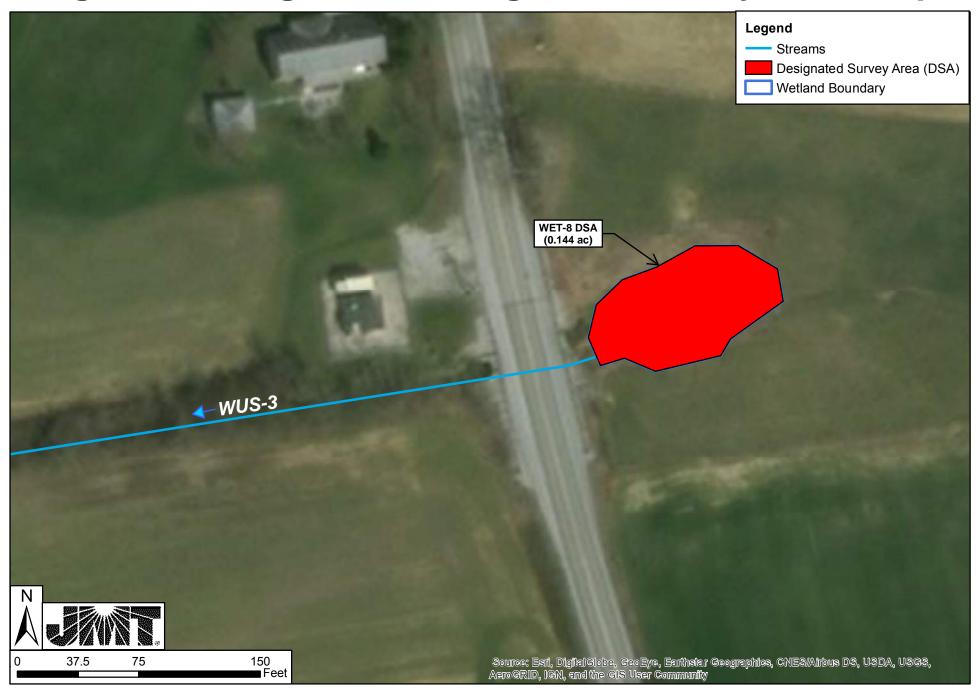




## Figure 13: Bog Turtle Designated Survey Area Map



# Figure 14: Bog Turtle Designated Survey Area Map





# Appendix C Wetland Determination Data Forms



#### WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Eisenhower Drive Extension	City/County: Hano	ver/Adams	Sampling Date: _11/17/2016
Applicant/Owner: PennDOT 8-0		State: PA	_ Sampling Point: DP-1-WET
Investigator(s): Craig Nein (CPN), Grace Erisman (GE)	Section, Township,	Range: Conewago Township	
Landform (hillslope, terrace, etc.): Depression		convex, none): Slightly Conca	ve Slope (%): <2
Subregion (LRR or MLRA): MLRA 148 La	000 401 051 NI	Long:77° 02' 16" W	Datum: WGS84
Soil Map Unit Name: Penslaw Silt Loam - Pa		NWI classifica	ation: PFO1A
Are climatic / hydrologic conditions on the site typical	for this time of year? Yes X	lo (If no, explain in Re	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? A	Are "Normal Circumstances" pr	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (	lf needed, explain any answer	s in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No _ No	Is the Sampled Area within a Wetland?	Yes X	No	
Remarks:	.1					
Wetland data point located within northern end of PEM depressional channel, which continues north						
into forested part of wetla	nd.					

Secondary Indicators (minimum of two required)
Surface Soil Cracks (B6)
<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> <li>FAC-Neutral Test (D5)</li> </ul>
and Hydrology Present? Yes X No
if available:
g survey date. ch was delineated at a later date (see surface runoff. on, nutrient removal, and minor

Sampling Point: DP-1-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>15' radius</u> ) 1		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: _2 (A
23				Total Number of Dominant Species Across All Strata: <u>2</u> (B
4 5				Percent of Dominant Species That Are OBL, FACW, or FAC:(A
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	f total cover:		OBL species         x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1			<u> </u>	FAC species         x 3 =
2		<u> </u>		FACU species x4 =
3				UPL species x5 =
4				
5.				Column Totals: (A) (I
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% o	f total cover:	1	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )				2 - Dominance Test is >50%
1. <u>Acer negundo</u>	5	Y	FAC	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide support data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology mus
6				be present, unless disturbed or problematic.
		= Total Cov		Definitions of Five Vegetation Strata:
50% of total cover:	<u>2.5</u> 20% o	f total cover:	. 1	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 15' radius )				approximately 20 ft (6 m) or more in height and 3 in.
1. Phalaris arundinacea	70	<u>Y</u>		(7.6 cm) or larger in diameter at breast height (DBH)
2. Typha latifolia	10			Sapling – Woody plants, excluding woody vines,
			OBL	Cuping freed, provide and grand the start of
3. Solidago sp.	3			approximately 20 ft (6 m) or more in height and less
3. Solidago sp. 4. Verbena hastata				approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
3. Solidago sp.	3		NI	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines,
3. Solidago sp. 4. Verbena hastata	3 5 10 10		NI FACW	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
3. Solidago sp. 4. Verbena hastata 5. Unidentified herb	3 5 10 10		NI FACW NI OBL	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
3.       Solidago sp.         4.       Verbena hastata         5.       Unidentified herb         6.       Scirpus atrovirens	3           5           10           10		NI FACW NI OBL	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
3.       Solidago sp.         4.       Verbena hastata         5.       Unidentified herb         6.       Scirpus atrovirens         7.	3 5 10 10		NI FACW NI OBL	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately
3.       Solidago sp.         4.       Verbena hastata         5.       Unidentified herb         6.       Scirpus atrovirens         7.	3           5           10           10		NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10		NI FACW NI OBL	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. <b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately
3.       Solidago sp.         4.       Verbena hastata         5.       Unidentified herb         6.       Scirpus atrovirens         7.	3           5           10           10		NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3.       Solidago sp.         4.       Verbena hastata         5.       Unidentified herb         6.       Scirpus atrovirens         7.	3 5 10 10 10 10 10	= Total Cov	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10 10 10 10	= Total Cov	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10 10 10 10 54 20% o	= Total Cov	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10 10 10 10 54 20% o	= Total Cov	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	$ \begin{array}{c} 3 \\ 5 \\ 10 \\ 10 \\ 10 \\ \hline 10 \\ 54 \\ 20\% \text{ or } \end{array} $	= Total Cov f total cover:	NI FACW NI OBL 	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10 10 10 10 54 20% o	= Total Cov f total cover:	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3 5 10 10 10 10 10 54 20% o	= Total Cov f total cover:	NI FACW NI OBL	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3         5         10         10         10         10         5         10         10         10         10         54         20% or	= Total Cov f total cover:	NI FACW NI OBL 	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3         5         10         10         10         10         5         10         10         10         10         54         20% or	= Total Cov f total cover:	NI FACW NI OBL 	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic Vegetation</li> </ul>
3. Solidago sp.         4. Verbena hastata         5. Unidentified herb         6. Scirpus atrovirens         7	3         5         10         10         10         10         54         20% or	= Total Cov f total cover: 	NI FACW NI OBL  er 21.6  er	<ul> <li>approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>

US Army Corps of Engineers

#### SOIL

### Sampling Point: DP-1-WET

Profile Desc	ription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirn	n the absence	of indicate	ors.)	
Depth	Matrix			x Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	_Loc <sup>2</sup>	Texture		Remarks	
0-6	10YR 4/1	95	5YR 4/6	5	<u> </u>	M,PL	Silty Clay Loam			
6-18	10YR 5/2	60	10YR 6/8	10	С	М	Silty Clay Loam	Highly va	ariable in col	or
	10YR 6/2	30			• • • • • • • • • • • • • • • • • • • •			Small/me	dium rock fra	gments (10%)
<sup>1</sup> Type: C=Cc Hydric Soil I Histosol	ndicators:	bletion, RM	=Reduced Matrix, M		d Sand Gra	ains.	Indica	ators for Pr	ng, M=Matrix. oblematic Hy	
Histic Ep Black Hi Hydroge Stratified 2 cm Mu Depleted Thick Da Sandy M	hipedon (A2) stic (A3) n Sulfide (A4) I Layers (A5) ick (A10) <b>(LRR N)</b> I Below Dark Surfac irk Surface (A12) Iucky Mineral (S1) (I	. ,	<ul> <li>Polyvalue Be</li> <li>Thin Dark Su</li> <li>Loamy Gleye</li> <li>Depleted Ma</li> <li>Redox Dark</li> <li>Depleted Da</li> <li>Redox Depres</li> <li>Iron-Mangan</li> </ul>	elow Surfa arface (S9 ad Matrix trix (F3) Surface (I rk Surface assions (F ese Mass	9) <b>(MLRA 1</b> (F2) F6) ∋ (F7) ≅8)	47, 148)	148) C P V	oast Prairie (MLRA 14 iedmont Flo (MLRA 13 ery Shallow	odplain Soils	(F19) (TF12)
Sandy G Sandy R Stripped	a <b>147, 148)</b> leyed Matrix (S4) edox (S5) Matrix (S6) .ayer (if observed):		MLRA 13 Umbric Surfa Piedmont Flo Red Parent M	ice (F13) odplain S	Soils (F19)	(MLRA 14	<b>I8)</b> we	tland hydrol	/drophytic veg logy must be p ed or problema	present,
	cky Substrate	•								
·· —	:hes): <u>&gt; 18 "</u>						Hydric Soil	Present?	Yes X	No
Remarks:	vdria agil indi									

Hydric soil indicator was met.

#### WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Eisenhower Drive Extension	City/County: Hanov	er/Adams	Sampling Date: <u>11/17/2016</u>
Applicant/Owner: PennDOT 8-0		State: PA	Sampling Point: DP-1-UPL
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Township,	Range: Conewago Township	
Landform (hillslope, terrace, etc.): Depression	Local relief (concave, c		Slope (%): <1
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 18" N	_ong:77º02' 14" W	Datum: WGS84
Soil Map Unit Name: Penlaw Silt Loam - Pa		NWI classific	ation: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this t	ime of year? Yes X N	o (If no, explain in R	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> sign	nificantly disturbed? A	re "Normal Circumstances" p	resent? Yes X No
Are Vegetation <u><sup>No</sup></u> , Soil <u><sup>No</sup></u> , or Hydrology <u><sup>No</sup></u> nat	urally problematic? (I	f needed, explain any answe	rs in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks: Drainage way between age Low-lying agricultural drain hydrology indicators.					

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Oxidized Rhizosphere:</li> <li>Water Marks (B1)</li> <li>Presence of Reduced</li> <li>Sediment Deposits (B2)</li> <li>Recent Iron Reduction</li> <li>Drift Deposits (B3)</li> <li>Thin Muck Surface (C2)</li> <li>Algal Mat or Crust (B4)</li> <li>Other (Explain in Rem</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> <li>Aquatic Fauna (B13)</li> </ul>	r (C1) Drainage Patterns (B10) s on Living Roots (C3) Moss Trim Lines (B16) Iron (C4) Dry-Season Water Table (C2) in Tilled Soils (C6) Crayfish Burrows (C8) 7) Saturation Visible on Aerial Imagery (C9)
Field Observations:         Surface Water Present?       Yes No X Depth (inches):         Water Table Present?       Yes No X Depth (inches):         Saturation Present?       Yes No X Depth (inches):         (includes capillary fringe)       Depth (inches):         Describe Recorded Data (stream gauge, monitoring well, aerial photos, prev         Google Earth 2016, Web Soil Survey of Adams County.	Wetland Hydrology Present? Yes No X
Remarks: Only one secondary hydrology indicator was met. T satisfied.	

Sampling Point: DP-1-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 15' radius ) 1.		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: _1 (A)
2				Total Number of Dominant Species Across All Strata: 2 (B)
3				Species Across Air Strata.
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 50% (A/B)
6				Developer Index workshoets
		= Total Cov	er	Prevalence Index worksheet:
50% of total cover:	20%	Etatal covor		Total % Cover of: Multiply by:
	20%0	i total cover.		OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1		·		FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4.				
				Column Totals: (A) (B)
5				Prevalence Index = B/A =
6				
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% 0	f total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )				2 - Dominance Test is >50%
1. Rosa multiflora	5	Y	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
2				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4		·		Constant and the contract of the second s
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	5	= Total Cov	er	Definitions of Five Vegetation Strata:
25				Deminiona of the regenation of that
50% of total cover: 2.5	20% 0	r total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 15' radius )			Et olti	approximately 20 ft (6 m) or more in height and 3 in.
1. Phalaris arundinacea		Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Solidago altissima	5		FACU	Sapling – Woody plants, excluding woody vines,
3. Dipsacus fullonum	2		FACU	approximately 20 ft (6 m) or more in height and less
4. Cirsium arvense	3		FACU	than 3 in. (7.6 cm) DBH.
5	•			Shrub – Woody plants, excluding woody vines,
		2		approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10.				
11.				Woody vine – All woody vines, regardless of height.
		= Total Cov	or	
50		U WAR ARE ADDRESS		
50% of total cover: 50	20% o	f total cover:	20	
Woody Vine Stratum (Plot size: 15' radius )				
1				
2.				
3.				
4				
5				Hydrophytic
		= Total Cov	er	Vegetation
50% of total cover:	20% o	f total cover:		Present? Yes <u>No X</u>
Remarks: (Include photo numbers here or on a separate				
No hydrophytic vegetation indicators		et. Plot s	sizes a	djusted due to drainage size.

#### SOIL

Profile Desc	ription: (Describe	to the dep	th needed to docum	ient the	indicator	or confirm	n the absence	of indicate	ors.)	
Depth	Matrix		Redox	k Feature	S					
(inches)	Color (moist)	%	Color (moist)	. %	Type <sup>1</sup>	_Loc <sup>2</sup>	Texture	<u>.                                    </u>	Remark	s
0-6	10YR 4/3	100	-	-		-	Silty Clay Loam	Very sm	all rock fra	gments
6-18	10YR 4/3	85	10YR 5/6	15	C	М	Clay Loam	Small-m	edium rocł	k fragments
		·			· · · · · · · · · · · · · · · · · · ·					
		·			·					
		·			·					
		·			·					
<sup>1</sup> Type: C=Co	ncentration, D=Dep	letion, RM=	Reduced Matrix, MS	=Masked	d Sand Gra	ains.	<sup>2</sup> Location: P	L=Pore Lini	ng, M=Matri	x.
Hydric Soil I										Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	(S7)					A10) <b>(MLRA</b>	-
	ipedon (A2)		Polyvalue Bel		ce (S8) <b>(N</b>	ILRA 147,			Redox (A16	-
Black His			Thin Dark Sur				· <u> </u>	(MLRA 14	•	,
Hydroge	n Sulfide (A <b>4</b> )		Loamy Gleyed	d Matrix (	(F2)		P	iedmont Flo	odplain Soil	is (F19)
	Layers (A5)		Depleted Mati					(MLRA 13		
	ck (A10) (LRR N)		Redox Dark S						/ Dark Surfa	
	Below Dark Surface	e (A11)	Depleted Darl				0	ther (Expla	in in Remark	(s)
	rk Surface (A12)		Redox Depres			<b>DD </b>				
	ucky Mineral (S1) (L	.KK N,	Iron-Mangane		es (F12) (I	LKK N,				
	<b>147, 148)</b> leyed Matrix (S4)		MLRA 136 Umbric Surfac	•	/MI 13A 42	6 122)	<sup>3</sup> Ind	iontoro of h	udrophytic y	egetation and
	edox (S5)		Piedmont Floo						logy must be	
	Matrix (S6)		Red Parent M					-	ed or proble	
	ayer (if observed):					,	,			
Туре:										
Depth (inc	:hes):						Hydric Soil	Present?	Yes	No X
Pomarke:			•							
N	o hydric soil ir	ndicator	s were observ	'ed.						

#### WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Ada	ms	Sampling Date: 12/27/2016
Applicant/Owner: PennDOT 8-0		State: PA	_ Sampling Point: DP-1A-WET
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Township, Range	Conewago Township	
Landform (hillslope, terrace, etc.): Floodplain terrace	Local relief (concave, convex		/e Slope (%): <2
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 30" N Long: _	770 001 4 011 1 1	Datum: WGS84
Soil Map Unit Name: <u>Penlaw silt loam - Pa</u>		NWI classifica	ation: PFO1A
Are climatic / hydrologic conditions on the site typical for this	time of year? Yes X No	(If no, explain in Re	emarks.)
Are Vegetation No , Soil No , or Hydrology No si	gnificantly disturbed? Are "No	rmal Circumstances" pr	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> na	aturally problematic? (If neede	ed, explain any answer	s in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>X</u> Yes <u>X</u> Yes <u>X</u>	No No No	ls the Sampled Area within a Wetland?	Yes <u>×</u>	No
Remarks:					

Data point is located in the forested area associated with WET-1 to the north and east of agricultural fields and to the west of Plum Creek, approximately 30 feet west of the drainage tributary (WUS-1).

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is I	required; check all that apply)	🗹 Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagen</li> <li>Water-Stained Leaves (B9)</li> </ul>	<ul> <li>True Aquatic Plants (B14)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres on Living Roots (C3)</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Soils (C6)</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>
Aquatic Fauna (B13) Field Observations:		✓ FAC-Neutral Test (D5)
Water Table Present? Yes	e, monitoring well, aerial photos, previous inspections), if a	Hydrology Present? Yes X No /ailable:
	as restricted to the drainage channel tha soils were not observed in the soil pit.	at cuts through the wetland. into PEM portion of wetland.

Sampling Point: DP-1A-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' radius</u> ) 1. Acer rubrum	% Cover 20	Species? Y	Status FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)
2. Fraxinus pennsylvanica	40	<u>Y</u>	FACW	Total Number of Dominant Species Across All Strata: 10 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 80% (A/B)
6				Prevalence Index worksheet:
20		= Total Cov		Total % Cover of:Multiply by:
50% of total cover: <u>30</u>	20% of	total cover:	12	OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4 5				Column Totals: (A) (B)
6.				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:				1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )	2070 01	total cover.		✓ 2 - Dominance Test is >50%
1. Rosa multiflora	5	Y	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Lindera benzoin	10	Y	FAC	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Alnus serrulata	5	Y	OBL	data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				10 states and the state of the discussion of the states are stated as
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	20	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: 10	20% of	total cover:	4	50
Herb Stratum (Plot size: 5' radius )				<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Symplocarpus foetidus	5	Y	OBL	(7.6 cm) or larger in diameter at breast height (DBH).
2. Alliaria petiolata	10	Y	FACU	Sapling – Woody plants, excluding woody vines,
3. Veronica serpyllifolia	5	Y	FAC	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4. Carex sp.	2		NI	TT 16. 10 22
5. Boehmeria cylindrica	3		FACW	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6. Unidentified grass species	5	Y	NI	
7. Impatiens capensis	5	<u>Y</u>	FACW	Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines, regardless of height.
11	0.00	= Total Cov	or	
FOX (111) 175				
50% of total cover: <u>17.5</u> <u>Woody Vine Stratum</u> (Plot size: <u>30' radius</u> )	20% of	total cover:		
1 Toxicodendron radicans	10	Y	FAC	
2				
3			2	
5				
·	10	= Total Cov	er	Hydrophytic Vegetation
50% of total cover: <sup>5</sup>				Present? Yes X No
Remarks: (Include photo numbers here or on a separate s	Lo bannes en	oonne transferi		
Hydrophytic vegetation indicator was				

#### SOIL

Profile Desc	ription: (Describe	to the dep	th needed to docun	nent the i	ndicator	or confirm	n the absence of indicators.)	
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	
0-12	10YR 4/1	85	5YR 4/6	15	С	M,PL	Silt Loam	
12-22	10YR 2/1	95	5YR 4/6	5			Silty Clay Loam	
						·		
	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · ·	•••••	·		
	·							
		·					······	
		·					·	·
		·			••	·		
			·					
		·				·		
	·	·			<b></b>			
		letion, RM=	Reduced Matrix, MS	S=Masked	Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.	
Hydric Soil							Indicators for Problematic Hydric Se	oils°:
Histosol			Dark Surface				2 cm Muck (A10) (MLRA 147)	
	oipedon (A2)		Polyvalue Be					
Black Hi			Thin Dark Su			47, 148)	(MLRA 147, 148)	
	n Sulfide (A4)		Loamy Gleye		F2)		Piedmont Floodplain Soils (F19)	
	l Layers (A5) ick (A <b>1</b> 0) <b>(LRR N)</b>		✓ Depleted Mat Redox Dark \$		(c)		(MLRA 136, 147)	、
	d Below Dark Surfac	o (A11)	Depleted Dark	-	-		Very Shallow Dark Surface (TF12) Other (Explain in Remarks)	)
-	ark Surface (A12)	e (ATT)	Redox Depre					
	lucky Mineral (S1) (I	RR N	Iron-Mangane		-			
	A 147, 148)	,	MLRA 13		53 (1 12) (			
	Bleyed Matrix (S4)		Umbric Surfa		MLRA 13	6. 122)	<sup>3</sup> Indicators of hydrophytic vegetation	and
	edox (S5)		Piedmont Flo					
	Matrix (S6)		Red Parent M					,
	ayer (if observed):							
Type:								
Depth (in	ches);						Hydric Soil Present? Yes X No	
		· · · · ·						
Remarks:	ydric soil india	ator wa	is met.					

#### WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Eisenhower Drive Extension	City/County: Hano	City/County: <u>Hanover/Adams</u>			
Applicant/Owner: PennDOT 8-0				ampling Date: <u>1</u> Sampling Point:	
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Township	, Range: <u><sup>Col</sup></u>	newago Township		
Landform (hillslope, terrace, etc.): Hillslope	Local relief (concave,	convex, non	e): <u>None</u>	Slope	e (%): _5
Subregion (LRR or MLRA): MLRA 148 Lat:	39º48' 29" N	Long:	77º02' 19" W	Datum:	WGS84
Soil Map Unit Name:			NWI classificatio	on: _ <sup>N/A</sup>	
Are climatic / hydrologic conditions on the site typical for th	is time of year? Yes X	lo (	If no, explain in Rem	arks.)	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed?	Are "Normal	Circumstances" pres	ent? Yes X	No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (	lf needed, e	xplain any answers ir	n Remarks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					
Upland point is located or	the slope	east of agricu	Iltural fields and we	st of foreste	ed portion of WET-1.

	rs:			Secondary Indicators (minimum of two required)
Primary Indicators (minimum	of one is required; chec	Surface Soil Cracks (B6)		
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 Aer		True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled So Thin Muck Surface (C7) Other (Explain in Remarks)		<ul> <li>Surrace Soil Cracks (B6)</li> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> </ul>
Water-Stained Leaves (B	9)			Microtopographic Relief (D4)
Aquatic Fauna (B13)				FAC-Neutral Test (D5)
Field Observations:				·····
Surface Water Present?		_ Depth (inches):		
Water Table Present?		_ Depth (inches):		
Saturation Present? (includes capillary fringe)		_ Depth (inches):		lydrology Present? Yes <u>No X</u>
Describe Recorded Data (stre		well, aerial photos, previous inspec	tions), if ava	ilable:
Google Earth 2016, W	eb Soli Suivey o	Addins Obunty		
Google Earth 2016, W Remarks:				
•	<b>_</b>	<b>*</b>	<u>-</u> ,	

Sampling Point: DP-1A-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 15' radius )		Species?	Status	Number of Dominant Species
1. Carya ovata	40	Y	FACU	That Are OBL, FACW, or FAC: 0 (A)
2. Prunus serotina	15	Y	FACU	Total Muscles of Development
3. Acer negundo	15	Y	FAC	Total Number of Dominant Species Across All Strata: 7 (B)
4				
5			_	Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)
6.				
0		= Total Cov	er	Prevalence Index worksheet:
25				Total % Cover of:Multiply by:
50% of total cover: <u>35</u>	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4			. <u> </u>	Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )				2 - Dominance Test is >50%
1. Prunus serotina	10	Y	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Ligustrum vulgare	3		FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Rosa multiflora	5	Y	FACU	data in Remarks or on a separate sheet)
				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5	- 17-			<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6	18			be present, unless disturbed or problematic.
		= Total Cov		Definitions of Five Vegetation Strata:
50% of total cover: 9	20% of	total cover:	3.6	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 5' radius )				approximately 20 ft (6 m) or more in height and 3 in.
1. Allium canadense	3		FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Carex sp.	2		NI	Sapling – Woody plants, excluding woody vines,
3. Unidentified grass species	2		NI	approximately 20 ft (6 m) or more in height and less
4. Alliaria petiolata	10	γ	FACU	than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb - All herbaceous (non-woody) plants, including
8.				herbaceous vines, regardless of size, and woody
				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines, regardless of height.
11				
	-	= Total Cov		
50% of total cover: 8.5	20% of	total cover:	3.4	
Woody Vine Stratum (Plot size: 15' radius )				
1. Lonicera japonica	20	Y	FACU	
2.				
3.				
4.				
5		= Total Cov	er	Hydrophytic Vegetation
10				Present? Yes No X
50% of total cover: 10		total cover:	-	
Remarks: (Include photo numbers here or on a separate		~		
No hydrophytic vegetation indicators	were me	et.		

epth <u>Matrix</u>	%	Color (moist)	<u>(Features</u> %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
	100	-	-		-	Loam	
				. <u> </u>			
		·					
				·			_
					<u> </u>		
						2	
ype: C=Concentration, D=Depleti	ion, RM=	Reduced Matrix, MS	=Masked	Sand Gra	iins.		PL=Pore Lining, M=Matrix.
dric Soil Indicators:			·				cators for Problematic Hydric Soils <sup>3</sup>
_ Histosol (A1)		Dark Surface	• •	(00) (84			2 cm Muck (A10) (MLRA 147)
Histic Epipedon (A2)		Polyvalue Bel				148)	Coast Prairie Redox (A16)
Black Histic (A3)		Thin Dark Sur		-	47, 148)		(MLRA 147, 148)
_ Hydrogen Sulfide (A4)		Loamy Gleye	•	-2)		_	Piedmont Floodplain Soils (F19)
_ Stratified Layers (A5)		Depleted Mat					(MLRA 136, 147)
2 cm Muck (A10) (LRR N)		Redox Dark S	•				Very Shallow Dark Surface (TF12)
_ Depleted Below Dark Surface (/	A11)	Depleted Darl		• •			Other (Explain in Remarks)
_ Thick Dark Surface (A12)		Redox Depres	•				
_ Sandy Mucky Mineral (S1) (LRI	RN,	Iron-Mangane	ese Masse	s (F12) <b>(L</b>	.RR N,		
MLRA 147, 148)		MLRA 136	5)				
_ Sandy Gleyed Matrix (S4)		Umbric Surfac	ce (F13) <b>(</b>	MLRA 130	ô, 122)	<sup>3</sup> lr	ndicators of hydrophytic vegetation and
Sandy Redox (S5)		Piedmont Floo					vetland hydrology must be present,
Stripped Matrix (S6)		Red Parent M					inless disturbed or problematic.
strictive Layer (if observed):			• •			1	
Туре:							
Depth (inches):						Hydric So	oil Present? Yes No X
marks:	·						· · · ·
Hydric soil indicat	tor wa	s not met. So	il samp	ple con	sists e	ntirely of	rich loam.

City/County: <u>-</u>	lanover/Adams	Sampli	ng Date: <u>11/17/2016</u>
			pling Point: DP-2-WET
Section, Town	ship, Range: <u>Cone</u>		
			Slope (%): <u>&lt;2%</u>
t: 39º48' 23" N			Datum: WGS84
		NWI classification: P	FO1/SS1A
for this time of year? Yes X	No (If	no, explain in Remarks.	)
significantly disturbed?	Are "Normal C	ircumstances" present?	Yes X No
naturally problematic?	(If needed, ex	plain any answers in Rer	marks.)
	Section, Town Local relief (conc t:39º 48' 23" N for this time of year? Yes <u>X</u> significantly disturbed?	Section, Township, Range: Cone Local relief (concave, convex, none t: <u>39°48' 23" N</u> Long: for this time of year? Yes <u>X</u> No (If significantly disturbed? Are "Normal C	State:       PA       Same         Section, Township, Range:       Conewago Township         Local relief (concave, convex, none):       Slighty Concave         t:       39°48' 23" N       Long:       -77°02' 01" W         for this time of year?       Yes X       No       (If no, explain in Remarks.

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X No Yes X No Yes X No	Is the Sampled Area within a Wetland?	Yes X	No	·
Remarks:					

PFO wetland with small PEM component east of Plum Creek and west of developed properties. A man-made/altered drainage channel flows along the southern portion of the wetland.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Oxidized Rhizospheres on Living</li> <li>Water Marks (B1)</li> <li>Presence of Reduced Iron (C4)</li> <li>Sediment Deposits (B2)</li> <li>Recent Iron Reduction in Tilled Sc</li> <li>Drift Deposits (B3)</li> <li>Thin Muck Surface (C7)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> <li>Aquatic Fauna (B13)</li> </ul>	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes X       No       Depth (inches): 1-6"         Water Table Present?       Yes X       No       Depth (inches): 15"	
Saturation Present? Yes X No Depth (inches): 12" (includes capillary fringe)	Wetland Hydrology Present? Yes X No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2016, Web Soil Survey of Adams County.	
Remarks:	
Hydrology supplied by groundwater springs/seeps, conveye surface runoff. Flags: WET 2-1 to WET 2-39.	ed drainage from upslope properties, and
Functions/Values: groundwater discharge, floodflow alterative removal, and wildlife habitat.	ion, sediment/toxicant retention, nutrient

Sampling Point: DP-2-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' radius</u> ) 1. Acer negundo	<u>% Cover</u> 60	Species? Y	<u>Status</u> FAC	Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)
2				Total Number of Dominant Species Across All Strata: <u>6</u> (B)
4 5				Percent of Dominant Species That Are OBL, FACW, or FAC: 82.5% (A/B)
6				Prevalence Index worksheet:
	60	= Total Cov	ver	Total % Cover of: Multiply by:
50% of total cover: <u>30</u>	20% of	total cover	12	OBL species         x1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x2 =
1.				FAC species X 2 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	/er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius)				✓ 2 - Dominance Test is >50%
1. Cornus amomum	50	Y	FACW	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Rosa multiflora	00	Y	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6	Comment of the second sec	= Total Cov		be present, unless disturbed or problematic.
50% of total cover: <u>35</u> <u>Herb Stratum</u> (Plot size: <u>15' radius</u> )				Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Phalaris arundinacea	10	Y Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Elymus virginicus	10	1	FACW	Sapling – Woody plants, excluding woody vines,
3. Agrimonia parviflora	5		NI	approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4. Solidago sp.	- <del>5</del> 15	Y	NI	5 5%.
5. Unidentified grass species	3	1	FACU	Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6. Allium canadense	5	-	NI	
7. Carex sp.				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8		C1		plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines, regardless of height.
11		= Total Cov		
00 5				
50% of total cover: <u>26.5</u>	20% of	total cover	10.0	
Woody Vine Stratum (Plot size: 30' radius )	10	Y	EAC	
1. Toxicodendron radicans	10		TAC	
2				
3				
4				
5	10	<b>T</b> .1.10		Hydrophytic
50% of total cover: 5		= Total Cov		Vegetation Present? Yes X No
Remarks: (Include photo numbers here or on a separate				
Hydrophytic vegetation indicator was				

Profile Desc	ription: (Describe	to the dep	th needed to docum	nent the	indicator	or confirm	m the absence of indicators.)		
Depth	Matrix	· · · · · · · · · · · · · · · · · · ·		x Feature					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	_	
0-16	10YR 4/2	90	10YR 4/6	10	<u>c</u>	M,PL	Silty Clay Loam		
16-20	10YR 5/1	80	10YR 5/1	20	С	M,PL	Silty Clay Loam		
		·						-	
	<u></u>			<u> </u>				-	
	<u></u>							-	
<u> </u>		·	· · · · · · · · · · · · · · · · · · ·		<del></del>				
	<u></u>		<u> </u>					_	
					•			-	
	· · · · ·			·					
		·	<u> </u>					-	
	<u></u>	·	<u> </u>					_	
		letion, RM	Reduced Matrix, MS	S=Masked	Sand Gra	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.		
Hydric Soil I							Indicators for Problematic Hydric Soils <sup>3</sup> :		
Histosol			Dark Surface	· ·			2 cm Muck (A10) (MLRA 147)		
	ipedon (A2)		Polyvalue Be						
Black His	· · ·		Thin Dark Su	•		47, 148)			
	n Sulfide (A4)		Loamy Gleye		F2)		Piedmont Floodplain Soils (F19)		
	Layers (A5)		<ul> <li>Depleted Mat</li> </ul>				(MLRA 136, 147)		
	ck (A10 <b>) (LRR N)</b>	( ) ) ( )	Redox Dark S	•	•		Very Shallow Dark Surface (TF12)		
	Below Dark Surface	e (A11)	Depleted Dar				Other (Explain in Remarks)		
	rk Surface (A12)	DD N	Redox Depre		•				
	ucky Mineral (S1) <b>(L</b> . <b>147, 148)</b>	.KK N,	Iron-Mangane MLRA 13		es (F12) (I	LKK N,			
	leyed Matrix (S4)		Umbric Surfa		MIDA 13	6 1221	<sup>3</sup> Indicators of hydrophytic vegetation and		
	edox (S5)		Piedmont Flo	• •	•	• •			
	Matrix (S6)		Red Parent M	-	• •	•			
	ayer (if observed):					~ 127, 14			
Type:									
Depth (inc	hes):						Hydric Soil Present? Yes X No		
Remarks:	,							_	

Hydric soil indicator was met.

Project/Site: Eisenhower Drive Extension	City/County: <u>Hanover/Adams</u>			Sampling Date: 11/18/2016		
Applicant/Owner: PennDOT 8-0			_ State: PA	Sampling Point: DP-2-UPL		
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Tow	nship, Range: <u>C</u>				
Landform (hillslope, terrace, etc.): Terrace		cave, convex, noi		Slope (%): <a></a>		
Subregion (LRR or MLRA): MLRA 148 Lat: 39° /	48' 24" N	Long:	-77º02'00" W	Datum: WGS84		
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classificatio	on: <u>N/A</u>		
Are climatic / hydrologic conditions on the site typical for this time of	f year? Yes X	No	(If no, explain in Rema	arks.)		
Are Vegetation No Soil No or Hydrology No significar	ntly disturbed?	Are "Normal	l Circumstances" pres	ent? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally	problematic?	(If needed, e	explain any answers ir	ו Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes <u>X</u> Yes	No_X No No_X	Is the Sampled Area within a Wetland?	Yes	No X		
Remarks:			L				
Southeastern section of study area located west of WET-2. Remnant hydric soils are present but							
hydrology/vegetation parameters were not met.							

#### HYDROLOGY

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Sampling Point: DP-2-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30' radius )	% Cover	Species?	Status	Number of Dominant Species
1		·	_	That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 25% (A/B)
6		-		Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species         x 1 =
Sapling Stratum (Plot size: 15' radius )				
1. Acer negundo	5	Y	FAC	FACW species x 2 =
2.				FAC species x 3 =
3				FACU species x 4 =
4				UPL species x 5 =
5.				Column Totals: (A) (B)
6.				Prevalence Index = B/A =
0		= Total Cov	er	Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover: 2.5	20% of	total cover:		2 - Dominance Test is >50%
Shrub Stratum (Plot size: 15' radius )	10	V	FACU	$3$ - Prevalence Index is $\leq 3.0^{1}$
1. Rosa multiflora	10	Y	FACU	
2. Rubus allegheniensis	5	Y	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	15	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: 7.5	20% of	total cover	3	10 802222 (cm)
Herb Stratum (Plot size: 5' radius )	207001	total cover.		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size:)	85	Y	FACU	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
2. Dipsacus fullonum	5		FACU	
3. Unidentified grass	15		NI	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
3. Ondertailed grass				than 3 in. (7.6 cm) DBH.
4		-	-	
5				Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including
8	·			herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10			;	Woody vine - All woody vines, regardless of height.
11			<u>.</u>	Woody vine - All woody vines, regardless of neight.
	105	= Total Cov	er	
50% of total cover: 52.5	20% of	total cover:	21	
Woody Vine Stratum (Plot size: 30' radius )				
1				
2			<u> </u>	
3				
4				
5				Hydrophytic
		= Total Cov	er	Vegetation
50% of total cover:	20% of	total cover:		Present? Yes No ^
Remarks: (Include photo numbers here or on a separate s	heet.)			
No hydrophytic vegetation indicate		re met		
no nyuropnyuo vegetation nulcati		o mot.		

Profile Desc	ription: (Describe	to the dep	th needed to docum	nent the i	ndicator	or confirn	m the absence of indicators.)	
Depth	Matrix		Redo	x Feature:	5			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	
0-3	10YR 4/3	100	-	-	-	-	Silt loam	
3-18	10YR 4/1	90	5YR 4/6	10	С	M,PL	Silt Loam	
		·	·			·		
		· ·	· · · · · · · · · · · · · · · · · · ·					
		·					· · · ·	
		• ••			•			
		·					· ·	
<u> </u>		·		·				
		·						
$^{1}$ Type: C=Cc	ncentration. D=Dep	letion. RM=	Reduced Matrix, MS		Sand Gra	ains	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.	
Hydric Soil I		,	·····, ····				Indicators for Problematic Hydric	Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	(S7)			2 cm Muck (A10) (MLRA 147)	
	ipedon (A2)		Polyvalue Be		ce (S8) (N	ILRA 147,		
Black His			Thin Dark Su				(MLRA 147, 148)	
Hydroge	n Sulfide (A4)		Loamy Gleye	d Matrix (	F2)	•	Piedmont Floodplain Soils (F19	))
Stratified	Layers (A5)		🖌 Depleted Mat	rix (F3)			(MLRA 136, 147)	
2 cm Mu	ck (A10) <b>(LRR N)</b>		Redox Dark S	Surface (F	6)		Very Shallow Dark Surface (TF	12)
Depleted	Below Dark Surface	e (A11)	Depleted Dar	k Surface	(F7)		Other (Explain in Remarks)	•
Thick Da	rk Surface (A12)		Redox Depre	ssions (F8	3)			
Sandy M	ucky Mineral (S1) (L	.RR N,	Iron-Mangane	ese Masse	es (F12) (I	LRR N,		
	147, 148)		MLRA 136	•				
	leyed Matrix (S4)		Umbric Surfa			-	<sup>3</sup> Indicators of hydrophytic vegetation	on and
	edox (S5)		Piedmont Flo			•		∍nt,
	Matrix (S6)		Red Parent M	laterial (F	21) (MLR.	A 127, 147	7) unless disturbed or problematic.	
	ayer (if observed):							
Type:			<u> </u>					
Depth (inc	hes):						Hydric Soil Present? Yes X No	o o
Remarks:			4					
H	dric soil indic	ator wa	is met.					

Project/Site: Eisenhower Drive Extension	City/County:	Hanover/Adams		Sampling Date: <u>11/18/2016</u>		
Applicant/Owner: PennDOT 8-0			_ State: PA	Sampling Point: _		
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Tow	nship, Range: <u>Co</u>	onewago Township			
Landform (hillslope, terrace, etc.): Depression	Local relief (cond			Slope (	(%):_<3	
Subregion (LRR or MLRA): MLRA 148 Lat:	39°49' 05 <b>"</b> N	Long:	-77°02' 20" W	Datum:	WGS84	
Soil Map Unit Name: Conestoga silt loam, 8 to 15% - CnC			NWI classifica	ation:		
Are climatic / hydrologic conditions on the site typical for this ti	me of year? Yes X	No	(If no, explain in Re	emarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> sigr	nificantly disturbed?	Are "Normal	Circumstances" p	resent? Yes X	No	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> nate	urally problematic?	(If needed, e	explain any answer	rs in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes         X         No           Yes         X         No           Yes         X         No           Yes         X         No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No
Remarks:				

Small PEM wetland at northern end of the project area associated with a tributary to Plum Creek located in a low depressional area adjacent to hillslope.

The wetland includes a silted in portion of the tributary that supports emergent vegetation.

Wetland Hydrology Indicato	rs:		Secondary In	dicators (minimum of two required)
Primary Indicators (minimum of	of one is required; chec	k all that apply)	Surface S	Soil Cracks (B6)
<ul> <li>✓ Surface Water (A1)</li> <li>✓ High Water Table (A2)</li> <li>✓ Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aeri</li> <li>Water-Stained Leaves (B3)</li> <li>Aquatic Fauna (B13)</li> </ul>		True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled So Thin Muck Surface (C7) Other (Explain in Remarks)	<ul> <li>✓ Drainage</li> <li>oots (C3)</li> <li>Moss Trin</li> <li>Dry-Seas</li> <li>s (C6)</li> <li>Crayfish</li> <li>Saturatio</li> <li>Stunted of</li> <li>✓ Geomorp</li> <li>Shallow A</li> <li>Microtopo</li> </ul>	Vegetated Concave Surface (B8) Patterns (B10) In Lines (B16) on Water Table (C2) Burrows (C8) In Visible on Aerial Imagery (C9) or Stressed Plants (D1) hic Position (D2) Aquitard (D3) ographic Relief (D4) tral Test (D5)
Field Observations:				
Google Earth 2016, W Remarks: Hydrology supplied k	Yes X No Yes X No monitoring v Yes X No monitoring v Yeb Soil Survey o	vell, aerial photos, previous inspec		
runoff.				

Sampling Point: DP-3-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 15' radius )		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2.				T is the star of Developed
3.				Total Number of Dominant Species Across All Strata: 2 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100% (A/B)
6				Prevalence Index worksheet:
		= Total Cov	rer	
50% of total cover:	20% of	total cover		Total % Cover of:Multiply by:
				OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1				FAC species x 3 =
2		\		FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6.				Prevalence Index = B/A =
0		= Total Cov		Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )				✓ 2 - Dominance Test is >50%
1. Phalaris arundinacea	80	Y	FACW	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Persicaria sagittata	30	Y	OBL	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Juncus sp.	5		NI	data in Remarks or on a separate sheet)
3	<u> </u>			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4			-	
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	= Total Cov	er	
50% of total cover: 57.5	115			Definitions of Five Vegetation Strata:
50% of total cover: <u>57.5</u>	115			Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 15' radius )	20% of	total cover	23	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
	20% of	total cover	23	Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 15' radius )	20% of	total cover	23	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,
Herb Stratum         (Plot size: 15' radius )           1	20% of	total cover	.23	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
Herb Stratum         (Plot size: 15' radius )           1	20% of	total cover	.23	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,
Herb Stratum       (Plot size: 15' radius )         1	20% of	total cover	.23	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,
Herb Stratum (Plot size: 15' radius )         1	<u>115</u> 20% of	total cover		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.
Herb Stratum (Plot size: 15' radius )         1	<u>115</u> 20% of	total cover		<ul> <li>Definitions of Five Vegetation Strata:</li> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> </ul>
Herb Stratum (Plot size: 15' radius )         1	<u>115</u> 20% of	f total cover		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
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# Sampling Point: DP-3-WET

Profile Desc	ription: (Describe	e to the de	oth needed to docum	nent the	indicator	or confirm	n the absence	of indicators.)
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	<u>    Texture</u>	Remarks
0-3	10YR 3/2	100	-	-	-	-	Silt Loam	
3-14	10YR 4/1	92	5YR 5/6	8	С	M		· · · · · · · · · · · · · · · · · · ·
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				<u> </u>			·	
<sup>1</sup> Type: C=Co	ncentration, D=De	pletion, RM	=Reduced Matrix, MS	S=Masked	d Sand Gr	ains.	<sup>2</sup> Location: PL	=Pore Lining, M=Matrix.
Hydric Soil I							Indica	tors for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	(S7)				cm Muck (A10) <b>(MLRA 147</b> )
	ipedon (A2)		Polyvalue Be		ce (S8) (N	ЛI RA 147		past Prairie Redox (A16)
Black His			Thin Dark Su				·	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye			141, 140,		edmont Floodplain Soils (F19)
	Layers (A5)		<ul> <li>Depleted Mat</li> </ul>		1 2)			(MLRA 136, 147)
	ck (A10) (LRR N)		Redox Dark S	• •	6)			ery Shallow Dark Surface (TF12)
	Below Dark Surfac	o (A11)	Depleted Dark	•	•			
·	rk Surface (A12)		Redox Depre				0	her (Explain in Remarks)
	ucky Mineral (S1) (		Iron-Mangane					
	147, 148)	LKK N,			es (F12) (	LKK N,		
			MLRA 130	-		0. 400	31. 1	
	leyed Matrix (S4)		Umbric Surfa					cators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo				-	land hydrology must be present,
	Matrix (S6)		Red Parent M	taterial (F	21) (MLR	A 127, 14	7) unle	ess disturbed or problematic.
	ayer (if observed)	:						
Type: _ <sup>Roc</sup>	ky substrate							
Depth (inc	hes): <u></u>						Hydric Soil I	Present? Yes X No
Remarks:							<u> </u>	
H	/dric soil indi	cator w	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Ada	ms S	ampling Date: <u>11/18/2016</u>
Applicant/Owner: PennDOT 8-0			Sampling Point: DP-3-UPL
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Township, Range		
Landform (hillslope, terrace, etc.): Hillslope	ocal relief (concave, convex,		Slope (%): <u>8-10</u>
	' 05" N Long: _	-77º02'19" W	Datum: WGS84
Soil Map Unit Name: Conestoga silt loam, 8 to 15% - CnC	·	NWI classificati	on: N/A
Are climatic / hydrologic conditions on the site typical for this time of y	ear? Yes X No	(If no, explain in Rem	arks.)
Are Vegetation No, Soil No, or Hydrology No significantly	/ disturbed? Are "No:	rmal Circumstances" pres	sent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally pr	oblematic? (If neede	ed, explain any answers i	in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>×</u>
Remarks:		· · · · ·			
Upland plot on grassy hills	slope locate	ed upslope fro	om WET-3 to the no	rth.	
	•				

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)       True Aquatic Plants (B14)         High Water Table (A2)       Hydrogen Sulfide Odor (C1)         Saturation (A3)       Oxidized Rhizospheres on Livi         Water Marks (B1)       Presence of Reduced Iron (C4         Sediment Deposits (B2)       Recent Iron Reduction in Tilled         Drift Deposits (B3)       Thin Muck Surface (C7)         Algal Mat or Crust (B4)       Other (Explain in Remarks)         Iron Deposits (B5)       Inundation Visible on Aerial Imagery (B7)         Water-Stained Leaves (B9)       Aquatic Fauna (B13)	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes No X Depth (inches):         Water Table Present?       Yes No X Depth (inches):         Saturation Present?       Yes No X Depth (inches):         Saturation Present?       Yes No X Depth (inches):         Includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective Recorded Data (stream gauge, monitoring well, aerial photos, previous inspective Remarks:         Remarks:       No wetland hydrology indicators were observed.	Wetland Hydrology Present? Yes <u>No X</u> pections), if available:

Sampling Point: DP-3-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 15' radius )	% Cover	Species?	Status	Number of Dominant Species		
1				That Are OBL, FACW, or FAC:	0	(A)
2				Total Number of Dominant		
3				Species Across All Strata:	2	(B)
4				Description of Description		
5.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0%	(A/B)
6.						Concert.
		= Total Cove	er	Prevalence Index worksheet:		
FOR a factor action	43-11			Total % Cover of:	Multiply by:	
50% of total cover:	20%01	total cover.		OBL species x	1 =	
Sapling Stratum (Plot size: 15' radius )				FACW species x	2 =	
1				FAC species x	3 =	
2				FACU species x	4 =	_
3	-			UPL species x	5 =	_
4				Column Totals: (A	A)	(B)
5						
6				Prevalence Index = B/A =		
		= Total Cov	er	Hydrophytic Vegetation Indica	ators:	
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophy	tic Vegetation	
Shrub Stratum (Plot size: 15' radius )				2 - Dominance Test is >50%	6	
0				3 - Prevalence Index is ≤3.0		
1				4 - Morphological Adaptation		porting
2				data in Remarks or on a	separate sheet)	
3		<u></u>		Problematic Hydrophytic Ve	getation <sup>1</sup> (Explai	n)
4						
5				<sup>1</sup> Indicators of hydric soil and wet	tland hydrology n	nust
6				be present, unless disturbed or p	problematic.	
		= Total Cov	25			
		Total oot	31	Definitions of Five Vegetation	Strata:	
50% of total cover:						
				Tree - Woody plants, excluding	woody vines,	in.
50% of total cover: <u>Herb Stratum</u> (Plot size: <sup>15' radius</sup> ) 1. Allium canadense					woody vines, e in height and 3	in. BH).
<u>Herb Stratum</u> (Plot size: <u>15' radius</u> ) 1. <u>Allium canadense</u>	20% of			<b>Tree</b> – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at	woody vines, e in height and 3 breast height (DI	BH).
Herb Stratum (Plot size: <u>15' radius</u> ) 1. Allium canadense 2. Cirsium arvense	20% of		FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor	woody vines, e in height and 3 breast height (Dl ling woody vines,	BH).
Herb Stratum (Plot size: 15' radius ) 1. Allium canadense 2. Cirsium arvense 3. Setaria viridis	20% of 5		FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud	woody vines, e in height and 3 breast height (Dl ling woody vines,	BH).
Herb Stratum (Plot size: 15' radius )         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale	20% of 5 10 40 5		FACU FACU UPL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH.	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le	BH).
Herb Stratum (Plot size: 15' radius )         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea	20% of 5 10 40 5 25	total cover;	FACU FACU UPL FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le ng woody vines,	BH).
Herb Stratum (Plot size: 15' radius )         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea         6	20% of 5 10 40 5 25	total cover;	FACU FACU UPL FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le ng woody vines, n) in height.	BH).
Herb Stratum (Plot size: 15' radius )         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea         6	20% of 5 10 40 5 25	total cover:	FACU FACU UPL FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m Herb – All herbaceous (non-wood	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le ng woody vines, n) in height.	BH). ess
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Herb Stratum (Plot size: 15' radius)         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea         6	20% of 5 10 40 5 25  85  20% of 	total cover:	FACU FACU FACU FACU FACU FACU FACU FACU FACU	<ul> <li>Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at</li> <li>Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m)</li> <li>Herb – All herbaceous (non-wood herbaceous vines, regardless of plants, except woody vines, less ft (1 m) in height.</li> </ul>	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le g woody vines, n) in height. bdy) plants, includ size, and woody than approximal	BH). , ess ding , tely 3
Herb Stratum (Plot size: 15' radius )         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea         6.         7.         8.         9.         10.         11.         50% of total cover: 42.5         Woody Vine Stratum (Plot size: 15' radius )         1.         2.         3.	20% of 5 10 40 5 25  85  85  20% of 	total cover;	FACU FACU FACU FACU FACU FACU FACU FACU FACU FACU	<ul> <li>Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at</li> <li>Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m)</li> <li>Herb – All herbaceous (non-wood herbaceous vines, regardless of plants, except woody vines, less ft (1 m) in height.</li> </ul>	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le g woody vines, n) in height. bdy) plants, includ size, and woody than approximal	BH). , ess ding , tely 3
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Herb Stratum (Plot size: 15' radius)         1. Allium canadense         2. Cirsium arvense         3. Setaria viridis         4. Taraxacum officinale         5. Glechoma hederacea         6	20% of 5 10 40 5 25  85  20% of  	total cover:	FACU FACU	Tree – Woody plants, excluding approximately 20 ft (6 m) or mor (7.6 cm) or larger in diameter at Sapling – Woody plants, exclud approximately 20 ft (6 m) or mor than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excludin approximately 3 to 20 ft (1 to 6 m Herb – All herbaceous (non-wood herbaceous vines, regardless of plants, except woody vines, less ft (1 m) in height. Woody vine – All woody vines, i	woody vines, e in height and 3 breast height (Dl ing woody vines, e in height and le g woody vines, n) in height. bdy) plants, includ size, and woody than approximal	BH). , ess ding , tely 3
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Profile Desc	ription: (Describe	to the dept	th needed to docur	nent the i	ndicator	or confirm	n the absence of indicators.)
Depth	Matrix	,		x Features	S.		
<u>(inches)</u>	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-11	10YR 4/4	100		-	-	-	Loam
						·	
		·					
		·			·		
					·	<u> </u>	
						. <u> </u>	
1					·		21
Hydric Soil	oncentration, D=Depl	etion, RM=	Reduced Matrix, Ma	S=Masked	Sand Gra	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
•				(07)			Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1) bipedon (A2)		Dark Surface	. ,	(00) (8)		2 cm Muck (A10) (MLRA 147)
Black Hi			Polyvalue Be Thin Dark Su				, 148) Coast Prairie Redox (A16) (MLRA 147, 148)
-	n Sulfide (A4)		Loamy Gleye		-	47, 140)	Piedmont Floodplain Soils (F19)
	l Layers (A5)		Depleted Mat	•			(MLRA 136, 147)
	ick (A10) (LRR N)		Redox Dark S	. ,	6)		Very Shallow Dark Surface (TF12)
	d Below Dark Surface	э (A11)	Depleted Dar	•			Other (Explain in Remarks)
Thick Da	ark Surface (A12)	· ·	Redox Depre				
Sandy M	lucky Mineral (S1) (L	.RR N,	Iron-Mangan	ese Masse	es (F12) (	LRR N,	
MLRA	A 147, 148)		MLRA 13	6)			
Sandy G	ileyed Matrix (S4)		Umbric Surfa				<sup>3</sup> Indicators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo	-	• •	-	
	Matrix (S6)		Red Parent N	/laterial (F:	21) (MLR	A 127, 147	7) unless disturbed or problematic.
	_ayer (if observed):						
Type: <u>Roc</u>	cky substrate						
Depth (ind	ches): <u>&gt;11"</u>						Hydric Soil Present? Yes No X
Remarks:							
N	o hydric soil ir	idicator	s were met.				

Project/Site: Eisenhower Drive Extension	_ City/County: _	Hanover/Adams	{	Sampling Date: <u>12</u>	/7/2016
Applicant/Owner: PennDOT 8-0			State: PA	_ Sampling Point:	
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	_ Section, Tow	nship, Range:	onewago Township		
Landform (hillslope, terrace, etc.): Depression			ne): Slightly concave	eSlope	(%): <2
	8' 52" N	Long:	-77º02' 16" W	Datum:	
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classificat	tion: <u>PEM</u>	
Are climatic / hydrologic conditions on the site typical for this time of y	year? Yes <u>X</u>	No	(If no, explain in Rei	marks.)	
Are Vegetation No, Soil No, or Hydrology No significanti	ly disturbed?	Are "Norma	l Circumstances" pre	esent? Yes X	No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally p	roblematic?	(If needed,	explain any answers	s in Remarks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No
Remarks:					
A large emergent wetland	located e	ast of Plum Cı	eek adjacent to ag	ricultural fi	elds.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Oxidized Rhizospheres on Living</li> <li>Water Marks (B1)</li> <li>Presence of Reduced Iron (C4)</li> <li>Sediment Deposits (B2)</li> <li>Recent Iron Reduction in Tilled Sc</li> <li>Drift Deposits (B3)</li> <li>Thin Muck Surface (C7)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> <li>Aquatic Fauna (B13)</li> </ul>	Dry-Season Water Table (C2)
Field Observations:         Surface Water Present?       Yes X       No Depth (inches): 0-3"         Water Table Present?       Yes X       No Depth (inches): 20"         Saturation Present?       Yes X       No Depth (inches): 18"         (includes capillary fringe)       Depth (inches): 18"         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection of Adams County.	Wetland Hydrology Present? Yes X No
Remarks: Multiple hydrology indicators were met. Hydrology supplied by seasonally high groundwater table a perched above a fine clay layer. Flags: WET 4-1 to WET 4-49 Functions/Values: floodflow alteration, sediment/toxicant re habitat.	

Sampling Point: DP-4-WET

	Absolute Dominant Inc	
<u>Tree Stratum</u> (Plot size: <u>30' radius</u> ) 1	<u>% Cover</u> Species? S	Number of Dominant Species
2 3		Total Number of Dominant
4 5		Percent of Dominant Species
6		
	= Total Cover	Total % Cover of: Multiply by:
50% of total cover:	20% of total cover:	
Sapling Stratum (Plot size: 15' radius )		
1		FACW species x 2 =
2		TAO Species X 3
-20		FACO species X4
3		
4		
5		
6		
	= Total Cover	
	20% of total cover:	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )		2 - Dominance Test is >50%
1		3 - Prevalence Index is ≤3.0 <sup>1</sup>
2		4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3		and the second sec
4		Fibblematic Hydrophytic vegetation (Explain)
5		
6.		indicators of hydric soil and wetland hydrology must
0	= Total Cover	
		Dennitione er i fregoration et ala.
	20% of total cover:	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 15' radius )	20% of total cover:	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <sup>15' radius</sup> ) 1. Phalaris arundinacea	20% of total cover: 90 <u>Y</u> F	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.         FACW         (7.6 cm) or larger in diameter at breast height (DBH).
Herb Stratum (Plot size: 15' radius )	20% of total cover:	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).         AC       Sapling – Woody plants, excluding woody vines,
<u>Herb Stratum</u> (Plot size: <sup>15' radius</sup> ) 1. Phalaris arundinacea	20% of total cover: 90 Y F 5 F	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).         AC       Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
<u>Herb Stratum</u> (Plot size: <u>15' radius</u> ) 1. Phalaris arundinacea 2. <sup>Ambrosia</sup> trifida	20% of total cover: 90 Y F 5 F	ACW       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 1 approximately 20 ft (6 m) or more in height and large approximately 20 ft (6 m) or more in height and 1 approximately 20 ft (6 m) or more in height and 1 approximately 20 ft (6 m) or more in height approximately 20 f
<u>Herb Stratum</u> (Plot size: <u>15' radius</u> ) 1. Phalaris arundinacea 2. <sup>Ambrosia</sup> trifida	20% of total cover: 90 Y F 5 F	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).         AC       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,
Herb Stratum (Plot size: 15' radius )         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F F	ACW       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).         AC       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 Stratum (Plot size: 15' radius )         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F	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).         AC       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
Herb Stratum         (Plot size: 15' radius)           1. Phalaris arundinacea        )           2. Ambrosia trifida	20% of total cover: 90 Y F 5 F/ 	ACW       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).         AC       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
Herb Stratum         (Plot size: 15' radius)           1. Phalaris arundinacea	20% of total cover: 90 Y F 5 F A A A A A A A A A A A A A A A A A	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).         AC       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
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 7 _	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 7	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).         AC       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.
Herb Stratum         (Plot size: 15' radius )           1. Phalaris arundinacea	20% of total cover: 90 Y F 5 F 7 _	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).         AC       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.
Herb Stratum         (Plot size: 15' radius )           1. Phalaris arundinacea         )           2. Ambrosia trifida	20% of total cover: 90 Y F 5 Fr 7	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).         AC       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.
Herb Stratum         (Plot size: 15' radius )           1. Phalaris arundinacea	20% of total cover: 90 Y F 5 Fr 7	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).         AC       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.
Herb Stratum         (Plot size: 15' radius )           1. Phalaris arundinacea         )           2. Ambrosia trifida	20% of total cover: 90 Y F 5 F/	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 7 	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 Fr 1 	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).         AC       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.
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 Fr 1 	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).         AC       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
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 7 _	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).         ACW         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         Yegetation         Brocent?       Yes X
Herb Stratum (Plot size: 15' radius)         1. Phalaris arundinacea         2. Ambrosia trifida         3	20% of total cover: 90 Y F 5 F 7 	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).         ACW         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         Yegetation         Brocent?       Yes X

# Sampling Point: DP-4-WET

Profile Desc	cription: (Describe	to the dep	oth needed to docur	nent the	indicator	or confirn	m the absence of indicators.)	
Depth	Matrix		Redo	x Feature	s			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	_
0-2	10YR 4/3	100					Silly Clay Loam	
2-12	10YR 4/1	90	5YR 4/6	10	С	M,PL	Silly Clay Loam	_
12-22	10YR 5/1	80	5YR 4/6	20	C	M	Clay	-
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					- <u> </u>			
		letion, RM	=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.	
Hydric Soil							Indicators for Problematic Hydric Soils <sup>3</sup> :	
Histosol			Dark Surface				2 cm Muck (A10) (MLRA 147)	
	oipedon (A2)		Polyvalue Be				· · ·	
Black Hi			Thin Dark Su	•		147, 148)	(MLRA 147, 148)	
	en Sulfide (A4) d Layers (A5)		Loamy Gleye		(F2)		Piedmont Floodplain Soils (F19) (MLRA 136, 147)	
	ick (A10) (LRR N)		Redox Dark \$	• •	F6)		Wery Shallow Dark Surface (TF12)	
	d Below Dark Surfac	e (A11)	Depleted Dar	•			Other (Explain in Remarks)	
·	ark Surface (A12)	. ,	Redox Depre					
Sandy M	lucky Mineral (S1) (I	LRR N,	Iron-Mangan	ese Mass	es (F12) (	LRR N,		
	<b>\ 147, 148)</b>		MLRA 13					
	eleyed Matrix (S4)		Umbric Surfa				<sup>3</sup> Indicators of hydrophytic vegetation and	
	Redox (S5)		Piedmont Flo	-		-		
	Matrix (S6) La <b>yer (if observed)</b> :		Red Parent N	haterial (F	-21) (MLR	A 127, 14	7) unless disturbed or problematic.	
	Layer (if observed):							
Туре:								
Depth (inc	ches):						Hydric Soil Present? Yes X No	
Remarks:	ydric soil indic	ator w	ae mot					
11	yune son muit	Jator wa	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hanove	r/Adams	Sampling Date: 12/7/2016
Applicant/Owner: PennDOT 8-0		State: PA	_ Sampling Point: DP-4-UPL
Investigator(s): <u>Craig Nein (CPN) and Grace Erisman (GE)</u>	Section, Township, F	ange: <u>Conewago</u> Township	
Landform (hillslope, terrace, etc.): <u>Terrace</u>	Local relief (concave, co		Slope (%): _0
Subregion (LRR or MLRA): MLRA 148 Lat:	39°48' 54" N Lo	ong:77° 02' 17" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classifica	ation: <u>N/A</u>
Are climatic / hydrologic conditions on the site typical for this tir	me of year? Yes <u>X</u> No	(If no, explain in Re	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> sign	ificantly disturbed? Are	e "Normal Circumstances" pr	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> natu	Irally problematic? (If	needed, explain any answer	s in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:			•		
Upland plot located to the	west of WE	ET-4 and adja	cent to an excavate	d drainage	channel.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)       True Aquatic Plants (B14)         High Water Table (A2)       Hydrogen Sulfide Odor (C1)         Saturation (A3)       Oxidized Rhizospheres on Living R         Water Marks (B1)       Presence of Reduced Iron (C4)         Sediment Deposits (B2)       Recent Iron Reduction in Tilled So         Drift Deposits (B3)       Thin Muck Surface (C7)         Algal Mat or Crust (B4)       Other (Explain in Remarks)         Iron Deposits (B5)       Inundation Visible on Aerial Imagery (B7)         Water-Stained Leaves (B9)       Aruatia Foura (D42)	<ul> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>
Aquatic Fauna (B13) Field Observations:	FAC-Neutral Test (D5)
Surface Water Present?       Yes No X Depth (inches):         Water Table Present?       Yes No X Depth (inches):         Saturation Present?       Yes No X Depth (inches):         (includes capillary fringe)       Depth (inches):         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect         Google Earth 2016, Web Soil Survey of Adams County.	Wetland Hydrology Present? Yes No X ions), if available:
Remarks:	
Nemarks.	

Sampling Point: DP-4-UPL

	Absolute	Dominant In	ndicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' radius</u> ) 1		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: _0 (A)
2				Total Number of Dominant Species Across All Strata: 1 (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: (A/B)
6		= Total Cover		Prevalence Index worksheet:
				Total % Cover of:Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
6				Prevalence Index = B/A =
		= Total Cover		Hydrophytic Vegetation Indicators:
50% of total cover:	and the second s			1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )	2076 01	total cover		2 - Dominance Test is >50%
				3 - Prevalence Index is ≤3.0 <sup>1</sup>
1				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
2				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5 6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
0				be present, unless disturbed or problematic.
		= Total Cover		Definitions of Five Menafelian Chapter
POAK OF FOR POAK OF		= Total Cover		Definitions of Five Vegetation Strata:
50% of total cover:				Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 5' radius )	20% of	f total cover:		Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <u>5' radius</u> ) 1. Setaria faberi	20% of	f total cover:	UPL	<b>Tree</b> – 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).
Herb Stratum (Plot size: <u>5' radius</u> ) 1. Setaria faberi 2. Solidago sp.	20% of 60 5	f total cover:	UPL NI	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,
Herb Stratum (Plot size: 5' radius ) 1. Setaria faberi 2. Solidago sp. 3. Unidentified plant sp.	20% of 5 10	f total cover:	UPL NI NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
Herb Stratum (Plot size: <u>5' radius</u> ) 1. Setaria faberi 2. Solidago sp.	20% of 60 5	f total cover:	UPL NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u>	f total cover:	UPL NI NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines,</li> </ul>
Herb Stratum       (Plot size: <u>5' radius</u> )         1. Setaria faberi       )         2. Solidago sp.       )         3. Unidentified plant sp.       )         4. Ambrosia trifida       )         5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u>	f total cover: 	UPL NI NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> </ul>
Herb Stratum       (Plot size: <u>5' radius</u> )         1. Setaria faberi       )         2. Solidago sp.       )         3. Unidentified plant sp.       )         4. Ambrosia trifida       )         5	20% of    	f total cover:   	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of <u>60</u> <u>5</u> 10 <u>5</u> 	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3</li> </ul>
Herb Stratum       (Plot size: 5' radius )         1. Setaria faberi       )         2. Solidago sp.       )         3. Unidentified plant sp.       )         4. Ambrosia trifida       )         5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of   	Y         1	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3</li> </ul>
Herb Stratum       (Plot size: 5' radius )         1. Setaria faberi       )         2. Solidago sp.       )         3. Unidentified plant sp.       )         4. Ambrosia trifida       )         5	20% of    	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum         (Plot size: 5' radius )           1. Setaria faberi         )           2. Solidago sp.         )           3. Unidentified plant sp.         )           4. Ambrosia trifida         )           5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum         (Plot size: 5' radius )           1. Setaria faberi         )           2. Solidago sp.         )           3. Unidentified plant sp.         )           4. Ambrosia trifida         )           5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of <u>60</u> <u>5</u> <u>10</u> <u>5</u> <u>-</u> <u>80</u> <u>20% of</u>	f total cover:	UPL NI FAC 6	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum         (Plot size: 5' radius )           1. Setaria faberi         )           2. Solidago sp.         )           3. Unidentified plant sp.	20% of 	f total cover:	UPL NI FAC 6	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of 	f total cover:	UPL NI FAC 6	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of 	Y         1           -         1	UPL NI FAC 6	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of   _	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of 	f total cover:	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of     	Y         I           Y         I           I         I	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Setaria faberi         2. Solidago sp.         3. Unidentified plant sp.         4. Ambrosia trifida         5	20% of 	Y         I           Y         I           I         I	UPL NI FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>

# Sampling Point: DP-4-UPL

Profile Desc	ription: (Describe	to the dep	th needed to docum	nent the	indicator	or confirm	m the absence of indicators.)	
Depth	Matrix		Redox	K Feature				
(inches)	Color (moist)		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	_
0-13	10YR 4/2	100	-	-	-		Silty Clay Loam	
13-22	10YR 5/1	80	10YR 4/6	20	С	М	Clay	-
22-30	10YR 6/2	20	10YR 4/6	35	С	М	Clay	-
	10YR 5/1	45	10YR 4/6					-
								-
					- <u> </u>			-
								-
						<u> </u>		-
								-
						·		-
<sup>1</sup> Type: C=Cc	ncentration D=Depl	etion RM:	-Reduced Matrix, MS	=Masker	d Sand Gra	ains	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.	-
Hydric Soil I		,	- toutoou maing me				Indicators for Problematic Hydric Soils <sup>3</sup> :	_
Histosol	(A1)		Dark Surface	(S7)			2 cm Muck (A10) (MLRA 147)	
	ipedon (A2)		Polyvalue Bel	• •	ice (S8) (N	LRA 147.		
Black His			Thin Dark Su				(MLRA 147, 148)	
	n Sulfide (A4)		Loamy Gleye	•		,,	Piedmont Floodplain Soils (F19)	
	Layers (A5)		Depleted Mat		(• =)		(MLRA 136, 147)	
	ck (A10) (LRR N)		Redox Dark S	• •	-6)		Very Shallow Dark Surface (TF12)	
	Below Dark Surface	(A11)	Depleted Darl	•	•		Other (Explain in Remarks)	
	rk Surface (A12)		Redox Depres		•••			
	ucky Mineral (S1) (L	RR N.	Iron-Mangane	•	•	RR N		
-	. 147, 148)	,	MLRA 136			,		
	leyed Matrix (S4)			,	(MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation and	
Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 144)								
	Matrix (S6)		Red Parent M	•	• •	•		
	ayer (if observed):				.,			
Туре:								
Depth (inc	hes):	<u></u>					Hydric Soil Present? Yes No X	

Remarks: Hydric soil indicator was not met.

Redoxymorphic features observed began too deep below the surface to satisfy any relevant indicators.

Project/Site: Eisenhower Drive Extension	City/Cou	nty: <u>Hanover/Adams</u>	Sampling	g Date: _ <sup>12/7/2016</sup>
Applicant/Owner: PennDOT 8-0		Si		ling Point: DP-5-WET
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section,	Township, Range: <u>Conewa</u>		
Landform (hillslope, terrace, etc.): Depression		concave, convex, none):		Slope (%): <u>&lt;3</u>
Subregion (LRR or MLRA): MLRA 148	Lat: 39º 49' 03" N		<sup>70</sup> 02' 19" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classification: <u>N/A</u>	
Are climatic / hydrologic conditions on the site typic	al for this time of year? Yes	X No (If no	o, explain in Remarks.)	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology	No significantly disturbed	I? Are "Normal Cire	cumstances" present?	Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology	<sup>No</sup> naturally problematic	? (If needed, expla	ain any answers in Rema	arks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No _ No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No
Remarks: Small emergent wetland l agricultural fields and upl				onal area ao	djacent to

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓       Surface Water (A1)	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?         Yes X         No         Depth (inches): 1-4"           Water Table Present?         Yes X         No         Depth (inches): 3"	er portion of wetland. ndwater table, surface runoff, and ion, nutrient removal, streambank

Sampling Point: DP-5-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <u>30' radius</u> ) 1		Species?		Number of Dominant Species That Are OBL, FACW, or FAC: (A)
2 3				Total Number of Dominant Species Across All Strata: (B)
4 5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15' radius)				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals:         (A)         (B)
6.				Prevalence Index = B/A =
		= Total Cov		Hydrophytic Vegetation Indicators:
50% of total cover:				1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )	2070 0	total oover.		✓ 2 - Dominance Test is >50%
1/				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3	<u></u>			Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
50% of total cover: Herb Stratum (Plot size: _ <sup>10' radius</sup> ) 1. Phalaris arundinacea		total cover:		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).
2. Typha latifolia	15		OBL	Serling Weedy plants evoluting woody vines
3. Persicaria arifolia	15		OBL	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
4				Shruh Woody plants, excluding woody vines
5		j <u> </u>		Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6			-	Use All best secure (new woods) plants including
7				Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines, regardless of height.
11		= Total Cov		
50				
50% of total cover: 50	20% of	total cover:	20	
Woody Vine Stratum (Plot size:)				
1				
2				
3				
4	·			
5				Hydrophytic
		= Total Cov	er	Vegetation Present? Yes X No
50% of total cover:	20% of	total cover:		Present? Yes <u>^</u> No
Remarks: (Include photo numbers here or on a separate	sheet.)			1
Hydrophytic vegetation indicator was				

Profile Desc	ription: (Describe	to the dep	th needed to docun	nent the	indicator	or confirn	n the absence	of indicators.)
Depth	Matrix		Redo	k Feature	S			-
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-6	10YR 4/2	100		_	-	-	Silty Clay Loam	
6-12	10YR 4/1	90	5YR 4/6	10	С	M,PL	Silty Clay Loam	
12-18	10YR 4/1	80	5YR 4/6	20	С	M,PL	Silty Clay Loam	Organic material in lower layer.
-								
<u> </u>			· · · · · · · · · · · · · · · · · · ·					
		·	· · · · · · · · · · · · · · · · · · ·			·		
							,	
·		·				·		
<sup>1</sup> Type: C=Co	oncentration. D=Dep	Ietion. RM:			Sand Gra	ains.	<sup>2</sup> Location: P	L=Pore Lining, M=Matrix.
Hydric Soil I		,	,, <b>,</b>					ators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface					cm Muck (A10) (MLRA 147)
Histic Ep	oipedon (A2)		Polyvalue Be	low Surfa	ce (S8) <b>(N</b>	ILRA 147,	, <b>148)</b> C	Coast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	face (S9	) (MLRA 1	47, 148)		(MLRA 147, 148)
Hydroge	n Sulfide (A4)		Loamy Gleye	d Matrix (	F2)	-	Р	Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Mat					(MLRA 136, 147)
	ck (A10) (LRR N)		Redox Dark S		-6)		V	/ery Shallow Dark Surface (TF12)
	Below Dark Surface	a (Δ11)	Depleted Dar	•				Other (Explain in Remarks)
	ark Surface (A12)	5 (711)	Redox Depre				_ 0	
		DD N		•				
	lucky Mineral (S1) (L \ 147, 148)	.KK N,	Iron-Mangane MLRA 136		es (F12) (I	LKK N,		
				,		o 400)	31	Bendenne of Incolor and the state of the state
	leyed Matrix (S4)		Umbric Surfa		-	· •		licators of hydrophytic vegetation and
· · ·	edox (S5)		Piedmont Flo				-	etland hydrology must be present,
	Matrix (S6) ayer (if observed):		Red Parent M	lateriai (F	21) (IVILR.	A 127, 14	/) un	less disturbed or problematic.
Type:								
Depth (inc	:hes):						Hydric Soil	Present? Yes X No
Remarks:	· · · ·							
'H	ydric soil indic	ator wa	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Adams			Sampling Date: <u>12/8/2016</u>		
Applicant/Owner: PennDOT 8-0				Sampling Point:		
In vestigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Tow	nship, Range: <u>C</u>	onewago Township	·		
Landform (hillslope, terrace, etc.): Terrace	Local relief (cond			Slope	(%): _<1	
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 49' 02" N	Long:	-77°02' 20" W	Datum:	WGS84	
Soil Map Unit Name:			NWI classificatio	on: <u></u>		
Are climatic / hydrologic conditions on the site typical for this	time of year? Yes X	No	(If no, explain in Rem	arks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> sig	nificantly disturbed?	Are "Norma	l Circumstances" pres	sent? Yes X	No	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> na	turally problematic?	(If needed, e	explain any answers i	n Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:			·		
Upland plot located on ter	race above	WET-5 adjac	cent to agricultural f	ield.	
• •		,	5		

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled S	oils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No X Depth (inches):	
Water Table Present? Yes No X Depth (inches):	
Saturation Present? Yes <u>No X</u> Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No X
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2016, Web Soil Survey of Adams County.	
Remarks:	
No wetland hydrology indicators were met.	

Sampling Point: DP-5-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30' radius )		Species?	1 · · · · · · · · · · · · · · · · · · ·	Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
2				Total Number of Dominant Species Across All Strata: <u>2</u> (B)
4 5				Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)
6.				
		= Total Cov	er	Prevalence Index worksheet:
50% of total cover:				Total % Cover of: Multiply by:
15 <sup>t</sup> radius	20%0			OBL species x 1 =
				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4 5				Column Totals: (A) (B)
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% 0	f total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' radius )		1.860% I		2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4.				
5.				1. How the second second second second second
6.				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
				Deminions of the vegetation of ata.
50% of total cover:	20% 0	i total cover.		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 5' radius )				
Pholoria anundinggoo	25	V	FACW	approximately 20 ft (6 m) or more in height and 3 in.
1. Phalaris arundinacea	25	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
1. <u>Phalaris arundinacea</u> 2. Setaria faberi	30	Y Y	UPL	(7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines,
1. Phalaris arundinacea 2. Setaria faberi 3. Plantago lanceolata	30 10	Y Y	UPL UPL	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
1. <u>Phalaris arundinacea</u> 2. Setaria faberi	30	Y Y	UPL	(7.6 cm) or larger in diameter at breast height (DBH). <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
1. Phalaris arundinacea 2. Setaria faberi 3. Plantago lanceolata	30 10	Y Y	UPL UPL	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines,</li> </ul>
1. Phalaris arundinacea 2. Setaria faberi 3. Plantago lanceolata	30 10 15		UPL UPL NI	(7.6 cm) or larger in diameter at breast height (DBH). <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.
Phalaris arundinacea     Setaria faberi     Setaria faberi     Plantago lanceolata     Unidentified grass species     S	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
Phalaris arundinacea     Setaria faberi     Plantago lanceolata     Unidentified grass species     S 6	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15		UPL UPL NI	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cove		<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cove		<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic Vegetation</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic</li> </ul>
1. Phalaris arundinacea         2. Setaria faberi         3. Plantago lanceolata         4. Unidentified grass species         5	30 10 15 	= Total Cover:	UPL UPL NI 	<ul> <li>(7.6 cm) or larger in diameter at breast height (DBH).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic Vegetation</li> </ul>

SOI	L
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Profile Desc	ription: (Describe	to the dep	oth needed to docu	ment the	indicator	or confirr	n the absence of indicators.)
Depth	Matrix	,	Redo	x Feature	s		
<u>(inches)</u>	Color (moist)	%	Color (moist)	%	_Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-15	10YR 4/3	100	-	-	-	-	Silt Loam
15-20	10YR 4/2	96	5 YR 5/6	4	С	М	Silt Loam
		·					
	-	• ••			·		
·							
		·					
	<u>- · · · · · · · · · · · · · · · · · · ·</u>	·	·				
·						<u> </u>	· · · · · · · · · · · · · · · · · · ·
	<u> </u>	·					
<sup>1</sup> Type: C=Co	oncentration, D=Dep	letion RM	=Reduced Matrix M	S=Masker	d Sand Gra	ains	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil I			neudoed maan, m				Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	e (S7)			2 cm Muck (A10) (MLRA 147)
	ipedon (A2)		Polyvalue Be		ce (S8) (N	ILRA 147	
Black Hi			Thin Dark Su				(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye			, ,	Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Ma		. ,		(MLRA 136, 147)
2 cm Mu	ck (A10) (LRR N)		Redox Dark	Surface (F	-6)		Very Shallow Dark Surface (TF12)
Depleted	Below Dark Surface	e (A11)	Depleted Da	rk Surface	e (F7)		Other (Explain in Remarks)
Thick Da	rk Surface (A12)		Redox Depre	essions (F	8)		
Sandy M	lucky Mineral (S1) (L	.RR N,	Iron-Mangan	ese Mass	es (F12) <b>(</b> I	LRR N,	
MLRA	. 147, 148)		MLRA 13	6)			
Sandy G	leyed Matrix (S4)		Umbric Surfa	ace (F13) i	(MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation and
Sandy R	edox (S5)		Piedmont Flo	oodplain S	ioils (F19)	(MLRA 14	<ol> <li>wetland hydrology must be present,</li> </ol>
	Matrix (S6)		Red Parent	Material (F	21) <b>(MLR</b>	A 127, 14	7) unless disturbed or problematic.
Restrictive L	.ayer (if observed):						
Type:							
Depth (inc	hes):						Hydric Soil Present? Yes No X
Remarks'		T III					

<sup>s:</sup> No hydric soil indicators were observed. Redox features were too deep within the soil profile to qualify as indicators.

Project/Site: Eisenhower Drive Extension	City/County: Ha	nover/Adam	s s	Sampling Date: <u>12/21/2016</u>
Applicant/Owner: PennDOT 8-0	·		State: PA	Sampling Point: DP-6-WET
Investigator(s):	Section, Townsh	nip, Range:	Conewago Township	
Landform (hillslope, terrace, etc.): Depressional floodplain			none): Slightly concave	e Slope (%): <a></a>
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 48' 34" N	_ Long:	77º02'10"W	Datum: WGS84
Soil Map Unit Name:			NWI classificat	ion: PFO1A
Are climatic / hydrologic conditions on the site typical for this til	me of year? Yes X	No	_ (If no, explain in Rer	narks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> sigr	ificantly disturbed?	Are "Norm	nal Circumstances" pre	esent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> natu	urally problematic?	(If needed	l, explain any answers	in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No
Remarks:					
Large bottomland, hardwo	od PFO w	etland located	to the east of Plum	ı Creek.	
Large bottomland, hardwood PFO wetland located to the east of Plum Creek. Contiguous with PEM wetland (WET-4) to the north.					
5		,			

,,	ors:		Secondary Indicators (minimum of two required)		
Primary Indicators (minimum	of one is required; chec	k all that apply)	Surface Soil Cracks (B6)		
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aer</li> <li>Water-Stained Leaves (B</li> <li>Aquatic Fauna (B13)</li> </ul>	ial Imagery (B7)	True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Living Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled So Thin Muck Surface (C7) Other (Explain in Remarks)	Sparsely Vegetated Concave Surface (B8)          Drainage Patterns (B10)          Moss Trim Lines (B16)          Dry-Season Water Table (C2)		
Field Observations:	······				
Field Observations:         Surface Water Present?       Yes X       No       Depth (inches): 1-4"         Water Table Present?       Yes X       No       Depth (inches): 4"         Saturation Present?       Yes X       No       Depth (inches): 3"       Wetland Hydrology Present? Yes X       No         (includes capillary fringe)       Depth (inches): 3"       Wetland Hydrology Present? Yes X       No					
(includes capillary fringe) Describe Recorded Data (stree Google Earth 2016, W Remarks: Multiple hydrology ir Hydrology supplied and occasional high	am gauge, monitoring v /eb Soil Survey o ndicators were n by seasonally hi flows from Plun	well, aerial photos, previous inspect f Adams County. net. igh groundwater table, g n Creek and tributaries.	tions), if available: groundwater spring/seep, surface runoff,		

Sampling Point: DP-6-WET

<u>Tree Stratum</u> (Plot size: <sup>30' radius</sup> ) 1 Fraxinus pennsylvanica	Absolute <u>% Cover</u> 20	Dominant Species? Y		Dominance Test worksheet:           Number of Dominant Species           That Are OBL, FACW, or FAC:             8   (A)
2. Quercus macrocarpa	15	Y	FAC	Total Number of Dominant
3				Species Across All Strata: 8 (B)
4				Percent of Dominant Species
5			-	That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
	35	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: 17.5	20% of	total cover:	7	OBL species         x1 =
Sapling Stratum (Plot size: 15' radius				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3.				UPL species x 5 =
4				
5.				Column Totals: (A) (B)
6.				Prevalence Index = B/A =
0		= Total Cov		Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		✓ 2 - Dominance Test is >50%
Shrub Stratum (Plot size:)	F	V	EAC	$3$ - Prevalence Index is $\leq 3.0^{1}$
1. Acer negundo	5	Y Y	FAC	
2. Rosa multiflora	10		FACW	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3. Cornus amomum	5	Y	FACW	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6.				be present, unless disturbed or problematic.
50% of total cover: <u>10</u> <u>Herb Stratum</u> (Plot size: <u>5' radius</u> )		= Total Cov total cover:		Definitions of Five Vegetation Strata: Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Boehmeria cylindrica	10	Y	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Impatiens capensis	5		FACW	Sapling – Woody plants, excluding woody vines,
3. Sphagnum	5		OBL	approximately 20 ft (6 m) or more in height and less
4 Unidentified grass sp.	3		NI	than 3 in. (7.6 cm) DBH.
5. Symplocarpus foetidus	10	Y	OBL	Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7.				Herb - All herbaceous (non-woody) plants, including
8.				herbaceous vines, regardless of size, and woody
				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine - All woody vines, regardless of height.
11	00	Table		
		= Total Cov		
50% of total cover: 16.5	20% of	total cover:	6.6	
Woody Vine Stratum (Plot size: 30' radius )				
1. Toxicodendron radicans	10	Y	FAC	
2				
3			3	
4				
5.				77 A. A. A.
<u>y</u>	1.4.4	= Total Cov	er	Hydrophytic Vegetation
FORMER AND A DESCRIPTION OF A DESCRIPTIO				Present? Yes X No
50% of total cover: 5		total cover:		
Remarks: (Include photo numbers here or on a separate s Hydrophytic vegetation indicator was				

# Sampling Point: <u>DP-6-WET</u>

2-15	Color (moist) 10YR 3/1	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
2-15	10YR 3/1	100						<u>Nenia</u> Ka	i
		100		-	-		Silt Loam		
15-20	10YR 4/1	90	5YR 4/6	10	С	M,PL	Silty Clay Loam		
	10YR 6/1	30	7.5YR 5/8	40	С	М	clay		
	10YR 4/1	30							
		- <u></u>				·			
						·			
Type: C=Con	ncentration, D=Dep	letion, RM	I=Reduced Matrix, M	S=Maske	d Sand Gra	ains.	<sup>2</sup> Location: PL=Por	e Lining, M=Matrix	κ.
Black Hist Hydrogen Stratified L 2 cm Muck Depleted F Thick Dark Sandy Mu MLRA 1	pedon (A2)		<ul> <li>Dark Surface</li> <li>Polyvalue Be</li> <li>Thin Dark Su</li> <li>Loamy Gleye</li> <li>Depleted Ma</li> <li>Redox Dark</li> <li>Depleted Da</li> <li>Redox Depre</li> <li>Iron-Mangan</li> <li>MLRA 13</li> <li>Umbric Surfa</li> </ul>	elow Surfa Inface (S9 ed Matrix trix (F3) Surface (I rk Surface essions (F esse Mass <b>6)</b>	) (MLRA 1 (F2) =6) = (F7) :8) ses (F12) (	47, 148) LRR N,	148) Coast F (MLI Piedmo (MLI Very SI Other (	uck (A10) <b>(MLRA</b> Prairie Redox (A16 <b>RA 147, 148</b> ) ont Floodplain Soil <b>RA 136, 147</b> ) nallow Dark Surfac Explain in Remark	s) s (F19) ce (TF12) s)
Sandy Red Stripped M	dox (S5) Matrix (S6)		Piedmont Flo	-	• •	•	•	hydrology must be isturbed or probler	•
Restrictive La	ayer (if observed):								
Туре:								V	
Depth (inch	nes):						Hydric Soil Pres	ent? Yes X	No
Remarks: Hyd	dric soil indic	cator w	vas met.						

ity/County: Hanover/Adams Sampling Date: 12/21/2016
State: Sampling Point: DP-6-UPL
ection, Township, Range: Conewago Township
I relief (concave, convex, none): None Slope (%): <sup>3</sup>
"N Long:72°02' 08" W Datum: WGS84
NWI classification: <u></u>
? Yes X No (If no, explain in Remarks.)
sturbed? Are "Normal Circumstances" present? Yes X No
lematic? (If needed, explain any answers in Remarks.)
- al 6

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes <u>X</u> Yes	No_X No No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					

Upland plot east of WET-6, adjacent to a large agricultural field. Hydric soil was observed, but there was a lack of hydrology and vegetation indicators.

#### HYDROLOGY

Г

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)       True Aquatic Plants (B14)         High Water Table (A2)       Hydrogen Sulfide Odor (C1)         Saturation (A3)       Oxidized Rhizospheres on Living Revent Parsence of Reduced Iron (C4)         Sediment Deposits (B2)       Recent Iron Reduction in Tilled Soil         Drift Deposits (B3)       Thin Muck Surface (C7)         Algal Mat or Crust (B4)       Other (Explain in Remarks)         Iron Deposits (B5)       Inundation Visible on Aerial Imagery (B7)         Water-Stained Leaves (B9)       Aquatic Fauna (B13)	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes       No       Depth (inches):       20"         Water Table Present?       Yes       X       No       Depth (inches):       20"         Saturation Present?       Yes       X       No       Depth (inches):       20"       1         Saturation Present?       Yes       X       No       Depth (inches):       20"       1         Saturation Present?       Yes       X       No       Depth (inches):       20"       1         Includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspection       Google Earth 2016, Web Soil Survey of Adams County.         Remarks:       No wetland hydrology indicators were met.       The water table was observed in the pit at 20".         Water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below the clay layer in the soil pit water table observed to be below table observed table <td></td>	

Sampling Point: DP-6-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30' radius )		Species?	-	Number of Dominant Species
1. Quercus rubra	30	Y	FACU	That Are OBL, FACW, or FAC: (A)
2. Quercus alba	25	Y	FACU	Total Number of Dominant
3. Carya ovata	25	Y	FACU	Species Across All Strata: 7(B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)
6.				
0		= Total Cov	er	Prevalence Index worksheet:
40				Total % Cover of: Multiply by:
50% of total cover: 40	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15' radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6.				Prevalence Index = B/A =
		= Total Cov		Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		2 - Dominance Test is >50%
Shrub Stratum (Plot size: 15' radius )		75	FLOU	
1. Rosa multiflora	25	Ŷ	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				
4.				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				
6.				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
0	10.00	= Total Cov	er	
10 5				Definitions of Five Vegetation Strata:
50% of total cover: 12.5	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 5' radius )				approximately 20 ft (6 m) or more in height and 3 in.
1. Alliaria petiolata	15	Y	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Allium canadense	5	Y	FACU	Sapling – Woody plants, excluding woody vines,
3. Undentified grass sp.	2		NI	approximately 20 ft (6 m) or more in height and less
4				than 3 in. (7.6 cm) DBH.
5.				Shrub - Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb - All herbaceous (non-woody) plants, including
8.				herbaceous vines, regardless of size, and woody
			·	plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10		() <u> </u>		Woody vine - All woody vines, regardless of height.
11			·	
	22	= Total Cov	er	
50% of total cover: 11	20% of	total cover:	4.40	
Woody Vine Stratum (Plot size: 30' radius )				
1. Lonicera japonica	35	Y	FACU	
2. Toxicodendron radicans	5		FAC	
L.				
2			8 <del>-</del>	
3				
4				
			·	Hydrophytic
4 5	40	= Total Cov		Vegetation
4	40			

S	Ο	I	L

Profile Desc	ription: (Describe	to the de	pth needed to docu	ment the	indicator	or confirn	n the absence of indicators	s.)
Depth (inches)	Matrix Color (moist)	%	Color (moist)	x Feature	es Type <sup>1</sup>	Loc <sup>2</sup>	Tautum	Demonst
0-8	10YR 4/2	- <u>- </u> 95	7.5YR 5/6	<u>%</u> 5	C C	<u>Loc</u>		Remarks
8-18	2.5YR 4/1	90	7.5YR 5/6	10	- <del></del>	M	Clay	
18-24	10YR 5/1	35	7.5YR 6/8	35	C		Clay	
	10YR 4/2	30			·			
·					·	·	, <u></u>	
			· ·				·	
·						·	······································	
·								
<u> </u>							·	
								·
. <u> </u>								
		letion, RM	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining	, M=Matrix.
Hydric Soil I							Indicators for Prol	blematic Hydric Soils <sup>3</sup> :
Histosol			Dark Surface		(- 0) /		2 cm Muck (A1	•••
Histic Ep	oipedon (A2)		Polyvalue Be Thin Dark Su					. ,
	n Sulfide (A4)		Loamy Gleye			47, 140).	(MLRA 147, Piedmont Floo	
	Layers (A5)		✓ Depleted Ma		(12)		(MLRA 136,	
	ck (A10) (LRR N)		Redox Dark		F6)			Dark Surface (TF12)
	Below Dark Surfac	e (A11)	Depleted Da		-		Other (Explain	. ,
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)			·
	lucky Mineral (S1) (I	LRR N,	Iron-Mangan		es (F12) <b>(</b>	LRR N,		
	147, 148)		MLRA 13	-			2	
	leyed Matrix (S4)		Umbric Surfa		-			lrophytic vegetation and
	edox (S5) Matrix (S6)		Piedmont Flo			-		gy must be present, Lor problematic
	.ayer (if observed)	:			21/(0161)	~ 12/, 14/		
Type:								
Depth (inc							Hydric Soil Present?	Yes X No
Remarks:		+						
H	ydric soil indio	cator w	as met.					

Project/Site:Eisenhower Drive Extension	on	City/Co	unty: Hanover/Adan	ns	_ Sampling Date: <u>12/21/2016</u>
Applicant/Owner: PennDOT 8-0				State: PA	
Investigator(s): Craig Nein (CPN) and Grace	Erisman (GE)	Section	n, Township, Range:	Conewago Township	
Landform (hillslope, terrace, etc.): Floc	dplain Terrace			none): Very slightly	concave Slope (%): <2
Subregion (LRR or MLRA): MLRA 148			Long:		
Soil Map Unit Name:	n - Dy				cation: <u>N/A</u>
Are climatic / hydrologic conditions on Are Vegetation <u>No</u> , Soil <u>No</u> , or Are Vegetation <u>No</u> , Soil <u>No</u> , or <b>SUMMARY OF FINDINGS – A</b>	Hydrology <u>No</u> Hydrology <u>No</u>	significantly disturbe naturally problemati	ed? Are "Norr ic? (If neede	mal Circumstances" d, explain any answe	present? Yes <u>X</u> No ers in Remarks.)
Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>X</u> Yes Yes		ls the Sampled Are within a Wetland?	ea Yes	No <u>X</u>

Remarks:

An elevated stream-side terrace along the eastern side of Plum Creek to the south of Chapel Road.

The area is located adjacent to large bends in Plum Creek.

The confluence of a tributary (WUS-3) drains into Plum Creek northeast of DP-A-UPL, south of Chapel Road.

#### HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required	)
Primary Indicators (minimum of one is	Surface Soil Cracks (B6)		
Surface Water (A1)	True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)	
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)	
Saturation (A3)	Oxidized Rhizospheres on Living	g Roots (C3) Moss Trim Lines (B16)	
Water Marks (B1)	Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)	
Sediment Deposits (B2)	Recent Iron Reduction in Tilled S	Soils (C6) Crayfish Burrows (C8)	
Drift Deposits (B3)	Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Other (Explain in Remarks)	Stunted or Stressed Plants (D1)	
Iron Deposits (B5)		Geomorphic Position (D2)	
Inundation Visible on Aerial Image	ery (B7)	Shallow Aquitard (D3)	
Water-Stained Leaves (B9)		Microtopographic Relief (D4)	
Aquatic Fauna (B13)		FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes _	No X Depth (inches):		
	No <u>X</u> Depth (inches):		
	No X Depth (inches):	Wetland Hydrology Present? Yes No X	
(includes capillary fringe)			
(includes capillary fringe)	ge, monitoring well, aerial photos, previous inspec		
(includes capillary fringe)	ge, monitoring well, aerial photos, previous inspec		
(includes capillary fringe) Describe Recorded Data (stream gaug	ge, monitoring well, aerial photos, previous inspec		
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks:	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County.	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me		
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks:	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	
(includes capillary fringe) Describe Recorded Data (stream gaug Google Earth 2016, Web Sc Remarks: Only one secondary hydro	ge, monitoring well, aerial photos, previous inspec il Survey of Adams County. Dology indicator was marginally me	ections), if available:	

B

Sampling Point: DP-A-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size:)		Species?		Number of Dominant Species
1 Acer rubrum	20	Y	FAC	That Are OBL, FACW, or FAC: $3$ (A)
2. Acer negundo	30	Y	FAC	
				Total Number of Dominant Species Across All Strata: 4 (B)
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75% (A/B)
1 m m			-	
6			2 <u></u>	Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: 25	20% of	total cover:	10	
Sapling Stratum (Plot size: 15' radius )				OBL species x 1 =
				FACW species x 2 =
1				FAC species x 3 =
2	5 <u></u>			FACU species x 4 =
3				
				UPL species x 5 =
4			-	Column Totals: (A) (B)
5				
6	-			Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
11 Salada A Salada Second and Anno 100 Sa				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		
Shrub Stratum (Plot size: 15' radius )				✓ 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
2	S			data in Remarks or on a separate sheet)
3			_	Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4.				
5.				
				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	S	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		
				Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 10' radius )	10		EACU	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
1. <u>Alliaria petiolata</u>	10		FACU	(7.0 cm) of larger in diameter at breast height (DDF).
2. Ambrosia trifida	25	Y	FAC	Sapling - Woody plants, excluding woody vines,
3. Unidentified grass sp.	5		NI	approximately 20 ft (6 m) or more in height and less
4 Elymus canadensis	15	Y	FACU	than 3 in. (7.6 cm) DBH.
4			-	
5			. <u> </u>	Shrub – Woody plants, excluding woody vines,
6.				approximately 3 to 20 ft (1 to 6 m) in height.
7.				Herb - All herbaceous (non-woody) plants, including
				herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				
11.				Woody vine – All woody vines, regardless of height.
			-	
		= Total Cov	er	
50% of total cover: 27.5	20% of	total cover:	11	
Woody Vine Stratum (Plot size: 30' radius )		85/35/14001403		
woody vine Stratum (Plot size)				
1				
2	9			
3.				
4				
5				Hydrophytic
		= Total Cov	er	Vegetation
	0004			Present? Yes X No
50% of total cover:		total cover:		
Remarks: (Include photo numbers here or on a separate s	sheet.)			
Hydrophytic vegetation indicator was				

Profile Desc	ription: (Describe	to the dep	oth needed to docum	nent the i	ndicator	or confirn	m the absence of indicators.)
Depth	Matrix		Redo	x Feature	<u>s</u>		
(inches)	Color (moist)	%	Color (moist)	%	_Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-16	10YR 4/3	100	-	-	-	-	Silt Loam
16-22	10YR 4/2	85	7.5YR 5/6	15	С	М	Silt Loam
		• • • • • • • • • • • • • • • • • • • •			•		
						·	
<u> </u>		·	,				
<u> </u>			<u> </u>				
	·			<u> </u>			
					•		
						·	
			<u> </u>			. <u> </u>	
		letion, RM	=Reduced Matrix, MS	=Masked	Sand Gra	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol			Dark Surface				2 cm Muck (A10) (MLRA 147)
	ipedon (A2)		Polyvalue Bel		• • •	-	
Black His			Thin Dark Su			47, 148)	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye	-	F2)		Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Mat		2		(MLRA 136, 147)
	ck (A10) <b>(LRR N)</b> Below Dark Surface	- ( . 1 1 )	Redox Dark S	-	•		Very Shallow Dark Surface (TF12)
· · · ·	rk Surface (A12)	e (ATT)	Depleted Dar Redox Depre				Other (Explain in Remarks)
	ucky Mineral (S1) (L	RR N	Iron-Mangane	-	•	PP N	
	. 147, 148)	-1111 11,	MLRA 136		55 (1 12) (1	_IXIX IN,	
	leyed Matrix (S4)		Umbric Surfac	-	MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo				
	Matrix (S6)		Red Parent M			-	
	ayer (if observed):						
Туре:							
Depth (inc	hes):						Hydric Soll Present? Yes No X
Remarks:							
INC	o hydric soil ir						
Re	edoxymorphic	: featur	es observed w	vere to	o deep	to sati	tisfy relevant indicators.
							•

Project/Site: Eisenhower Drive Extension	City/County:	Hanover/Adams		Sampling Date: 12/27/2016
Applicant/Owner: PennDOT 8-0			State: PA	Sampling Point: DP-B-UPL
Investigator(s): Craig Nein (CPN) and Grace Erisman (GE)	Section, Tow	nship, Range: _	onewago Township	
Landform (hillslope, terrace, etc.): Streamside terrace	Local relief (con			Slope (%): <2
Subregion (LRR or MLRA): MLRA 148 Lat: 39°4	48' 49" N	Long:	77⁰02' 19" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classific	ation: <u></u>
Are climatic / hydrologic conditions on the site typical for this time of	•	No	(If no, explain in R	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> significar		Are "Norma	al Circumstances" p	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally	problematic?	(If needed,	explain any answei	s in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>	
Remarks:			- <b>I</b>			
The upland point is located along the eastern portion of Plum Creek and south of a large set of						
bends in the creek. The data point was taken in an area with abundant herbaceous vegetation						

against a wooded riparian corridor along Plum Creek.

Wetland Hydrology Indicato	irs:				Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)				<ul> <li>Surface Soil Cracks (B6)</li> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> </ul>		
<ul> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aeri</li> <li>Water-Stained Leaves (B2)</li> <li>Aquatic Fauna (B13)</li> </ul>			Other (Explain in Remarks)		<ul> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> <li>FAC-Neutral Test (D5)</li> </ul>	
Field Observations: Surface Water Present? Water Table Present? Saturation Present?	Yes	No <u>X</u>	_ Depth (inches): _ Depth (inches): _ Depth (inches):	Wetland F	lydrology Present? Yes No <sup>X</sup>	
Google Earth 2016, W	am gauge, m	onitoring w	vell, aerial photos, previous inspec			
Remarks: Only one secondary satisfied.	hydrolog	y indica	ator was met. Therefor	e, the hy	/drology parameter was not	

Sampling Point: DP-B-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <sup>30' radius</sup> )		Species?		Number of Dominant Species
1. Juglans nigra	25	Y	FACU	That Are OBL, FACW, or FAC: 2 (A)
2. Acer negundo	10	Υ	FAC	Total Number of Dominant
3				Species Across All Strata: <u>5</u> (B)
4				
				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 40% (A/B)
6				Prevalence Index worksheet:
	35	= Total Cov	er	Total % Cover of:Multiply by:
50% of total cover: <u>17.5</u>	20% of	total cover:	7	OBL species         x1 =
Sapling Stratum (Plot size: 15' radius )				
				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6.				Prevalence Index = B/A =
		= Total Cov		Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		2 - Dominance Test is >50%
Shrub Stratum (Plot size: 15' radius)			FLOU	
1. Rosa multiflora	10	Y	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3.				
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	10 = Total Cover		er	Definitions of Five Vegetation Strata:
				-
50% of total cover: _5	20% of	total cover:		
	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>5' radius</sup> )	20% of 40	total cover: Y		
<u>Herb Stratum</u> (Plot size: <sup>5' radius</sup> ) 1. Phalaris arundinacea	40	total cover:	2	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).
<u>Herb Stratum</u> (Plot size: <sup>5' radius ) 1. Phalaris arundinacea 2. Alliaria petiolata</sup>	40	Y	FACW FACU	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,
<u>Herb Stratum</u> (Plot size: <sup>5' radius</sup> ) 1. Phalaris arundinacea	40	Y	2 FACW	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).
<u>Herb Stratum</u> (Plot size: <sup>5' radius ) 1. Phalaris arundinacea 2. Alliaria petiolata</sup>	40	Y	FACW FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> </ul>
<u>Herb Stratum</u> (Plot size: <sup>5' radius ) 1. Phalaris arundinacea 2. Alliaria petiolata</sup>	40	Y	FACW FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines,</li> </ul>
<u>Herb Stratum</u> (Plot size: <sup>5' radius ) 1. Phalaris arundinacea 2. Alliaria petiolata</sup>	40 25 15	Y	FACW FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> </ul>
Herb Stratum (Plot size: 5' radius ) 1. Phalaris arundinacea 2. Alliaria petiolata 3. Ambrosia trifida 4 5	40 25 15	Y Y	2 FACW FACU FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
Herb Stratum       (Plot size: 5' radius )         1. Phalaris arundinacea         2. Alliaria petiolata         3. Ambrosia trifida         4	40 25 15	Y Y	2 FACW FACU FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
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Herb Stratum       (Plot size: 5' radius )         1. Phalaris arundinacea       )         2. Alliaria petiolata       )         3. Ambrosia trifida       )         4	40 25 15 	Y Y	2 FACW FACU FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
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Herb Stratum (Plot size: 5' radius )         1. Phalaris arundinacea         2. Alliaria petiolata         3. Ambrosia trifida         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 40         Woody Vine Stratum (Plot size: 30' radius )         1. Vitis sp.         2.	40 25 15 	Y Y 	2 FACW FACU FAC 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum (Plot size: 5' radius )         1. Phalaris arundinacea         2. Alliaria petiolata         3. Ambrosia trifida         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 40         Woody Vine Stratum (Plot size: 30' radius )         1. Vitis sp.         2.         3.         4.         5.         5.         5.         5.         5.         5.         5.         5.         5.	40 25 15 	Y Y 	2 FACW FACU FAC FAC FAC FAC FAC FAC FAC FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic</li> </ul>
Herb Stratum (Plot size: 5' radius )         1. Phalaris arundinacea         2. Alliaria petiolata         3. Ambrosia trifida         4	40 25 15 	Y Y 	2 FACW FACU FAC FAC FAC FAC FAC FAC FAC FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
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Profile Desc	ription: (Describe	to the dep	oth needed to docur	nent the	indicator (	or confirn	n the absence of indicators.)
Depth	Matrix			x Feature			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-12	10YR 4/3	100		-		-	Silt Loam
12-24	10YR 5/4	85	-	-	-		Silt Loam
	10YR 3/2	15					
						·	
					<u> </u>		
<del></del> .				······			
· · ·		<u> </u>			<u> </u>		
<sup>1</sup> Type: C=Cc	ncentration D=Den	etion RM	=Reduced Matrix, MS		 Sand Gra		<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil I		ouon, run	reduced main, me				Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol			Dark Surface	(S7)			2 cm Muck (A10) (MLRA 147)
Histic Ep	ipedon (A2)		Polyvalue Be	low Surfa	ce (S8) <b>(M</b>	ILRA 147,	
Black His			Thin Dark Su			47, 148)	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye		(F2)		Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Mat	trix (F3)			(MLRA 136, 147)
	ck (A10) <b>(LRR N)</b>		Redox Dark S	-	-		Very Shallow Dark Surface (TF12)
······	Below Dark Surface	e (A11)	Depleted Dar				Other (Explain in Remarks)
	rk Surface (A12)		Redox Depre	ssions (F	8)		
-	ucky Mineral (S1) <b>(L</b>	RR N,	Iron-Mangan	ese Mass	es (F12) <b>(I</b>	.RR N,	
	. 147, 148)		MLRA 13	6)			
	leyed Matrix (S4)		Umbric Surfa	ce (F13)	(MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo	odplain S	oils (F19)	(MLRA 14	<ol> <li>wetland hydrology must be present,</li> </ol>
	Matrix (S6)		Red Parent M	laterial (F	21) <b>(MLR</b>	A 127, 147	<ol><li>unless disturbed or problematic.</li></ol>
Restrictive L	ayer (if observed):						
Туре:		·					
Depth (inc	hes):	• • • • •					Hydric Soil Present? Yes No X
Remarks: No	hydric soil ir	dicato	rs were met				

No hydric soil indicators were met.

Project/Site: Eisenhower Drive Extension	_ City/County: Hanover/Ac	lams Sam	pling Date: 11/08/2017
Applicant/Owner: PennDOT District 8-0		State: PA Sa	ampling Point: DP-7-WET
Investigator(s): CPN, GE	Section, Township, Rang	ge: <u>Conewago Township</u>	
Landform (hillslope, terrace, etc.):	Local relief (concave, conve		Slope (%): <a></a>
Subregion (LRR or MLRA): MLRA 148 Lat: 39°4	18' 06" N Long	: 77°02' 46" W	Datum: WGS84
Soil Map Unit Name: Penlaw silt loam - Pa		NWI classification:	PEM
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes X No	(If no, explain in Remark	<s.)< td=""></s.)<>
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> significan	tly disturbed? Are "N	lormal Circumstances" presen	nt? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally	problematic? (If nee	ded, explain any answers in F	Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes_X	_ No
Remarks: Emergent wetland situate Wetland fed by WUS-7 co Wetland consists of depre	oming from	n the east.			

Wetland Hydrology Indicato	rs:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of	of one is required; o	check all that apply)	Surface Soil Cracks (B6)
✓       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 Aeri         ✓       Water-Stained Leaves (B1)		<ul> <li>True Aquatic Plants (B14)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres on Living I</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled Sc</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Dry-Season Water Table (C2)
Field Observations:			
Surface Water Present? Water Table Present?		Depth (inches): 0-3" Depth (inches): 10"	
Saturation Present? (includes capillary fringe)	Yes <u>X</u> No _	Depth (inches): 8"	Wetland Hydrology Present? Yes X No
Describe Recorded Data (stre Google Earth 2017, W		ing well, aerial photos, previous inspec y of Adams County.	tions), if available:
Remarks: Multiple wetland hyd Hydrology is fed by V Overland runoff and Water table affected Seasonally high wate Flags: WET 7-1 to W	WUS coming drainage fro by recent ra er table pres	from the east. m adjacent agricultural fiel in events.	lds.

Sampling Point: DP-7-WET

401 D = 1	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: 10' Radius )		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
		= Total Cove		Total % Cover of:Multiply by:
50% of total cover:	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: <sup>10' Radius</sup> )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cove	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		✓ 1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 10' Radius)				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indiantara of hydric coil and watland hydrology must
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
	=	= Total Cove	er	Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		
Herb Stratum (Plot size: 10' Radius )		-		<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Phalaris arundinacea	95	Yes	FACW	(7.6 cm) or larger in diameter at breast height (DBH).
2. Boehmeria cylindrica	1	No	FACW	Sapling – Woody plants, excluding woody vines,
3				approximately 20 ft (6 m) or more in height and less
4				than 3 in. (7.6 cm) DBH.
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
9				plants, except woody vines, less than approximately 3 ft (1 m) in height.
10				
11.				<b>Woody vine</b> – All woody vines, regardless of height.
	96	= Total Cove	er	
50% of total cover: $\frac{48}{2}$	20% of	total aquar	19.2	
Woody Vine Stratum (Plot size: 10' Radius )	20% Of	total cover:		
1				
2				
3				
4				
5				Hydrophytic
	=	= Total Cove	er	Vegetation Present? Yes X No
50% of total cover:	20% of	total cover:		Present? Yes <u>*</u> No
Remarks: (Include photo numbers here or on a separate	sheet.)			
Hydrophytic vegetation indicator was	met.			
· · · ·				

|--|

Profile Desc	ription: (Describe	to the de	oth needed to docur	nent the	indicator	or confirn	n the absence	of indicators.)
Depth	Matrix			x Feature		. 2	_	
(inches)	Color (moist)	<u>%</u>	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-2	10YR 3/2	100					Silt loam	
2-14	10YR 5/1	95	5YR 4/6	5	С	M,PL	Silty clay loam	
14-16	10YR 5/2	90	10YR 5/6	10	С	Μ	Silty clay loam	Small to medium rock fragments (30%)
						·		
					·	·		
					·	·		
						·		
17				0 Martin			<sup>2</sup> l	Description M. Materia
Hydric Soil		pletion, RIV	l=Reduced Matrix, MS	S=Maske	d Sand Gr	ains.		L=Pore Lining, M=Matrix. ators for Problematic Hydric Soils <sup>3</sup> :
Histosol			Dark Surface	(97)				2 cm Muck (A10) <b>(MLRA 147)</b>
	oipedon (A2)		Polyvalue Be		nce (S8) <b>(N</b>	II RA 147		Coast Prairie Redox (A16)
Black Hi	• • • •		Thin Dark Su		· · ·			(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye				P	Piedmont Floodplain Soils (F19)
Stratified	Layers (A5)		Depleted Ma	trix (F3)				(MLRA 136, 147)
	ick (A10) <b>(LRR N)</b>		Redox Dark					/ery Shallow Dark Surface (TF12)
	Below Dark Surfac	e (A11)	Depleted Dar				C	Other (Explain in Remarks)
	ark Surface (A12)		Redox Depre					
-	lucky Mineral (S1) <b>(</b> I <b>\ 147, 148)</b>	LKK N,	Iron-Mangan MLRA 13		es (F12) (	LKK N,		
	Bleyed Matrix (S4)		Umbric Surfa	,	(MI RA 13	6, 122)	<sup>3</sup> Ind	licators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo	. ,	•			etland hydrology must be present,
	Matrix (S6)		Red Parent M	•	,	•		less disturbed or problematic.
Restrictive I	_ayer (if observed)							
Туре:								
Depth (ind	ches):						Hydric Soil	Present? Yes $\frac{X}{X}$ No
Remarks:								
H	ydric soil indi	cator w	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hano	ver/Adams	Samplii	ng Date: 11/0	08/2017
Applicant/Owner: PennDOT District 8-0			State: PA Sam	pling Point: _	DP-7-UPL
Investigator(s): CPN, GE	Section, Township	, Range: Cone	ewago Township		
Landform (hillslope, terrace, etc.):	Local relief (concave,			Slope	(%): <u>&lt;2</u>
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 06" N	Long: 7	′2º02' 46" W	Datum:	WGS84
Soil Map Unit Name: Penlaw silt Ioam - Pa			NWI classification: N	/A	
Are climatic / hydrologic conditions on the site typical for th	s time of year? Yes X	lo (If	no, explain in Remarks.	)	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed?	Are "Normal C	ircumstances" present?	Yes X	No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (	lf needed, ex	plain any answers in Rer	marks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>×</u> Yes <u>×</u> Yes	No No No_ <u></u>	Is the Sampled Area within a Wetland?	Yes	No <u></u>
Remarks:					
Upland plot located north Hydrophytic vegetation in indicators were met.			• • •		•

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> <li>Aquatic Fauna (B13)</li> </ul>	<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> </ul>
Field Observations:	
Surface Water Present?       Yes       No       X       Depth (inches):	Wetland Hydrology Present? Yes No X tions), if available:
Remarks: No wetland hydrology indicators were met.	

Sampling Point: DP-7-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>5' Radius</u> ) 1)	-	Species?		Number of Dominant Species That Are OBL, FACW, or FAC: _1 (A)
2				
3				Total Number of Dominant       Species Across All Strata:         1   (B)
4				
5				Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)
6	00	· <u> </u>		Prevalence Index worksheet:
		= Total Cov		Total % Cover of: Multiply by:
50% of total cover: <u>40</u>	20% of	f total cover:	16	OBL species         x 1 =
Sapling Stratum (Plot size: 5' Radius)				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3		·		UPL species x 5 =
4		·		Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	f total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 5' Radius)				∠ 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2		·		4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3		·		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	25	= Total Cov	er	Definitions of Five Vegetation Strata:
				Demittoris of Five vegetation Strata.
50% of total cover:	20% of			
Herb Stratum (Plot size: <sup>5' Radius</sup> )		f total cover:		<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Setaria</sup> pumila	60	f total cover:	FAC	<b>Tree</b> – Woody plants, excluding woody vines,
<u>Herb Stratum</u> (Plot size: <u>5' Radius</u> ) 1. <u>Setaria pumila</u> 2. <u>Phalaris arundinacea</u>	60 5	f total cover: Yes No	FAC FACW	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines,</li> </ul>
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Setaria</sup> pumila	60	f total cover:	FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
Herb Stratum       (Plot size: 5' Radius )         1. Setaria pumila       )         2. Phalaris arundinacea       )         3. Grass sp.       )         4	60 5	f total cover: Yes No	FAC FACW	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> </ul>
Herb Stratum       (Plot size: 5' Radius )         1.       Setaria pumila         2.       Phalaris arundinacea         3.       Grass sp.         4.       5.	60 5 15	f total cover: Yes No No	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines,</li> </ul>
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Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria pumila       )         2. Phalaris arundinacea       )         3. Grass sp.       )         4.       )         5.	60 5 15	f total cover: Yes No No	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria pumila       )         2. Phalaris arundinacea       )         3. Grass sp.	60 5 15	f total cover: Yes No No	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> </ul>
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Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria pumila       )         2. Phalaris arundinacea       )         3. Grass sp.       )         4.       )         5.       )         6.       )         7.       )         8.       )         9.       )         10.       )	60 5 15	f total cover: Yes No No 	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum       (Plot size: 5' Radius )         1. Setaria pumila       )         2. Phalaris arundinacea       )         3. Grass sp.	60 5 15 	f total cover: <u>Yes</u> <u>No</u> <u>No</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria pumila	60 5 15 	f total cover: <u>Yes</u> <u>No</u> <u>No</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum (Plot size: 5' Radius )         1. Setaria pumila         2. Phalaris arundinacea         3. Grass sp.         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 40	60 5 15 	f total cover: Yes No No Total Cover: Total Cover:	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum       (Plot size: 5' Radius )         1. Setaria pumila       .         2. Phalaris arundinacea       .         3. Grass sp.       .         4.       .         5.       .         6.       .         7.       .         8.       .         9.       .         10.       .         11.       .         50% of total cover: 40         Woody Vine Stratum (Plot size: 5' Radius )         1.       .         2.       .         3.       .	60 5 15 	f total cover: Yes No No Total Cov f total cover: f total cover:	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 5' Radius )         1. Setaria pumila         2. Phalaris arundinacea         3. Grass sp.         4	60 5 15 	f total cover: <u>Yes</u> <u>No</u> <u>No</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u> <u>-</u>	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum (Plot size: 5' Radius )         1. Setaria pumila         2. Phalaris arundinacea         3. Grass sp.         4	60 5 15 	f total cover: Yes No No Total Cover: Total Cover: T	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic</li> </ul>
Herb Stratum (Plot size: 5' Radius )         1. Setaria pumila         2. Phalaris arundinacea         3. Grass sp.         4	60 5 15 	f total cover: Yes No No Total Cover: Total Cover: T	FAC FACW NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>

Depth	Matrix			ox Features	1				
nches)	Color (moist)	%	Color (moist)	%	Type'	Loc <sup>2</sup>	Texture	Remarks	
12	10YR 4/2	95	10YR 6/6	5	С	M	Clay		
				·					
21		epletion, RM	I=Reduced Matrix, M	S=Masked S	Sand Gr	ains.	<sup>2</sup> Location: PL=Por		
<ul> <li>Histosol</li> <li>Histic Eş</li> <li>Black Hi</li> <li>Hydroge</li> <li>Stratified</li> <li>2 cm Mu</li> <li>Depleted</li> <li>Thick Da</li> <li>Sandy M</li> <li>MLRA</li> <li>Sandy G</li> </ul>	Indicators: (A1) Dipedon (A2) Istic (A3) en Sulfide (A4) d Layers (A5) Ick (A10) (LRR N) d Below Dark Surfa ark Surface (A12) Mucky Mineral (S1) A 147, 148) Bleyed Matrix (S4) Redox (S5)		Dark Surface Polyvalue Be Thin Dark Si Loamy Gleys Depleted Ma Redox Dark Depleted Da Redox Depr Iron-Mangar MLRA 13 Umbric Surfa Piedmont Fil	elow Surface urface (S9) ( ed Matrix (F3) Surface (F6) rk Surface ( essions (F8) nese Masses (6) ace (F13) (N	MLRA 1 2) F7) s (F12) ( ILRA 13	47, 148) LRR N, 6, 122)	, 148) 2 cm M , 148) Coast F (MLF Piedmo (MLF Very Sh Other (I	for Problematic H uck (A10) (MLRA Prairie Redox (A16 RA 147, 148) ont Floodplain Soils RA 136, 147) nallow Dark Surfac Explain in Remark s of hydrophytic ve hydrology must be	<b>147)</b> 5 (F19) 5e (TF12) 5) egetation and
-	Matrix (S6)		Red Parent					isturbed or probler	
	Layer (if observed	l):							
Type: Depth (in	ches):						Hydric Soil Prese	ent? Yes X	No
emarks: H	ydric soil ind	icator w	as met.				1		

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Adam	าร	Sampling Date: 11/08/2017		
Applicant/Owner:		State: PA	Sampling Point: DP-8-WET		
Investigator(s): CPN, GE	Section, Township, Range:	Conewago Township			
Landform (hillslope, terrace, etc.): Depressional	Local relief (concave, convex,		Slope (%): <u>&lt;2</u>		
Subregion (LRR or MLRA): MLRA 148 Lat	:: 39º 48' 58" N Long:	77°01' 49" W	Datum: WGS84		
Soil Map Unit Name:		NWI classifi	ication: PEM		
Are climatic / hydrologic conditions on the site typical f	for this time of year? Yes X No	(If no, explain in F	Remarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are "Norr	mal Circumstances"	present? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If neede	d, explain any answe	ers in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	_ No
Remarks: Emergent, spring-fed wet	land east o	f Church Stree	at surrounded by a	fenced na	sturo
Emergent, spring-red wer	ianu east o		et, surrounded by a	Tenced pas	sure.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓       Surface Water (A1)       True Aquatic Plants (B14)         ✓       High Water Table (A2)       Hydrogen Sulfide Odor (C1)         ✓       Saturation (A3)       ✓       Oxidized Rhizospheres on Living Re         Water Marks (B1)       Presence of Reduced Iron (C4)         Sediment Deposits (B2)       Recent Iron Reduction in Tilled Soil         Drift Deposits (B3)       Thin Muck Surface (C7)         Algal Mat or Crust (B4)       Other (Explain in Remarks)         Iron Deposits (B5)       Inundation Visible on Aerial Imagery (B7)         Water-Stained Leaves (B9)       Aquatic Fauna (B13)	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes X       No       Depth (inches):       0-6*         Water Table Present?       Yes X       No       Depth (inches):       At surface	present in the pit.

Sampling Point: DP-8-WET

, <i>,</i> ,	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <sup>10' Radius</sup> )		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: _1 (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover:		OBL species         x1 =
Sapling Stratum (Plot size: 10' Radius )				FACW species         x 2 =
1				FAC species          x 3 =
2				FACU species          x 4 =
3				UPL species         x 5 =
4				Column Totals:         (A)         (B)
5				
6				Prevalence Index = B/A =
		= Total Cov		Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 10' Radius )				✓ 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
		= Total Cov	er	be present, unless disturbed or problematic.
E0% of total covers				Definitions of Five Vegetation Strata:
50% of total cover:	20% 01	total cover.		Tree – Woody plants, excluding woody vines,
<u>Herb Stratum</u> (Plot size: <sup>10' Radius</sup> ) 1 Phalaris arundinacea	90	Yes	FACW	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
2. Xanthium strumarium	5	No	FAC	
				<b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
3				than 3 in. (7.6 cm) DBH.
4				Shrub – Woody plants, excluding woody vines,
o				approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				<b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				
	·	= Total Cov		
50% of total cover: 47.5	20% of	total cover:	19	
<u>Woody Vine Stratum</u> (Plot size: <sup>10' Radius</sup> )				
1				
2				
3				
4				
5				Hydrophytic
		= Total Cov	er	Vegetation
50% of total cover:	20% of	total cover:		Present? Yes $\frac{X}{}$ No
Remarks: (Include photo numbers here or on a separate				
		+	odiuot	ed due to small size of wetland.

SOIL	

Project/Site: Eisenhower Drive Extension	City/County: Hanover//	Adams	Sampling Date: 11/08/2017	
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-8-UPL	
Investigator(s): CPN, GE	Section, Township, Ra	nge: <u>Conewago Township</u>		
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, con		Slope (%): <a></a>	
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 48' 58" N Lon	g:72°01' 50" W	Datum: WGS84	
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classif	ication: N/A	
Are climatic / hydrologic conditions on the site typical for t	his time of year? Yes X No	(If no, explain in I	Remarks.)	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_significantly disturbed? Are '	Normal Circumstances"	present? Yes X No	
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_naturally problematic? (If ne	eded, explain any answ	ers in Remarks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes _X Yes	No_X No No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u> _
Remarks:			-		
Upland plot within vegeta	ted area no	orth of WET-8	and west/south of f	enced past	ture.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Sc	ils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No X Depth (inches):	
Water Table Present? Yes No X Depth (inches):	
Saturation Present? Yes No X Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No $\frac{\chi}{\chi}$
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2017, Web Soil Survey of Adams County.	
Remarks:	
No wetland hydrology indicators were met.	

Sampling Point: DP-8-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <sup>10' Radius</sup> )		Species?		Number of Dominant Species	
1				That Are OBL, FACW, or FAC: $1$ (A	(A)
2					. ,
3				Total Number of Dominant	(D)
				Species Across All Strata: 2 (	(B)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 50% (A	(A/B)
6		·		Prevalence Index worksheet:	
		= Total Cove	ər		
50% of total cover:	20% of	total cover:		Total % Cover of: Multiply by:	
Sapling Stratum (Plot size: 10' Radius )		·····		OBL species x 1 =	
				FACW species x 2 =	-
1				FAC species x 3 =	-
2				FACU species x 4 =	_
3				UPL species x 5 =	
4				Column Totals: (A)	
5	_				(_)
6				Prevalence Index = B/A =	_
		= Total Cove		Hydrophytic Vegetation Indicators:	
500/ // / /				1 - Rapid Test for Hydrophytic Vegetation	
50% of total cover:	20% 01	total cover:		2 - Dominance Test is >50%	
Shrub Stratum (Plot size: 10' Radius)					
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>	
2				4 - Morphological Adaptations <sup>1</sup> (Provide suppo	orting
3				data in Remarks or on a separate sheet)	
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	)
5					
				<sup>1</sup> Indicators of hydric soil and wetland hydrology mu	ust
6				be present, unless disturbed or problematic.	
		= Total Cove	er	Definitions of Five Vegetation Strata:	
50% of total cover:				_	
				Tree – Woody plants, excluding woody vines,	n.
50% of total cover: <u>Herb Stratum</u> (Plot size: <sup>10' Radius</sup> ) 1. <sup>Phalaris arundinacea</sup>				_	
Herb Stratum (Plot size: 10' Radius )	20% of	total cover:		<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBH	
Herb Stratum       (Plot size: 10' Radius )         1. Phalaris arundinacea       )         2. Oenothera biennis       )	20% of	total cover:	FACW	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBH <b>Sapling</b> – Woody plants, excluding woody vines,	H).
<u>Herb Stratum</u> (Plot size: <sup>10' Radius</sup> ) 1. <sup>Phalaris arundinacea</sup>	20% of 5	total cover: Yes No	FACW FACU	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBH	H).
Herb Stratum       (Plot size: 10' Radius )         1. Phalaris arundinacea       )         2. Oenothera biennis       )	20% of 5	total cover: Yes No	FACW FACU	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBH <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	H).
Herb Stratum       (Plot size: 10' Radius )         1. Phalaris arundinacea       )         2. Oenothera biennis       )	20% of 25 5 50	Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines,</li> </ul>	H).
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4	20% of 25 5 50	Yes No Yes	FACW FACU NI	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBH <b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.	H).
Herb Stratum       (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4	20% of 25 5 50 	Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir</li> </ul>	H). ss
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.	20% of 5 5 	Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody</li> </ul>	H). ss ng
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4	20% of 5 5 	total cover: Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximatel</li> </ul>	H). ss ng
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.         8.         9.	20% of 25 5 50	total cover: Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody</li> </ul>	H). ss ng
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.         8.         9.         10.	20% of 25 5 50 	total cover: Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (7.6 cm) or larger in diameter at breast height (DBF Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximatel</li> </ul>	H). :s ng Iy 3
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.         8.         9.	20% of 25 5 50 	total cover:	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (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.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>	H). :s ng Iy 3
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.         8.         9.         10.	20% of 25 5 50 	total cover: Yes No Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (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.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>	H). :s ng Iy 3
Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4.         5.         6.         7.         8.         9.         10.	20% of 25 5 50 	Yes         No         Yes         Yes	FACW FACU NI	<ul> <li>Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (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.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately ft (1 m) in height.</li> </ul>	H). :s ng Iy 3
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Herb Stratum (Plot size: 10' Radius )         1. Phalaris arundinacea         2. Oenothera biennis         3. Cirsium sp.         4	20% of 25 5 50 80 20% of 80 20% of 80 20% of 5 20% of 5 5 5 5 5 5 5 5 5 5 5 5 5	total cover: Yes No Yes Total Cover: total cover: Total Cover: Total Cover:	FACW FACU NI	Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 ir (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, includir herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximatel ft (1 m) in height.         Woody vine – All woody vines, regardless of height         Hydrophytic Vegetation Present?       Yes No X	H). :s ng Iy 3

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Profile Desc	ription: (Describ	e to the de	pth needed to docu	ment the	indicator	or confirm	the absence of indicators.	)
Depth	Matrix			ox Feature				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	_Loc <sup>2</sup>		Remarks
0-2	10YR 4/3	96	10YR 6/6	4		·	Silt loam	
2-15	10YR 4/2	98	5YR 4/6	2	С	M, PL	Silt loam	
					·			
						·	;	
						·		
						·		
						·		
						·		
		<u> </u>			<u> </u>	·		
<sup>1</sup> Type: C=C	oncentration, D=De	epletion, RM	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining,	M=Matrix.
Hydric Soil	Indicators:						Indicators for Prob	ematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	e (S7)			2 cm Muck (A10	) (MLRA 147)
Histic Ep	oipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) <b>(N</b>	ILRA 147	148) Coast Prairie Re	edox (A16)
	stic (A3)		Thin Dark Su	•	, <b>.</b>	47, 148)	(MLRA 147, 1	-
	en Sulfide (A4)		Loamy Gley		(F2)		Piedmont Flood	
	d Layers (A5)		Depleted Ma	. ,			(MLRA 136, 1	•
	ick (A10) <b>(LRR N)</b>		Redox Dark	```	,			ark Surface (TF12)
	d Below Dark Surfa ark Surface (A12)	ace (A11)	Depleted Da Redox Depre				Other (Explain ir	n Remarks)
	lucky Mineral (S1)	(I RR N	Iron-Mangar		,			
-	A 147, 148)	(ERR 14,	MLRA 13			LIXIX I <b>X</b> ,		
	Gleyed Matrix (S4)		Umbric Surfa	,	(MLRA 13	6, 122)	<sup>3</sup> Indicators of hydro	ophytic vegetation and
	Redox (S5)		Piedmont Fl				-	y must be present,
Stripped	Matrix (S6)		Red Parent	Material (F	=21) <b>(MLR</b>	A 127, 14	) unless disturbed	or problematic.
Restrictive	Layer (if observed	ł):						
Type:								
Depth (in	ches):						Hydric Soil Present? Y	es X No
Remarks:								
Н	ydric soil ind	licator w	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hanove	er/Adams	Sampling Date: 11/08/2017
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-9-WET
Investigator(s): CPN, GE	Section, Township, F	Range: Conewago Township	
Landform (hillslope, terrace, etc.): Depressional		onvex, none): Slightly concave	Slope (%): <u>&lt;2</u>
Subregion (LRR or MLRA): MLRA 148	at: 39° 48' 54" N L	ong:77°02' 07" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classific	ation: PEM
Are climatic / hydrologic conditions on the site typical	for this time of year? Yes X No	(If no, explain in R	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Ar	e "Normal Circumstances" p	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If	needed, explain any answe	rs in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No	
Remarks:						
Emergent wetland along the southern side of WUS-3.						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required	; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> <li>Aquatic Fauna (B13)</li> </ul>	<ul> <li>True Aquatic Plants (B14)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Oxidized Rhizospheres on Living F</li> <li>Presence of Reduced Iron (C4)</li> <li>Recent Iron Reduction in Tilled So</li> <li>Thin Muck Surface (C7)</li> <li>Other (Explain in Remarks)</li> </ul>	Dry-Season Water Table (C2)
Field Observations:		
Water Table Present? Yes X No	ey of Adams County.	

Sampling Point: DP-9-WET

, , ,	Abaaluta Daminant Indiantan	Deminence Test worksheet
<u>Tree Stratum</u> (Plot size: <sup>10' Radius</sup> )	Absolute Dominant Indicator % Cover Species? Status	Dominance Test worksheet:
1)		Number of Dominant Species That Are OBL, FACW, or FAC: $\frac{1}{2}$ (A)
2		Total Number of Dominant
3		Species Across All Strata: (B)
4		Percent of Dominant Species
5		That Are OBL, FACW, or FAC: 100 (A/B)
6		
	= Total Cover	Prevalence Index worksheet:
		Total % Cover of: Multiply by:
	20% of total cover:	OBL species x 1 =
Sapling Stratum (Plot size: 10' Radius )		FACW species x 2 =
1		FAC species x 3 =
2		
3		FACU species x 4 =
4		UPL species x 5 =
		Column Totals: (A) (B)
5		
6		Prevalence Index = B/A =
	= Total Cover	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of total cover:	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: <sup>10' Radius</sup> )		✓ 2 - Dominance Test is >50%
· · · · · · · · · · · · · · · · · · ·		3 - Prevalence Index is ≤3.0 <sup>1</sup>
1		
2		4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3		Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4		
5		
6		<sup>1</sup> Indicators of hydric soil and wetland hydrology must
0		be present, unless disturbed or problematic.
	Total Cover	
	= Total Cover	Definitions of Five Vegetation Strata:
	= Total Cover 20% of total cover:	
		<b>Tree</b> – Woody plants, excluding woody vines,
Herb Stratum (Plot size: 10' Radius )	20% of total cover:	
<u>Herb Stratum</u> (Plot size: <u>10' Radius</u> ) 1. <u>Phalaris arundinacea</u>	20% of total cover:	<b>Tree</b> – 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).
<u>Herb Stratum</u> (Plot size: <u>10' Radius</u> ) 1. <u>Phalaris arundinacea</u> 2	20% of total cover: 95 Yes FACW	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines,</li> </ul>
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Profile Desc	ription: (Describe	to the dept	h needed to docum	nent the in	ndicator	or confirm	the absence of	indicato	rs.)	
Depth	Matrix		Redox	Features	3					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remarks	
0-18	10YR 4/1	95	5YR 4/6	5	С	M, PL	Silty clay loam			
		·								
		·								
			·							
. <u></u>		·								
		letion, RM=	Reduced Matrix, MS	=Masked	Sand Gra	ains.	<sup>2</sup> Location: PL=			
Hydric Soil I									oblematic Hy	
Histosol			Dark Surface						10) <b>(MLRA 1</b>	
	ipedon (A2)		Polyvalue Bel						Redox (A16)	
Black His	. ,		Thin Dark Su			47, 148)		MLRA 147		(540)
	n Sulfide (A4) Layers (A5)		Loamy Gleye Depleted Mat		-2)			MLRA 136	odplain Soils	(F19)
	ck (A10) <b>(LRR N)</b>		Redox Dark S		6)		•		Dark Surface	(TE12)
	Below Dark Surface	e (A11)	Depleted Dar	•	,				n in Remarks	
	rk Surface (A12)		Redox Depre					o. ( <u>=</u> ,tp.c		/
	ucky Mineral (S1) (L	.RR N,	Iron-Mangane			LRR N,				
	147, 148)		MLRA 136		. , .					
Sandy G	leyed Matrix (S4)		Umbric Surfa	ce (F13) <b>(</b>	MLRA 13	6, 122)	<sup>3</sup> Indica	ators of hy	drophytic veg	getation and
Sandy R	edox (S5)		Piedmont Flo					nd hydrol	ogy must be	present,
	Matrix (S6)		Red Parent M	laterial (F	21) <b>(MLR</b>	A 127, 147	') unles	ss disturbe	ed or problem	atic.
Restrictive L	ayer (if observed):									
Туре:									V	
Depth (inc	:hes):						Hydric Soil Pr	resent?	Yes X	No
Remarks:	udria apil india	otor wa	a mat							
	ydric soil indic		is mei.							

Project/Site: Eisenhower Drive Extension	City/County: Hanove	r/Adams	Sampling Date: 11/08/2017		
Applicant/Owner: PennDOT District 8-0	State: PA	Sampling Point: DP-9-UPL			
Investigator(s): CPN, GE	Section, Township, R	ange: Conewago Township			
Landform (hillslope, terrace, etc.): Terrace		nvex, none): <u>None</u>	Slope (%): <u>&lt;3</u>		
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 55" N Lo	ong:77°02' 08" W	Datum: WGS84		
Soil Map Unit Name: <sup>Dunning silty clay loam - Dy</sup>		NWI classifi	cation: N/A		
Are climatic / hydrologic conditions on the site typical for th	is time of year? Yes X No	(If no, explain in F	Remarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are	e "Normal Circumstances"	present? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If	needed, explain any answe	ers in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>	
Remarks:						
Upland plot in riparian woodlands to the northwest of WET-9.						

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Hydrogen Sulfide Odor (C1)</li> <li>Saturation (A3)</li> <li>Oxidized Rhizospheres on Living</li> <li>Water Marks (B1)</li> <li>Presence of Reduced Iron (C4)</li> <li>Sediment Deposits (B2)</li> <li>Recent Iron Reduction in Tilled So</li> <li>Drift Deposits (B3)</li> <li>Thin Muck Surface (C7)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water-Stained Leaves (B9)</li> </ul>	<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>
Aquatic Fauna (B13) Field Observations:	FAC-Neutral Test (D5)
Surface Water Present?       Yes No X       Depth (inches):         Water Table Present?       Yes No X       Depth (inches):         Saturation Present?       Yes No X       Depth (inches):         (includes capillary fringe)       Ves No X       Depth (inches):         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect       Google Earth 2017, Web Soil Survey of Adams County.	Wetland Hydrology Present? Yes No X
Remarks: No wetland hydrology indicators were met.	

Sampling Point: DP-9-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <sup>15' Radius</sup> ) 1. <sup>Acer negundo</sup>	<u>% Cover</u> 25	Species? Yes	Status FAC	Number of Dominant Species That Are OBL, FACW, or FAC: <sup>1</sup> (A)
2. Juglans nigra	25	Yes	FACU	That Are OBL, FACW, or FAC: $\frac{1}{2}$ (A)
3				Total Number of Dominant         Species Across All Strata: <sup>5</sup> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 20% (A/B)
6				Prevalence Index worksheet:
	·	= Total Cov		Total % Cover of: Multiply by:
50% of total cover: <sup>25</sup>	20% of	total cover	. 10	OBL species x 1 =
Sapling Stratum (Plot size: 15' Radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
	:	= Total Cov	/er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover	: <u> </u>	1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' Radius)				2 - Dominance Test is >50%
1. Rubus phoenicolasius		Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Rosa multiflora	5	No	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	30	= Total Cov	/er	Definitions of Five Vegetation Strata:
50% of total cover: 15				
Herb Stratum (Plot size: <sup>15' Radius</sup> )				<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <sup>15' Radius</sup> ) 1. <sup>Alliaria petiolata</sup>	20% of			<b>Tree</b> – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>15' Radius</sup> )	20% of	total cover	. 6	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <sup>15' Radius</sup> ) 1. <sup>Alliaria petiolata</sup>	20% of	total cover	FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
Herb Stratum       (Plot size: 15' Radius )         1.       Alliaria petiolata )         2.       Phytolacca americana )	20% of	total cover	FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines,</li> </ul>
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Herb Stratum       (Plot size: 15' Radius )         1.       Alliaria petiolata )         2.       Phytolacca americana )	20% of <u>15</u>	Yes Yes	. 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> </ul>
Herb Stratum       (Plot size: 15' Radius )         1.       Alliaria petiolata         2.       Phytolacca americana         3.       .         4.       .         5.       .	20% of 5	Yes Yes	. 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including</li> </ul>
Herb Stratum       (Plot size: 15' Radius )         1. Alliaria petiolata       )         2. Phytolacca americana       )         3	20% of 5	Yes Yes	. 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 5	Yes Yes	. 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
Herb Stratum       (Plot size: 15' Radius )         1. Alliaria petiolata       )         2. Phytolacca americana       )         3	20% of	Yes Yes	. 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of	Yes Yes	- 6 FACU FACU	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3</li> </ul>
Herb Stratum         (Plot size: 15' Radius )           1. Alliaria petiolata         )           2. Phytolacca americana         )           3.	20% of	Yes Yes	- 6 FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3.         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 10	20% of	Yes Yes	- 6 FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum         (Plot size: 15' Radius )           1. Alliaria petiolata         )           2. Phytolacca americana	20% of 	Yes Yes Yes Total Cov total cover	. 6 FACU FACU FACU Ver . 4	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3.         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 10	20% of 	Yes Yes	. 6 FACU FACU FACU Ver . 4	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum         (Plot size: 15' Radius )           1. Alliaria petiolata         )           2. Phytolacca americana	20% of 5  20% of  _	Yes Yes Yes Total Cov total cover	. 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3.         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 10         Woody Vine Stratum (Plot size: 15' Radius )         1. Vitis sp.	20% of 	Yes Yes Yes Total Cov total cover	. 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 	Yes Yes Yes Total Cov total cover	. 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 5    	Yes Yes Yes Total Cover Yes	- 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 15 5    20 20% of 20 	Yes Yes Yes Total Cover Yes	- 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 15 5 	Yes         Yes         Yes         Total Cover         Yes         Yes	- 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> <li>Hydrophytic</li> </ul>
Herb Stratum (Plot size: 15' Radius )         1. Alliaria petiolata         2. Phytolacca americana         3	20% of 5    	Yes         Yes         Yes         Total Cover         Yes         Yes	- 6 FACU FACU FACU 	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>

		e to the de				or confirr	m the absence of indicators.)
Depth (inchos)	Matrix Color (moist)	%	Color (moist)	<u>x Feature</u> %	s Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
<u>(inches)</u> 0-3	10YR 4/3	100		/0	<u>Type</u>	LUC	Loam
3-16	10YR 4/2	95	5YR 4/6	5	С	Μ	Silt loam
							· · · · · · · · · · · · _ /
							·
		nlation DM	Reduced Matrix, M	C Maakaa	l Cond Cr		<sup>2</sup> Lagation: DL Data Lining M Matrix
Hydric Soil			Reduced Matrix, M	S=IVIASKet	a Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils <sup>3</sup> :
Histosol			Dark Surface	(97)			2 cm Muck (A10) (MLRA 147)
	bipedon (A2)		Polyvalue Be	. ,	ce (S8) <b>(N</b>	II RA 147	
Black Hi			Thin Dark St				(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye	• •		,,	Piedmont Floodplain Soils (F19)
	Layers (A5)		Depleted Ma		,		(MLRA 136, 147)
	ick (A10) (LRR N)		Redox Dark		-6)		Very Shallow Dark Surface (TF12)
Depleted	d Below Dark Surfa	ce (A11)	Depleted Da	rk Surface	e (F7)		Other (Explain in Remarks)
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)		
Sandy M	lucky Mineral (S1)	(LRR N,	Iron-Mangan	ese Mass	es (F12) <b>(</b>	LRR N,	
MLRA	A 147, 148)		MLRA 13	6)			
	Bleyed Matrix (S4)		Umbric Surfa	, ,	•		<sup>3</sup> Indicators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo	•	, ,	•	, , ,
	Matrix (S6)		Red Parent I	Material (F	21) <b>(MLR</b>	A 127, 14	7) unless disturbed or problematic.
	_ayer (if observed	):					
Туре:							×
Depth (ind	ches):						Hydric Soil Present? Yes <u>X</u> No
Remarks:	برطيتاه ممثل أبعرا	lootor w					
н	ydric soil ind	icator w	as met.				

Project/Site: Eisenhower Drive Extension	nover/Adams	San	Sampling Date: 11/09/2017		
Applicant/Owner: PennDOT District 8-0			ampling Point:		
Investigator(s): CPN, GE	Section, Townsh	nip, Range: <u>Cone</u>	wago Township		
Landform (hillslope, terrace, etc.): Depressional	Local relief (concav			Slope	(%): <2
	39º 48' 55" N		7°02' 06" W	Datum:	WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classification	: PEM	
Are climatic / hydrologic conditions on the site typical for this time	e of year? Yes X	No (If	no, explain in Remar	rks.)	
Are Vegetation <u><sup>No</sup></u> , Soil <u><sup>No</sup></u> , or Hydrology <u><sup>No</sup></u> signif	icantly disturbed?	Are "Normal C	ircumstances" prese	nt? Yes X	No
Are Vegetation <u><sup>No</sup></u> , Soil <u><sup>No</sup></u> , or Hydrology <u><sup>No</sup></u> natura	ally problematic?	(If needed, exp	plain any answers in	Remarks.)	

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No
Remarks: Small, emergent wetland I See the DP-9-UPL datash		•			ET-10.

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; cl	Surface Soil Cracks (B6)	
Primary Indicators (minimum of one is required; check all that apply)         ✓       Surface Water (A1)       True Aquatic Plants (B14)         ✓       High Water Table (A2)       Hydrogen Sulfide Odor (C1)         ✓       Saturation (A3)       ✓       Oxidized Rhizospheres on Living Roots (C3)         Water Marks (B1)       Presence of Reduced Iron (C4)         Sediment Deposits (B2)       Recent Iron Reduction in Tilled Soils (C6)         Drift Deposits (B3)       Thin Muck Surface (C7)         Algal Mat or Crust (B4)       Other (Explain in Remarks)         Iron Deposits (B5)		
		Shallow Aquitard (D3)
Water-Stained Leaves (B9)     Aquatic Fauna (B13)		Microtopographic Relief (D4) Y FAC-Neutral Test (D5)
Field Observations:		
Water Table Present?     Yes X     No       Saturation Present?     Yes X     No       (includes capillary fringe)     Yes X     No	Depth (inches): 1" Depth (inches): 1" Depth (inches): At surface	Wetland Hydrology Present? Yes <u>X</u> No
Describe Recorded Data (stream gauge, monitorin Google Earth 2017, Web Soil Survey		ions), if available:
Remarks: Multiple wetland hydrology indicat Hydrology perched atop a layer o Flags: WET 10-1 to WET 10-8.		rated soils.

Sampling Point: DP-10-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: 5' Radius )		Species?		Number of Dominant Species	4	
1				That Are OBL, FACW, or FAC:	1	(A)
2				Total Number of Dominant	4	
3				Species Across All Strata:	1	(B)
4				Percent of Dominant Species	100	
5				That Are OBL, FACW, or FAC:	100	(A/B)
6				Prevalence Index worksheet:		
		= Total Cov		Total % Cover of:	Multiply by:	
50% of total cover:	20% of	total cover:		OBL species	: 1 = <u> </u>	
Sapling Stratum (Plot size: 5' Radius )				FACW species x	( 2 = <u> </u>	
1				FAC species	x 3 =	
2				FACU species >	<u> </u>	
3				UPL species	x 5 =	
4				Column Totals: (/	۹)	(B)
5				Prevalence Index = B/A =		
6		= Total Cov		Hydrophytic Vegetation Indic		_
				<ul> <li>1 - Rapid Test for Hydrophy</li> </ul>		
50% of total cover:	20% of	total cover:		✓ 2 - Dominance Test is >509	e e	
Shrub Stratum (Plot size: <sup>5' Radius</sup> )				3 - Prevalence Index is ≤3.0		
1				4 - Morphological Adaptatic		nortina
2				data in Remarks or on a	separate sheet)	porting
3				Problematic Hydrophytic Ve	egetation <sup>1</sup> (Expla	in)
4						
5				<sup>1</sup> Indicators of hydric soil and we		must
6		= Total Cov		be present, unless disturbed or	-	
				Definitions of Five Vegetation	Strata:	
50% of total cover: Herb Stratum (Plot size: 5' Radius )	20% of	total cover:	<u> </u>	Tree - Woody plants, excluding		
1 Phalaris arundinacea	95	Yes	FACW	approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter at		
2						,
3				Sapling – Woody plants, exclude approximately 20 ft (6 m) or mo		
4				than 3 in. (7.6 cm) DBH.		
5				Shrub – Woody plants, excludir	na woody vines.	
6				approximately 3 to 20 ft (1 to 6		
7				Herb – All herbaceous (non-wo	odv) plants inclu	Idina
8.				herbaceous vines, regardless o	f size, and woody	y Ű
9				plants, except woody vines, less ft (1 m) in height.	s than approxima	ately 3
10						
11				Woody vine – All woody vines,	regardless of he	ight.
	05	= Total Cov	er			
50% of total cover: 47.5	20% of	total cover	19			
Woody Vine Stratum (Plot size: 5' Radius )	2070 01					
1)						
2						
3						
4						
5						
		= Total Cov	er	Hydrophytic Vegetation		
50% of total cover:				Present? Yes $\frac{X}{X}$	No	
Remarks: (Include photo numbers here or on a separate s						
Ludren butie us potetien in die ster use	,					

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

S	Ο	I	L
-	~		_

Profile Desc	ription: (Describe	to the dep	th needed to docum	ent the i	ndicator	or confirm	the absence of indicators.)	
Depth	Matrix			Features	\$			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		arks
0-3	10YR 4/3	100					Silt loam	
3-14	10YR 5/1	95	5YR 4/6	5	С	M,PL	Silty clay loam	
						·		
		·				·		
<u> </u>		·				·		
						·		
·		·				·	· ·	
<u> </u>		·				·		
<sup>1</sup> Type: C=Co	oncentration. D=Dep	letion. RM=	Reduced Matrix, MS	=Masked	Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining, M=N	latrix.
Hydric Soil I			, -			-	Indicators for Problema	
Histosol	(A1)		Dark Surface	(S7)			2 cm Muck (A10) <b>(ML</b>	LRA 147)
Histic Ep	pipedon (A2)		Polyvalue Bel		ce (S8) <b>(N</b>	ILRA 147	148) Coast Prairie Redox	(A16)
Black His	stic (A3)		Thin Dark Sur	face (S9)	(MLRA 1	47, 148)	(MLRA 147, 148)	
	n Sulfide (A4)		Loamy Gleyed	,	F2)		Piedmont Floodplain	Soils (F19)
	Layers (A5)		Depleted Materia				(MLRA 136, 147)	
	ick (A10) <b>(LRR N)</b>	- ( )	Redox Dark S				Very Shallow Dark Su	
	d Below Dark Surface ark Surface (A12)	e (A11)	Depleted Dark Redox Depres				Other (Explain in Rer	narks)
	lucky Mineral (S1) <b>(L</b>	RRN	Iron-Mangane					
-	<b>147, 148)</b>	-ixix i <b>x</b> ,	MLRA 136		55 (1 12) (	LINIX IN,		
	ileyed Matrix (S4)		Umbric Surfac		MLRA 13	6. 122)	<sup>3</sup> Indicators of hydrophyt	ic vegetation and
	edox (S5)		Piedmont Floo					-
-	Matrix (S6)		Red Parent M					
Restrictive L	_ayer (if observed):							
Туре:								
Depth (inc	ches):						Hydric Soil Present? Yes X	< <u>No</u>
Remarks:								
H	ydric soil indic	cator wa	as met.					

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Ad	ams	Sampling Date: 11/13/2017		
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point:		
Investigator(s): CPN, GE	Section, Township, Rang	je: Conewago Township			
Landform (hillslope, terrace, etc.): Depressional	Local relief (concave, conve		Slope (%): <a></a>		
Subregion (LRR or MLRA): MLRA 148 Lat:	39°48' 51" N Long:	77°0'21" W	Datum: WGS84		
Soil Map Unit Name: _ <sup>Dunning silty clay loam - Dy</sup>		NWI classific	cation: PEM		
Are climatic / hydrologic conditions on the site typical for t	his time of year? Yes X No	(If no, explain in R	Remarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_significantly disturbed? Are "N	ormal Circumstances"	present? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_naturally problematic? (If need	ded, explain any answe	ers in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No		
Remarks:							
Small wetland to the east of WUS-8 and west of recreational fields.							

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓       Surface Water (A1)	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes X       No       Depth (inches): 0-3"         Water Table Present?       Yes X       No       Depth (inches): At surface         Saturation Present?       Yes X       No       Depth (inches): 0-6"	Wetland Hydrology Present? Yes X No
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec Google Earth 2017, Web Soil Survey of Adams County. Remarks: Multiple wetland hydrology indicators were met. Hydrology is supplied by a small seep in the wetland. Water table was not observed in the auger pit, but was obs Flags: WET 11-1 to WET 11-8.	tions), if available:

Sampling Point: DP-11-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: <sup>10' Radius</sup> )		Species?		Number of Dominant Species
1				That Are OBL, FACW, or FAC: 2 (A)
2				Total Number of Dominant
3				Species Across All Strata: (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 100 (A/B)
6				Prevalence Index worksheet:
		= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover:	20% of	total cover		OBL species         x 1 =
Sapling Stratum (Plot size: 10' Radius )				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species          x 5 =
4		·		Column Totals:
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 10' Radius )				✓ 2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3				data in Remarks or on a separate sheet)
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
·		= Total Cov	er	be present, unless disturbed or problematic.
				Definitions of Five Vegetation Strata:
50% of total cover:	20% 01	total cover		Tree – Woody plants, excluding woody vines,
<u>Herb Stratum</u> (Plot size: <sup>10' Radius</sup> ) 1. Phalaris arundinacea	45	Yes	FACW	approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).
2. Pycnanthemum sp.		 No	NI	
3. Carex stricta	20	Yes	OBL	<b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
4. Mimulus ringens	3	 No	FACW	than 3 in. (7.6 cm) DBH.
4. United ingene 5. Cirsium sp.	5	No	NI	
				<b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7		·		<b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody
8		·		plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11	70	·		
	78	= Total Cov	er	
50% of total cover: <sup>39</sup>	20% of	total cover	15.6	
Woody Vine Stratum (Plot size: <sup>10' Radius</sup> )				
1				
2		·		
3				
4				
5				
		= Total Cov		Hydrophytic Vegetation
50% of total cover:				Present? Yes $\frac{X}{}$ No
Remarks: (Include photo numbers here or on a separate			<u> </u>	
Remarks. (include photo numbers here of on a separate	,			

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

Depth	Cription: (Descrii Matrix		-	ment the ox Feature		or contirr	n the absence of indic	ators.)
(inches)	Color (moist)	%	Color (moist)	<u>%</u>	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-6	10YR 4/2	90	5YR 4/6	10	С	M,PL	Silt loam	
6-14	10YR 5/1	95	10YR 6/6	5	С	M,PL	Clay	
							·	
						·		
			·			·		
							·	
			·					
							·	
<sup>1</sup> Tvpe: C=C	oncentration. D=D	Depletion. RM	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location: PL=Pore	Lining. M=Matrix.
Hydric Soil		-1 ,	,					r Problematic Hydric Soils <sup>3</sup> :
Histoso	l (A1)		Dark Surfac					ck (A10) <b>(MLRA 147)</b>
	pipedon (A2)		Polyvalue B					airie Redox (A16)
	istic (A3)		Thin Dark S			47, 148)		147, 148)
	en Sulfide (A4)		Loamy Gley		(F2)			Floodplain Soils (F19)
	d Layers (A5)		Depleted Ma	. ,				136, 147)
	uck (A10) <b>(LRR N)</b> d Below Dark Surf		Redox Dark Depleted Da	•	,			llow Dark Surface (TF12) plain in Remarks)
	ark Surface (A12)		Redox Depr					
	Mucky Mineral (S1	) (LRR N,	Iron-Mangar	•	,	LRR N,		
MLR	A 147, 148)		MLRA 13					
	Gleyed Matrix (S4)	1	Umbric Surfa	. ,	•			of hydrophytic vegetation and
	Redox (S5)		Piedmont FI	•	. ,	•		drology must be present,
	d Matrix (S6)		Red Parent	Material (	F21) <b>(MLR</b>	A 127, 14	7) unless dist	urbed or problematic.
	Layer (if observe	d):						
Туре:								
Depth (in	icnes):						Hydric Soil Presen	t? Yes X No
Remarks:	lydric soil ind	dicator w	as met.					
	•							

Project/Site: Eisenhower Drive Extension	City/County: Hanov	er/Adams	Sampling Date: 11/13/2017		
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-11-UPL		
Investigator(s): CPN, GE	Section, Township,	Range: Conewago Township			
Landform (hillslope, terrace, etc.): <u>Terrace</u>		onvex, none): <u>None</u>	Slope (%): <u>&lt;2</u>		
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 51" N	ong: 77º0'21" W	Datum: WGS84		
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classif	ication: N/A		
Are climatic / hydrologic conditions on the site typical for th	is time of year? Yes X No	o (If no, explain in I	Remarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? A	re "Normal Circumstances"	present? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (It	needed, explain any answ	ers in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>×</u> Yes Yes	No No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					
Upland plot located south	of WET-11	and adjacen	t to a large fallow fie	ld.	
		-	-		

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Set	bils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes No $\frac{X}{2}$ Depth (inches):	
Water Table Present? Yes No X Depth (inches):	
Saturation Present? Yes <u>No X</u> Depth (inches): (includes capillary fringe)	Wetland Hydrology Present? Yes No $\frac{\times}{}$
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2017, Web Soil Survey of Adams County.	
Remarks:	
No wetland hydrology indicators were met.	
, ,	

Sampling Point: DP-11-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 30' Radius )		Species?		Number of Dominant Species
1. Acer saccharinum	20	Yes	FACW	That Are OBL, FACW, or FAC: 4 (A)
2. Acer negundo	35	Yes	FAC	Total Number of Dominant
3. Morus alba	10	No	UPL	Species Across All Strata: 5 (B)
4. Prunus serotina	10	No	FACU	Percent of Dominant Species
5				That Are OBL, FACW, or FAC: <u>80%</u> (A/B)
6				
		= Total Cov		Prevalence Index worksheet:
50% of total cover: 37.5	20% of	total cover	15	Total % Cover of: Multiply by:
Sapling Stratum (Plot size: 15' Radius )	2070 01			OBL species x 1 =
				FACW species x 2 =
1				FAC species x 3 =
2				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation
Shrub Stratum (Plot size: 15' Radius )				✓ 2 - Dominance Test is >50%
1. <u>Crataegus sp.</u>	2	Yes	NI	3 - Prevalence Index is ≤3.0 <sup>1</sup>
				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
2				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
	2	= Total Cov	er	Definitions of Five Vegetation Strata:
50% of total cover: 1	20% of	total cover:	.4	Tree Mandy planta availuding woody vince
Herb Stratum (Plot size: <sup>5' Radius</sup> )				<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
1. Microstegium vimineum	85	Yes	FAC	(7.6 cm) or larger in diameter at breast height (DBH).
2. Allium sp.	3	No	NI	Conting Weather laste and discussed wines
3. Ligustrum vulgare	1	No	FACU	<b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less
0				than 3 in. (7.6 cm) DBH.
T5				<b>Shruh</b> Weady planta avaluding weady vince
0			<u> </u>	<b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				woody vine – All woody vines, regardless of height.
	89	= Total Cov	er	
50% of total cover: 44.5	20% of	total cover	17.8	
Woody Vine Stratum (Plot size: 30' Radius )	2070 01			
1. Lonicera japonica	5	Yes	FACU	
2 Toxicodendron radicans	10	Yes	FAC	
2		100		
3	·			
4	·			
5				Hydrophytic
	15	= Total Cov	er	Vegetation
50% of total cover: 7.5	20% of	total cover:	3	Present? Yes <u>×</u> No
Remarks: (Include photo numbers here or on a separate s				
Hydrophytic vegetation indicator was	met.			

Color (moist)       %       Color (moist)       %       Type <sup>1</sup> Loc <sup>7</sup> Texture       Remarks         0-8       10YR 4/2       100	Depth	Matrice						the absence		- /	
0-8         10YR 4/2         100         Silt loam           8-14         10YR 5/6         90         10YR 5/8         10         Silty clay loam           8-14         10YR 5/6         90         10YR 5/8         10         Silty clay loam           8-14         10YR 5/6         90         10YR 5/8         10         Silty clay loam           90         10YR 5/8         10         Silty clay loam	(inches)	<u>Matrix</u> Color (moist)	%				Loc <sup>2</sup>	Texture		Remarks	
Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)	0-8										
Type:       C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. <sup>2</sup> Location: PL=Pore Lining, M=Matrix.         Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147, 148)         Histosol (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Histosol (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Bolow Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Dapressions (F8)       Sandy Mucky Minerai (S1) (LRR N,         Sandy Sleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         Sandy Redox (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Restrictive Layer (if observed):       Red Paren	8-14	10YR 5/6	90	10YR 5/8	10			Silty clay loam			
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :											
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :					<u> </u>				<u></u>		
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :									<u> </u>		
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :											
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :											
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :									<u></u>		
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :					<u> </u>				<u></u>		
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :											
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :											
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :					·				· ·		
Hydric Soil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :					·						
Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histos (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)			pletion, RM	I=Reduced Matrix, M	S=Masked	Sand Gra	ains.				
Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 136, 122)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:	•									•	
Black Histic (A3)		· · /			. ,						47)
Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 147, 148)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 127, 147)       unless disturbed or problematic.         Restrictive Layer (if observed):       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:								148)			
Stratified Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 136)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Restrictive Layer (if observed):       Type:       No X         Depth (inches):       Depth (inches):       No X							47, 148)				/ <b></b>
2 cm Muck (A10) (LRR N)					•	-2)		'		•	(F19)
Depleted Below Dark Surface (A11)     Depleted Dark Surface (F7)     Cother (Explain in Remarks)     Redox Depressions (F8)     Sandy Mucky Mineral (S1) (LRR N,     MLRA 147, 148)     MLRA 147, 148)     Sandy Gleyed Matrix (S4)     Depleted Dark Surface (F13) (MLRA 136, 122)     Sandy Redox (S5)     Piedmont Floodplain Soils (F19) (MLRA 148)     wetland hydrology must be present,     stripped Matrix (S6)     Red Parent Material (F21) (MLRA 127, 147)     unless disturbed or problematic.  Restrictive Layer (if observed):     Type:     Depth (inches):     De						<b>C</b> )		,			
Thick Dark Surface (A12)   Sandy Mucky Mineral (S1) (LRR N,   MLRA 147, 148)   Sandy Gleyed Matrix (S4)   Sandy Redox (S5)   Piedmont Floodplain Soils (F19) (MLRA 148)   Stripped Matrix (S6)   Restrictive Layer (if observed):   Type:   Depth (inches):   Restrictive Layer (if conserved):   Type:   Piedmont Floodplain Soils (F19) (MLRA 127, 147)   Hydric Soil Present?   Yes No X			o (A11)		•	,					
Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) Sandy Gleyed Matrix (S4) Sandy Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 136, 122) Sitripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) Unless disturbed or problematic. Restrictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes No X			e (ATT)			. ,			otner (⊏xpiai	n in Remarks	)
MLRA 147, 148)       MLRA 136)											
Sandy Gleyed Matrix (S4)Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.          Sandy Redox (S5)      Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)      Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic.         Restrictive Layer (if observed):			LIXIX IN,	-		5 (I 12) <b>(</b>	LIXIX I <b>X</b> ,				
Sandy Redox (S5)Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, 						MI R 4 13	6 122)	<sup>3</sup> In	dicators of hy	drophytic veg	etation and
Stripped Matrix (S6)Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic.  Restrictive Layer (if observed):  Type: Depth (inches): Hydric Soil Present? Yes No X											
Restrictive Layer (if observed):									-		
Type:	Sandy R						,	,			
Depth (inches):          No X           Remarks:	Sandy R Stripped	Matrix (S6)	:								
Pomarka:	Sandy R Stripped Restrictive L	Matrix (S6)	:								
Remarks: No hydric soil indicators were met.	Sandy R Stripped Restrictive L Type:	Matrix (S6) .ayer (if observed)	:					Hydric Soi	il Procont?	Vos	No X
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed)	:					Hydric Soi	il Present?	Yes	No X
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	No <u>×</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	No <u>X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric So	il Present?	Yes	. No <u>X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Sol	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Soi	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Sol	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Sol	il Present?	Yes	<u>No X</u>
	Sandy R Stripped Restrictive L Type: Depth (inc	Matrix (S6) .ayer (if observed) ches):						Hydric Sol	il Present?	Yes	<u>No X</u>

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Adan	ns	Sampling Date: 11/13/2017
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-12-WET
Investigator(s): CPN, GE	Section, Township, Range:	Conewago Township	
Landform (hillslope, terrace, etc.): Depressional	Local relief (concave, convex,		Slope (%): _ <sup>&lt;3</sup>
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 48' 54" N Long:	77°0' 25" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classific	ation: PFO
Are climatic / hydrologic conditions on the site typical for	this time of year? Yes X No	(If no, explain in R	emarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_significantly disturbed? Are "Nor	mal Circumstances" p	present? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_naturally problematic? (If neede	d, explain any answe	rs in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No
Remarks:					
Wetland located to the east	st of WUS-	8 past the nor	rth end of the Clarks	s building.	

Primary Indicators (minimum of one is required; check all that apply)	Secondary Indicators (minimum of two required)
	Surface Soil Cracks (B6)
✓       Surface Water (A1)        True Aquatic Plants (B14)         ✓       High Water Table (A2)        Hydrogen Sulfide Odor (C1)         ✓       Saturation (A3)       ✓       Oxidized Rhizospheres on Living	<ul> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes X No Depth (inches): 1-2"	
Water Table Present? Yes X No Depth (inches): 7"	× · · · · · · · · · · · · · · · · · · ·
Saturation Present? Yes X No Depth (inches): 5" (includes capillary fringe)	Wetland Hydrology Present? Yes X No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspe	ctions), if available:
Google Earth 2017, Web Soil Survey of Adams County.	
Remarks: Multiple wetland hydrology indicators were met.	nd overland runoff.

Sampling Point: DP-12-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <sup>10' Radius</sup> )		Species?		Number of Dominant Species	
1. Fraxinus pennsylvanica	45	Yes	FACW	That Are OBL, FACW, or FAC: 3 (	(A)
2				Total Number of Dominant	
3					(B)
4				Percent of Dominant Species	
5					(A/B)
6			<u> </u>	Prevalence Index worksheet:	
	45	= Total Cov	er	Total % Cover of: Multiply by:	
50% of total cover: 22.5	20% of	total cover:	9	OBL species         x 1 =	
Sapling Stratum (Plot size: 10' Radius )				FACW species         x 2 =	
1				FAC species         x 3 =	
2				FACU species         x 4 =	
3				UPL species         x 5 =	
4				Column Totals:	
5					(0)
6				Prevalence Index = B/A =	_
	:	= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: 10' Radius )					
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>	
2				4 - Morphological Adaptations <sup>1</sup> (Provide suppo	orting
3				data in Remarks or on a separate sheet)	
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	)
5					
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology mube present, unless disturbed or problematic.	ust
		= Total Cov	er	•	
50% of total cover:				Definitions of Five Vegetation Strata:	
Herb Stratum (Plot size: <sup>5' Radius</sup> )	20 % 01	total cover.		<b>Tree</b> – Woody plants, excluding woody vines,	
1. Microstegium vimineum	65	Yes	FAC	approximately 20 ft (6 m) or more in height and 3 in (7.6 cm) or larger in diameter at breast height (DBI	
2. Phalaris arundinacea	5	No	FACW		,
3. Scirpus atrovirens	20	Yes	OBL	Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and les	s
3. <u> </u>				than 3 in. (7.6 cm) DBH.	
5				Shrub – Woody plants, excluding woody vines,	
5				approximately 3 to 20 ft (1 to 6 m) in height.	
6 7					·
8				Herb – All herbaceous (non-woody) plants, includi herbaceous vines, regardless of size, and woody	ng
9				plants, except woody vines, less than approximate	ely 3
9 10				ft (1 m) in height.	
11				Woody vine - All woody vines, regardless of heigh	ht.
11	00	= Total Cov			
45					
50% of total cover: 45	20% of	total cover:	10		
Woody Vine Stratum (Plot size: 10' Radius )					
1			. <u></u>		
2					
3					
4					
5				Hydrophytic	
		= Total Cov	er	Vegetation	
50% of total cover:	20% of	total cover:		Present? Yes $\frac{X}{}$ No	
Remarks: (Include photo numbers here or on a separate	,				

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

Depth inches)	Matrix Color (moist)	%	Color (moist)	ox Feature %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks	
-5	10YR 4/1	100	, <u></u>				Silt loam		
-12	10YR 4/1	95	7.5YR 4/6	5	С	M, PL	Silt loam	Small rock fragments (5%)	
					·				
				. <u> </u>	. <u> </u>				
vpe: C=C	oncentration. D=D	Depletion, RM	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location:	 PL=Pore Lining, M=Matrix.	
	Indicators:		· · · • • • • • • • · · · · · · · · · ·					cators for Problematic Hydr	ic Soils <sup>3</sup> :
Black Hi Hydroge Stratified 2 cm Mu Depleter Thick Da Sandy M	bipedon (A2) stic (A3) on Sulfide (A4) d Layers (A5) ick (A10) <b>(LRR N</b> d Below Dark Sur ark Surface (A12) Mucky Mineral (S1 A <b>147, 148)</b> Bleyed Matrix (S4)	face (A11) ) <b>(LRR N,</b>	Dark Surfac Polyvalue B Thin Dark S Loamy Gley Depleted Ma Redox Dark Depleted Da Redox Depr Iron-Mangar MLRA 1 Umbric Surf	elow Surfa urface (SS ed Matrix atrix (F3) Surface ( ark Surface essions (F nese Mass <b>36)</b>	9) (MLRA 1 (F2) F6) e (F7) F8) Ses (F12) (	47, 148) LRR N,	, 148)  	2 cm Muck (A10) <b>(MLRA 147</b> Coast Prairie Redox (A16) <b>(MLRA 147, 148)</b> Piedmont Floodplain Soils (F <b>(MLRA 136, 147)</b> Very Shallow Dark Surface (T Other (Explain in Remarks)	, 19) FF12)
	Redox (S5)		Piedmont Fl		•			vetland hydrology must be pre	
	Matrix (S6)		Red Parent	Material (I	=21) <b>(MLR</b>	A 127, 14	<b>7)</b> u	nless disturbed or problemati	с.
	Layer (if observe	ed):							
Type: Depth (in-	ches):						Hydric So	il Present? Yes X	No
<sup>emarks:</sup> H	ydric soil in	dicator w	vas met.				1		

Project/Site: Eisenhower Drive Extension	City/County: Hai	nover/Adams	S	Sampling Date: 11.	/13/2017
Applicant/Owner: PennDOT 8-0			State: PA	Sampling Point:	DP-12-UPL
Investigator(s): CPN, GE	Section, Townsh	nip, Range: C	onewago Township		
Landform (hillslope, terrace, etc.): Terrace	Local relief (concav	e, convex, no	ne): <u>None</u>	Slope	(%): <u>&lt;</u> 3
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 48' 54" N	_ Long:	77º0'23" W	Datum:	WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy			NWI classificat	ion: N/A	
Are climatic / hydrologic conditions on the site typical for this t	ime of year? Yes X	No	(If no, explain in Ren	marks.)	
Are Vegetation No, Soil No, or Hydrology No sig	nificantly disturbed?	Are "Norma	I Circumstances" pre	esent? Yes X	No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> nat	urally 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? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>×</u>
Remarks:					
Upland plot located in wo	odlands to	the east of W	ET-12.		

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1) True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (A3) Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled So	oils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes <u>No X</u> Depth (inches):	
Water Table Present? Yes No X Depth (inches):	
Saturation Present? Yes X No Depth (inches): 15"	Wetland Hydrology Present? Yes No $\frac{X}{2}$
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2017, Web Soil Survey of Adams County.	
Remarks: No wetland hydrology indicators were met. Saturation is not checked as an indicator because the dept	h was greater than 12".

Sampling Point: DP-12-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
<u>Tree Stratum</u> (Plot size: <u>30' Radius</u> )	% Cover	Species?	Status	Number of Dominant Species
1. Maclura pomifera	55	Yes	UPL	That Are OBL, FACW, or FAC: $(A)$
2				
				Total Number of Dominant
3				Species Across All Strata: <u>5</u> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: (A/B)
6				
	55	= Total Cov	er	Prevalence Index worksheet:
27.5				Total % Cover of: Multiply by:
50% of total cover: 27.5	20% of	total cover:		OBL species x 1 =
Sapling Stratum (Plot size: 15' Radius )				FACW species x 2 =
1				
2				FAC species x 3 =
				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	total cover:		
Shrub Stratum (Plot size: 15' Radius )				2 - Dominance Test is >50%
1. Rubus phoenicolasius	10	Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>
2. Ligustrum vulgare	5	Yes	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
3. Prunus serotina	5	Yes	FACU	data in Remarks or on a separate sheet)
				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov	er	Definitions of Five Vegetation Strata:
				Deminions of Five vegetation Strata.
50% of total cover: 10	20% of	total cover:	4	Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>5' Radius</sup> )				approximately 20 ft (6 m) or more in height and 3 in.
1. Microstegium vimineum	90	Yes	FAC	(7.6 cm) or larger in diameter at breast height (DBH).
2				Sapling – Woody plants, excluding woody vines,
3				approximately 20 ft (6 m) or more in height and less
				than 3 in. (7.6 cm) DBH.
4				
5				Shrub – Woody plants, excluding woody vines,
6				approximately 3 to 20 ft (1 to 6 m) in height.
7				Herb – All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
				plants, except woody vines, less than approximately 3
9				ft (1 m) in height.
10				Woody vine – All woody vines, regardless of height.
11				woody vine – All woody vines, regardless of height.
	00	= Total Cov	er	
			18	
50% of total cover: 45	20% of	total cover:		
Woody Vine Stratum (Plot size: 30' Radius )				
1				
2				
3				
4				
5				Hydrophytic
	:	= Total Cov	ər	Vegetation
				Present? Yes <u>No<sup><math>\chi</math></sup></u>
50% of total cover:		total cover:		
Remarks: (Include photo numbers here or on a separate	sheet.)			
Hydrophytic vegetation indicator was	met.			

Depth	Matrix		pth needed to docur Redo	x Features				,	
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Rema	irks
0-12	10YR 3/2	100					Silt loam		
12-15	10YR 4/2	95	10YR 5/6	5	С	М	Silty loam		
						·			
						·	<u> </u>		
					. <u></u>		<u> </u>		
						<u></u>			
							·		
		letion, RN	I=Reduced Matrix, M	S=Masked	Sand Gr	ains.	<sup>2</sup> Location: PL=P		
Hydric Soil	Indicators:						Indicators	s for Problemati	c Hydric Soils <sup>3</sup> :
Histosol	· · /		Dark Surface					Muck (A10) <b>(MLF</b>	
	pipedon (A2)		Polyvalue Be		· / ·		· · —	t Prairie Redox (A	A16)
	istic (A3)		Thin Dark Su			147, 148)		LRA 147, 148)	
	en Sulfide (A4) d Layers (A5)		Loamy Gleye		F2)			nont Floodplain S	50IIS (F19)
	uck (A10) <b>(LRR N)</b>		Depleted Ma Redox Dark		6)		(MLRA 136, 147) Very Shallow Dark Surface (TF12)		
	d Below Dark Surfac	e (A11)	Depleted Da					(Explain in Rem	
	ark Surface (A12)	· · /	Redox Depre		. ,				,
Sandy M	Mucky Mineral (S1) (	LRR N,	Iron-Mangan	ese Masse	es (F12) <b>(</b>	LRR N,			
	A 147, 148)		MLRA 13				<u>^</u>		
	Gleyed Matrix (S4)		Umbric Surfa					ors of hydrophytic	-
Sandy Redox (S5)       Piedmont Floodplain Soils (         Stripped Matrix (S6)       Red Parent Material (F21) (						d hydrology must			
	d Matrix (S6) Layer (if observed)	-	Red Parent i	viateriai (F.	21) (IVILR	A 127, 14	() uniess	disturbed or prob	piematic.
	Layer (il Observeu)	•							
Type:	-h ).						Ukudaia Cail Das		No X
Depth (in	cnes):						Hydric Soil Pre	sent? Yes	NO
Remarks: N	lo hydric soil i	ndicato	ors were met.						

Project/Site: Eisenhower Drive Extension	_ City/County: Hanover/A	Adams Sa	Sampling Date: 11/13/2017		
Applicant/Owner: PennDOT 8-0		State: PA	Sampling Point: DP-13-WET		
Investigator(s): CPN, GE	_ Section, Township, Rar	nge: <u>Conewago Township</u>			
Landform (hillslope, terrace, etc.): Depressional	_ocal relief (concave, conv		Slope (%): <a></a>		
Subregion (LRR or MLRA): MLRA 148 Lat: 39°4		g:77°00' 40" W	Datum: WGS84		
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classification	on: PEM		
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes X No	(If no, explain in Rem	arks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> significant	tly disturbed? Are "	Normal Circumstances" pres	sent? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally p	problematic? (If ne	eded, explain any answers i	n Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No		
Remarks:							
Depressional emergent wetland located north of the Clarks building and west of WUS-8.							

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓       Surface Water (A1)	<ul> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> </ul>
Aquatic Fauna (B13) Field Observations:	FAC-Neutral Test (D5)
Surface Water Present?       Yes X       No Depth (inches): 1"         Water Table Present?       Yes X       No Depth (inches): 13" in the pit         Saturation Present?       Yes X       No Depth (inches): 11         (includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect         Google Earth 2017, Web Soil Survey of Adams County.	Wetland Hydrology Present? Yes X No tions), if available:
Remarks: Multiple wetland hydrology indicators were met. Surface water, a high water table, and saturation were met wetland. Hydrology is supplied by a seasonally high groundwater tal Flags: WET 13-1 to WET 13-18.	-

Sampling Point: DP-13-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 15' Radius )		Species?		Number of Dominant Species	
1Acer negundo	25	Yes	FAC	That Are OBL, FACW, or FAC: $\frac{2}{2}$	(A)
2					
				Total Number of Dominant	
3				Species Across All Strata: 2	(B)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 100	(A/B)
6					
	25	= Total Cov	er	Prevalence Index worksheet:	
50% of total cover: <u>12.5</u>	20% of	total cover	5	Total % Cover of: Multiply by	
Sapling Stratum (Plot size: 15' Radius )	2070 01			OBL species x 1 =	
				FACW species x 2 =	
1				FAC species x 3 =	
2				FACU species x 4 =	
3				UPL species x 5 =	
4					
5				Column Totals: (A)	(B)
				Broyclopes Index - B/A -	
6		Table		Prevalence Index = B/A =	
		= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover:		1 - Rapid Test for Hydrophytic Vegetatic	n
Shrub Stratum (Plot size: <sup>15' Radius</sup> )				2 - Dominance Test is >50%	
1. Rosa multiflora	2	Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>	
2				4 - Morphological Adaptations <sup>1</sup> (Provide	supporting
				data in Remarks or on a separate sh	eet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (E	kplain)
4					
5				<sup>1</sup> Indicators of hydric soil and wetland hydrold	av must
6				be present, unless disturbed or problematic.	yy musi
	2	= Total Cov	er	Definitions of Five Vegetation Strata:	
50% of total cover: $\frac{2}{3}$				Deminions of the Vegetation of ata.	
	20 % 01			Tree - Woody plants, excluding woody vines	
Herb Stratum (Plot size: <sup>5' Radius</sup> )		N/	54.014	approximately 20 ft (6 m) or more in height a	nd 3 in.
1. Phalaris arundinacea	80	Yes	FACW	(7.6 cm) or larger in diameter at breast heigh	it (DBH).
2. Typha latifolia	15	No	OBL	Sapling – Woody plants, excluding woody v	ines.
3				approximately 20 ft (6 m) or more in height a	
4.				than 3 in. (7.6 cm) DBH.	
5	<u> </u>			Shrub – Woody plants, excluding woody vin	90
				approximately 3 to 20 ft (1 to 6 m) in height.	
6					
7				Herb – All herbaceous (non-woody) plants, i	
8					
				herbaceous vines, regardless of size, and we	oody
9				herbaceous vines, regardless of size, and we plants, except woody vines, less than approx	oody
9 10.				herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10				herbaceous vines, regardless of size, and we plants, except woody vines, less than approx	oody kimately 3
				herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10 11	95		  er	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10 11 50% of total cover: 47.5	95		  er	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10 11 50% of total cover: 47.5	95		  er	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10 11	95	= Total Cov	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height.	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height. <b>Woody vine</b> – All woody vines, regardless o	oody kimately 3
10	95	= Total Cov total cover:	er 19	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height. Woody vine – All woody vines, regardless of Hydrophytic Vegetation	body kimately 3 f height.
10	95	= Total Cov total cover:	er 19 	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height. Woody vine – All woody vines, regardless of Hydrophytic	oody kimately 3 f height.
10	95 20% of 	= Total Cov total cover:	er 19 	herbaceous vines, regardless of size, and we plants, except woody vines, less than approx ft (1 m) in height. Woody vine – All woody vines, regardless of Hydrophytic Vegetation	body kimately 3 f height.

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

		e to the de				or confirm	m the absence of indicators.)
Depth (inches)	<u>Matrix</u> Color (moist)	%	Color (moist)	<u>x Feature</u> %	s Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
0-2	10YR 4/2	100		/0	Туре		Silt loam
2-16	10YR 4/1	95	5YR 4/6	5	С	M, PL	Silty clay loam
							· · · · · · _ · _
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<sup>1</sup> Type: C=Co	oncentration, D=De	pletion, RN	I=Reduced Matrix, M	S=Masked	d Sand Gr	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indicators for Problematic Hydric Soils <sup>3</sup> :
<u> </u>	(A1)		Dark Surface	e (S7)			2 cm Muck (A10) (MLRA 147)
·	pipedon (A2)		Polyvalue Be		· / ·		
Black Hi	( )		Thin Dark Su			47, 148)	(MLRA 147, 148)
	n Sulfide (A4)		Loamy Gleye		(F2)		Piedmont Floodplain Soils (F19)
	Layers (A5)		✓ Depleted Ma	• •	-0)		(MLRA 136, 147)
	ck (A10) <b>(LRR N)</b> I Below Dark Surfac	co (A11)	Redox Dark Depleted Da	•			Very Shallow Dark Surface (TF12) Other (Explain in Remarks)
·	ark Surface (A12)		Redox Depre		( )		
	lucky Mineral (S1)		Iron-Mangan	· ·	,		
	147, 148)	(,	MLRA 13			,	
	leyed Matrix (S4)		Umbric Surfa		(MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo				
-	Matrix (S6)		Red Parent N				
Restrictive L	ayer (if observed)	):					
Type:							
Depth (ind	ches):						Hydric Soil Present? Yes $\frac{X}{2}$ No
Remarks:	ydric soil indi	cotor w	vac mot				
П	yunc son mu		as met.				

Project/Site: Eisenhower Drive Extension	City/County: Hanover	Adams	Sampling Date: 11/13/2017
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-13-UPL
Investigator(s): CPN, GE	Section, Township, Ra	ange: Conewago Township	
Landform (hillslope, terrace, etc.): Terrace		vex, none): Very slightly con	Slope (%): <u>&lt;3</u>
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 49' 02" N Lo	ng:77º0'41" W	Datum: WGS84
Soil Map Unit Name:		NWI classific	cation: N/A
Are climatic / hydrologic conditions on the site typical for thi	s time of year? Yes X No	(If no, explain in R	Remarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are	"Normal Circumstances" p	present? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> r	naturally problematic? (If n	eeded, explain any answe	ers in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					
Upland plot to the west of	WET-13, a	adjacent to a l	arge agricultural fiel	d.	

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
	<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> </ul>
Field Observations:	
Surface Water Present?       Yes No X Depth (inches):         Water Table Present?       Yes No X Depth (inches):         Saturation Present?       Yes No X Depth (inches):         (includes capillary fringe)       Depth (inches):         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspect         Google Earth 2017, Web Soil Survey of Adams County.	Wetland Hydrology Present? Yes No X
Remarks: No wetland hydrology indicators were met.	

Sampling Point: DP-13-UPL

, , , , , , , , , , , , , , , , , , ,	Abaaluta	Dominant	Indiantar	Deminence Test werksheet
<u>Tree Stratum</u> (Plot size: <sup>15' Radius</sup> )		Dominant Species?		Dominance Test worksheet:
1 Juglans nigra	20	Yes	FACU	Number of Dominant Species
··				That Are OBL, FACW, or FAC: (A)
2				Total Number of Dominant
3				Species Across All Strata: <sup>4</sup> (B)
4				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 25% (A/B)
6				
	20	= Total Cov	/er	Prevalence Index worksheet:
				Total % Cover of: Multiply by:
50% of total cover: <sup>10</sup>	20% of	f total cover	. 11	OBL species x 1 =
Sapling Stratum (Plot size: 15' Radius )				
				FACW species x 2 =
1				FAC species x 3 =
2			·	FACU species x 4 =
3				
4				UPL species x 5 =
				Column Totals: (A) (B)
5			·	
6				Prevalence Index = B/A =
		= Total Cov	/er	Hydrophytic Vegetation Indicators:
				1 - Rapid Test for Hydrophytic Vegetation
50% of total cover:	20% of	f total cover	:	
Shrub Stratum (Plot size: <sup>15' Radius</sup> )				2 - Dominance Test is >50%
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>
				4 - Morphological Adaptations <sup>1</sup> (Provide supporting
2				data in Remarks or on a separate sheet)
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
4				
5				
			·	<sup>1</sup> Indicators of hydric soil and wetland hydrology must
6				be present, unless disturbed or problematic.
		= Total Cov	/er	Definitions of Five Vegetation Strata:
50% of total cover				Definitions of Five Vegetation Strata:
50% of total cover:				<b>Tree</b> – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>5' Radius</sup> )	20% of	f total cover	:	<b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in.
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Setaria faberi</sup>				<b>Tree</b> – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>5' Radius</sup> )	20% of	f total cover	:	<b>Tree</b> – 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).
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Setaria faberi 2. <sup>Ambrosia trifida</sup></sup>	20% of	f total cover	UPL FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines,</li> </ul>
Herb Stratum       (Plot size: 5' Radius )         1.       Setaria faberi         2.       Ambrosia trifida         3.       Grass sp.	20% of 20 25 40	f total cover	UPL FAC NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Setaria faberi 2. <sup>Ambrosia trifida</sup></sup>	20% of 20 20 25	f total cover	UPL FAC	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines,</li> </ul>
Herb Stratum       (Plot size: 5' Radius )         1. Setaria faberi       )         2. Ambrosia trifida       )         3. Grass sp.       .         4. Solidago sp.       .	20% of 20 25 40 5	f total cover	UPL FAC NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less</li> </ul>
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Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria faberi       )         2. Ambrosia trifida       )         3. Grass sp.       )         4. Solidago sp.       )         5	20% of 20 25 40 5	f total cover	UPL FAC NI NI	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody</li> </ul>
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Herb Stratum         (Plot size: 5' Radius )           1. Setaria faberi         )           2. Ambrosia trifida	20% of 20 25 40 5 	f total cover	UPL FAC NI NI Ver 18	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum       (Plot size: 5' Radius )         1. Setaria faberi       )         2. Ambrosia trifida       )         3. Grass sp.	20% of 25 40 5     	f total cover	UPL FAC NI NI Ver 18	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> </ul>
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Herb Stratum (Plot size: 5' Radius )         1. Setaria faberi         2. Ambrosia trifida         3. Grass sp.         4. Solidago sp.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 45         Woody Vine Stratum (Plot size: 15' Radius )         1.         2.         3.         4.	20% of 20 25 40 5 - - - - - - - - - - - - -	f total cover	UPL FAC NI NI Ver 18	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria faberi	20% of 20 25 40 5     	f total cover	UPL FAC NI NI Ver	<ul> <li>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).</li> <li>Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</li> <li>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.</li> <li>Woody vine – All woody vines, regardless of height.</li> </ul>
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Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Setaria faberi	20% of 20 25 40 5 - - - - - - - - - - - - -	f total cover	UPL FAC NI NI Ver 18 Ver 	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 _X

|--|

(inches)	Color (moist)	%	Color (moist)	<u>x Features</u> %	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks
)-2	10YR 4/4	100					Silt loam
2-8	10YR 4/4	95					Silt loam
	10YR 5/8	5					
3-16	10YR 4/4	75					Silt loam
	10YR 5/8	25					
	oncentration, D=De	pletion, RM	I=Reduced Matrix, M	S=Masked	Sand Gra	ains.	<sup>2</sup> Location: PL=Pore Lining, M=Matrix. Indicators for Problematic Hydric Soils
Histoso			Dark Surface	e (S7)			2 cm Muck (A10) (MLRA 147)
	pipedon (A2)		Polyvalue Be	elow Surfac			
	istic (A3)		Thin Dark Su			47, 148)	(MLRA 147, 148)
	en Sulfide (A4)		Loamy Gley	•	-2)		Piedmont Floodplain Soils (F19)
	d Layers (A5) uck (A10) <b>(LRR N)</b>		Depleted Ma Redox Dark		6)		(MLRA 136, 147) Very Shallow Dark Surface (TF12)
	d Below Dark Surfa	ce (A11)	Depleted Da	•	,		Other (Explain in Remarks)
	ark Surface (A12)		Redox Depre				
	Mucky Mineral (S1)	(LRR N,	Iron-Mangar			LRR N,	
-	A 147, 148)		MLRA 13		. , .		
_ Sandy (	Gleyed Matrix (S4)		Umbric Surfa	ace (F13) <b>(</b> I	MLRA 13	6, 122)	<sup>3</sup> Indicators of hydrophytic vegetation an
	Redox (S5)		Piedmont Fle				
	d Matrix (S6)		Red Parent	Material (F2	21) <b>(MLR</b>	A 127, 14	7) unless disturbed or problematic.
Type:	Layer (if observed)	):					
Depth (in	ches):						Hydric Soil Present? Yes No $\frac{X}{2}$
emarks:	lydric soil indi	ootor w					
	тусни. Som шкл		oc not mot				

Project/Site: Eisenhower Drive Extension	City/County: Hanover/A	Adams	Sampling Date: 11/14/2017
Applicant/Owner:		State: PA	Sampling Point: DP-14-WET
Investigator(s): CPN, GE	Section, Township, Rar	nge: <u>Conewago Township</u>	
Landform (hillslope, terrace, etc.): Depressional	Local relief (concave, conv		Slope (%): <u>&lt;3</u>
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 48' 39" N Long	g:77°0' 50" W	Datum: WGS84
Soil Map Unit Name: Conestoga silt loam - CnA		NWI classi	fication: PEM
Are climatic / hydrologic conditions on the site typical fo	r this time of year? Yes X No _	(If no, explain in	Remarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are "	Normal Circumstances'	" present? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If ne	eded, explain any answ	vers in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No
Remarks: Depressional emergent we and Kindig Lane.	etland loca	ted west of th	e Clarks building at	the corner	of Oxford Avenue

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓       Surface Water (A1)        True Aquatic Plants (B14)         ✓       High Water Table (A2)        Hydrogen Sulfide Odor (C1)         ✓       Saturation (A3)        Oxidized Rhizospheres on Living Roots	Dry-Season Water Table (C2)
Field Observations:	
Surface Water Present?       Yes X       No       Depth (inches): 5"         Water Table Present?       Yes X       No       Depth (inches): 5"         Saturation Present?       Yes X       No       Depth (inches): 3"       Wetl         (includes capillary fringe)       Depth (inches): 3"       Wetl         Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections),       Google Earth 2017, Web Soil Survey of Adams County.         Remarks:       Multiple wetland hydrology indicators were met.         Hydrology is supplied by a high water table and overland/roadw         Flags: WET 14-1 to 14-7.	

Sampling Point: DP-14-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
<u>Tree Stratum</u> (Plot size: <sup>5' Radius</sup> )		Species?		Number of Dominant Species	0	
1				That Are OBL, FACW, or FAC:	2	(A)
2				Total Number of Dominant		
3				Species Across All Strata:	2	(B)
4				Percent of Dominant Species		
5				That Are OBL, FACW, or FAC:	100	(A/B)
6				Prevalence Index worksheet:		
		= Total Cov	er	Total % Cover of:		
50% of total cover:	20% of	total cover:				
Sapling Stratum (Plot size: <sup>5' Radius</sup> )				OBL species		
1				FACW species 2		
2				FAC species		
3				FACU species x		
4				UPL species		
5				Column Totals: (	A)	(B)
6				Prevalence Index = B/A =	=	
·		= Total Cov		Hydrophytic Vegetation Indic		
500/ // /				<ul> <li>1 - Rapid Test for Hydroph</li> </ul>		
50% of total cover:	20% of	total cover:		✓ 2 - Dominance Test is >50	, 0	
Shrub Stratum (Plot size: <sup>5' Radius</sup> )				3 - Prevalence Index is ≤3.		
1				4 - Morphological Adaptation		onortina
2				data in Remarks or on a	a separate sheet	)
3				Problematic Hydrophytic V	•	
4						,
5				<sup>1</sup> Indicators of hydric soil and we	etland hydrology	must
6				be present, unless disturbed or		maor
		<ul> <li>Total Cov</li> </ul>	er	Definitions of First Manufation	01	
		- 10101 000		Definitions of Five Vegetation	i Strata:	
50% of total cover:						
50% of total cover: <u>Herb Stratum</u> (Plot size: _ <sup>5' Radius</sup> )				Tree – Woody plants, excluding approximately 20 ft (6 m) or mo	g woody vines,	3 in.
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Typha latifolia</sup>				Tree – Woody plants, excluding	g woody vines, ore in height and	
Herb Stratum (Plot size: <sup>5' Radius</sup> )	20% of	total cover:		<b>Tree</b> – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a	g woody vines, ore in height and t breast height (E	OBH).
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1. <sup>Typha latifolia</sup> 2. Leersia oryzoides	20% of 55 40	total cover: Yes Yes	OBL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclu approximately 20 ft (6 m) or mo	g woody vines, ore in height and t breast height (E ding woody vines	DBH). s,
Herb Stratum       (Plot size: <u>5' Radius</u> )         1. Typha latifolia       )         2. Leersia oryzoides       )         3	20% of 55 40	total cover: Yes Yes	OBL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a Sapling – Woody plants, exclu	g woody vines, ore in height and t breast height (E ding woody vines	DBH). s,
Herb Stratum       (Plot size: 5' Radius)         1. Typha latifolia       )         2. Leersia oryzoides	20% of	total cover: Yes Yes	OBL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclu approximately 20 ft (6 m) or mo	g woody vines, re in height and t breast height (E ding woody vines ore in height and	DBH). s,
Herb Stratum       (Plot size: 5' Radius)         1.       Typha latifolia         2.       Leersia oryzoides         3.	20% of 55 40	total cover: Yes Yes	OBL OBL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclu- approximately 20 ft (6 m) or mo than 3 in. (7.6 cm) DBH.	g woody vines, re in height and t breast height (E ding woody vines ore in height and ng woody vines,	DBH). s,
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Herb Stratum       (Plot size: 5' Radius)         1.       Typha latifolia         2.       Leersia oryzoides         3.	20% of 55 40	Yes Yes	OBL OBL	<ul> <li>Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a</li> <li>Sapling – Woody plants, exclua approximately 20 ft (6 m) or mo than 3 in. (7.6 cm) DBH.</li> <li>Shrub – Woody plants, excludi approximately 3 to 20 ft (1 to 6</li> <li>Herb – All herbaceous (non-work herbaceous vines, regardless or set of the set o</li></ul>	g woody vines, bre in height and t breast height (E ding woody vines bre in height and ng woody vines, m) in height. body) plants, inclu f size, and wood	DBH). s, less uding ly
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Herb Stratum       (Plot size: 5' Radius)         1. Typha latifolia	20% of 55 40      	Yes       Yes       Yes	OBL OBL	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclud approximately 20 ft (6 m) or mo than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excludi approximately 3 to 20 ft (1 to 6 <b>Herb</b> – All herbaceous (non-wo herbaceous vines, regardless of plants, except woody vines, les ft (1 m) in height. <b>Woody vine</b> – All woody vines,	g woody vines, re in height and t breast height (E ding woody vines, re in height and ng woody vines, m) in height. body) plants, inclu of size, and wood s than approxima , regardless of he	DBH). s, less uding ly ately 3
Herb Stratum (Plot size: 5' Radius )         1. Typha latifolia         2. Leersia oryzoides         3.         4.         5.         6.         7.         8.         9.         10.         11.         50% of total cover: 47.5         Woody Vine Stratum (Plot size: 5' Radius )         1.         2.         3.         4.	20% of 55 40      	Yes         Yes         Yes         Total Cover:         Total Cover:         Total Cover:         Total Cover:         Total Cover:	OBL OBL 	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclud approximately 20 ft (6 m) or mo than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excludi approximately 3 to 20 ft (1 to 6 <b>Herb</b> – All herbaceous (non-wo herbaceous vines, regardless of plants, except woody vines, les ft (1 m) in height. <b>Woody vine</b> – All woody vines,	g woody vines, ore in height and t breast height (E ding woody vines ore in height and ng woody vines, m) in height. body) plants, including f size, and wood s than approximal	DBH). s, less uding ly ately 3
Herb Stratum       (Plot size: 5' Radius)         1. Typha latifolia	20% of 55 40      	Yes         Yes         Yes         Total Cover:         Total Cover:         Total Cover:         Total Cover:         Total Cover:	OBL OBL 	Tree – Woody plants, excluding approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter a <b>Sapling</b> – Woody plants, exclud approximately 20 ft (6 m) or mo than 3 in. (7.6 cm) DBH. <b>Shrub</b> – Woody plants, excludi approximately 3 to 20 ft (1 to 6 <b>Herb</b> – All herbaceous (non-wo herbaceous vines, regardless of plants, except woody vines, les ft (1 m) in height. <b>Woody vine</b> – All woody vines,	g woody vines, re in height and t breast height (E ding woody vines, re in height and ng woody vines, m) in height. body) plants, inclu of size, and wood s than approxima , regardless of he	DBH). s, less uding ly ately 3

SOIL	

Profile Desc	ription: (Describ	pe to the de	pth needed to docu	nent the	indicator	or confirm	n the absence	of indicators.)
Depth	Matrix		Redo	x Feature				
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
0-2	10YR 2/1	100				·	Silt loam	
2-8	10YR 3/2	95	7.5YR 4/6	5	С	M, PL	Silt loam	Small rock fragments (5%)
8-14	10YR 7//8	80			_			Small rock fragments (10%)
	10YR 4/1	20						
					_			
<sup>1</sup> Type: C=Co	oncentration, D=D	epletion, RM	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.	<sup>2</sup> Location: P	L=Pore Lining, M=Matrix.
Hydric Soil I	ndicators:						Indic	ators for Problematic Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	e (S7)			2	2 cm Muck (A10) <b>(MLRA 147)</b>
Histic Ep	oipedon (A2)		Polyvalue Be	elow Surfa	ace (S8) <b>(N</b>	ILRA 147	, <b>148)</b> (	Coast Prairie Redox (A16)
Black Hi	stic (A3)		Thin Dark Su	urface (S	9) (MLRA 1	47, 148)		(MLRA 147, 148)
Hydroge	n Sulfide (A4)		Loamy Gleye	ed Matrix	(F2)		F	Piedmont Floodplain Soils (F19)
Stratified	l Layers (A5)		Depleted Ma					(MLRA 136, 147)
2 cm Mu	ck (A10) (LRR N)	1	<ul> <li>Redox Dark</li> </ul>	Surface (	F6)		ν.	/ery Shallow Dark Surface (TF12)
	Below Dark Surf		Depleted Da	rk Surfac	e (F7)			Other (Explain in Remarks)
-	ark Surface (A12)	· · /	Redox Depre					
	lucky Mineral (S1)	) (LRR N.	Iron-Mangan		,	LRR N.		
	147, 148)		MLRA 13			,		
	ileyed Matrix (S4)		Umbric Surfa		(MLRA 13	6, 122)	<sup>3</sup> Inc	licators of hydrophytic vegetation and
	edox (S5)		Piedmont Flo					etland hydrology must be present,
	Matrix (S6)		Red Parent I	Material (	F21) <b>(MLR</b>	A 127, 14	<b>7)</b> un	less disturbed or problematic.
	_ayer (if observe	d):						
Type:								X
Depth (ind	ches):		<u>.</u>				Hydric Soi	Present? Yes X No
Remarks:	ydric soil inc	dicator w	as met					
	yano oon ma							

Project/Site: Eisenhower Drive Extension	City/County: Hanove	r/Adams	Sampling Date: 11/14/2017
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point:
Investigator(s): CPN, GE	Section, Township, F	Range: Conewago Township	
Landform (hillslope, terrace, etc.): Depressional		onvex, none): Slightly concave	Slope (%): _ <sup>&lt;3</sup>
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 49' 07" N L	ong:77°0' 41" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classific	ation: PEM
Are climatic / hydrologic conditions on the site typical for this t	ime of year? Yes X No	(If no, explain in R	emarks.)
Are Vegetation No, Soil No, or Hydrology No sig	nificantly disturbed? Ar	e "Normal Circumstances" p	resent? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> na	turally problematic? (If	needed, explain any answei	rs in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No
Remarks: Depressional, emergent v and a riparian woodland.	vetland to t	he east of WL	IS-8 and situated be	tween a la	rge agricultural field

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
✓ Surface Water (A1)	Sparsely Vegetated Concave Surface (B8)
✓ High Water Table (A2) Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
✓ Saturation (A3) ✓ Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1) Presence of Reduced Iron (C4)	Dry-Season Water Table (C2)
Sediment Deposits (B2) Recent Iron Reduction in Tilled Se	oils (C6) Crayfish Burrows (C8)
Drift Deposits (B3) Thin Muck Surface (C7)	Saturation Visible on Aerial Imagery (C9)
Algal Mat or Crust (B4) Other (Explain in Remarks)	Stunted or Stressed Plants (D1)
Iron Deposits (B5)	Geomorphic Position (D2)
Inundation Visible on Aerial Imagery (B7)	Shallow Aquitard (D3)
Water-Stained Leaves (B9)	Microtopographic Relief (D4)
Aquatic Fauna (B13)	FAC-Neutral Test (D5)
Field Observations:	
Surface Water Present? Yes X No Depth (inches): 1-2"	
Water Table Present? Yes X No Depth (inches): 4"	
Saturation Present? Yes X No Depth (inches): 2"	Wetland Hydrology Present? Yes X No
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	ctions), if available:
Google Earth 2017, Web Soil Survey of Adams County.	

Sampling Point: DP-15-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: <sup>5' Radius</sup> )		Species?		Number of Dominant Species	
1				That Are OBL, FACW, or FAC: (A	4)
2				Total Number of Dominant	
3				Species Across All Strata: (E	3)
4				Percent of Dominant Species	
5				That Are OBL, FACW, or FAC: 100 (A	4∕B)
6				Prevalence Index worksheet:	
		= Total Cov		Total % Cover of: Multiply by:	
50% of total cover:	20% of	total cover:		OBL species x 1 =	
Sapling Stratum (Plot size: 5' Radius )				FACW species x 2 =	
1				FAC species x 3 =	
2				FACU species x 4 =	
3				UPL species x 5 =	
4				Column Totals: (A) (	(B)
5					
6				Prevalence Index = B/A =	
		= Total Cov	er	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover:		✓ 1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: <sup>5' Radius</sup> )				$\checkmark$ 2 - Dominance Test is >50%	
1				3 - Prevalence Index is ≤3.0 <sup>1</sup>	
2				4 - Morphological Adaptations <sup>1</sup> (Provide suppor data in Remarks or on a separate sheet)	rting
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
4					
5				<sup>1</sup> Indicators of hydric soil and wetland hydrology mus	st
6				be present, unless disturbed or problematic.	
		= Total Cov	er	Definitions of Five Vegetation Strata:	
50% of total cover:	20% of	total cover:		<b>Tree</b> – Woody plants, excluding woody vines,	
Herb Stratum (Plot size: <sup>5' Radius</sup> )				approximately 20 ft (6 m) or more in height and 3 in.	
1. Phalaris arundinacea	90	Yes	FACW	(7.6 cm) or larger in diameter at breast height (DBH	I).
2. Boehmeria cylindrica	3	No	FACW	Sapling – Woody plants, excluding woody vines,	
3. <u>Carex sp.</u>	2	No	NI	approximately 20 ft (6 m) or more in height and less	3
4				than 3 in. (7.6 cm) DBH.	
5				Shrub – Woody plants, excluding woody vines,	
6				approximately 3 to 20 ft (1 to 6 m) in height.	
7				Herb - All herbaceous (non-woody) plants, including	ıg
8				herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately	v3
9				ft (1 m) in height.	<i>y</i> 0
10				Woody vine – All woody vines, regardless of height	.+
11				Woody vine – All woody vines, regardless of height	ι. 
	95	= Total Cov	er		
50% of total cover: 47.5	20% of	total cover:	19		
Woody Vine Stratum (Plot size: 5' Radius )					
1	<u> </u>				
2					
3					
4					
5					
		= Total Cov	er	Hydrophytic Vegetation	
				- J - I - I - I - I - I - I - I - I - I	
50% of total cover:	20% of	total cover.		Present? Yes X No	

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

SOIL	

0-3       10YR 4/2       100	10YR 4/2         100         Silt loam           10YR 4/2         95         5YR 4/6         5         C         M, PL         Silt loam           10YR 4/2         95         5YR 4/6         5         C         M, PL         Clay           10YR 4/2         95         5YR 4/6         5         C         M, PL         Clay           10YR 4/2         95         5YR 4/6         5         C         M, PL         Clay           10YR 4/2         95         5YR 4/6         5         C         M, PL         Clay           10YR 4/2         95         5YR 4/6         5         C         M, PL         Clay           10	3       10YR 4/2       100	Depth inches)	Matriz Color (moist)		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture Remarks	
-12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay	10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay	12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10 <td></td> <td></td> <td></td> <td></td> <td>/0</td> <td></td> <td></td> <td></td> <td></td>					/0				
12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay	10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay	12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10YR 4/2       95       5YR 4/6       5       C       M, PL       Clay         12       10 <td>-6</td> <td>10YR 4/2</td> <td>95</td> <td>5YR 4/6</td> <td>5</td> <td>С</td> <td>M, PL</td> <td>Silt loam</td> <td></td>	-6	10YR 4/2	95	5YR 4/6	5	С	M, PL	Silt loam	
vdric Soil Indicators:       Indicators for Problematic	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:	·12	10YR 4/2	95	5YR 4/6	5	С		Clay	
ydric Soil Indicators:       Indicators for Problematic	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:									
vdric Soil Indicators:       Indicators for Problematic         _ Histosol (A1)       _ Dark Surface (S7)       _ 2 cm Muck (A10) (MLRA         _ Histic Epipedon (A2)       _ Polyvalue Below Surface (S8) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Black Histic (A3)       _ Thin Dark Surface (S9) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Hydrogen Sulfide (A4)       _ Loamy Gleyed Matrix (F2)       _ Piedmont Floodplain Soi         _ Stratified Layers (A5)       _ Depleted Matrix (F3)       _ (MLRA 136, 147)         _ 2 cm Muck (A10) (LRR N)       _ Redox Dark Surface (F6)       _ Very Shallow Dark Surface         _ Depleted Below Dark Surface (A11)       _ Depleted Dark Surface (F7)       _ Other (Explain in Remar         _ Thick Dark Surface (A12)       _ Redox Depressions (F8)       _ Iron-Manganese Masses (F12) (LRR N,         _ MLRA 147, 148)       MLRA 136)       MLRA 136)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:				·					
vdric Soil Indicators:       Indicators for Problematic         _ Histosol (A1)       _ Dark Surface (S7)       _ 2 cm Muck (A10) (MLRA         _ Histic Epipedon (A2)       _ Polyvalue Below Surface (S8) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Black Histic (A3)       _ Thin Dark Surface (S9) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Hydrogen Sulfide (A4)       _ Loamy Gleyed Matrix (F2)       _ Piedmont Floodplain Soi         _ Stratified Layers (A5)       _ Depleted Matrix (F3)       _ (MLRA 136, 147)         _ 2 cm Muck (A10) (LRR N)       _ Redox Dark Surface (F6)       _ Very Shallow Dark Surface         _ Depleted Below Dark Surface (A11)       _ Depleted Dark Surface (F7)       _ Other (Explain in Remar         _ Thick Dark Surface (A12)       _ Redox Depressions (F8)       _ Iron-Manganese Masses (F12) (LRR N,       _ MLRA 136)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:				·	<u> </u>				
Ordric Soil Indicators:       Indicators for Problematic         Histosol (A1)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:				- <u>-</u>					
Ordric Soil Indicators:       Indicators for Problematic         Histosol (A1)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:				·					
dric Soil Indicators:       Indicators for Problematic         Histosol (A1)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:									
Ordric Soil Indicators:       Indicators for Problematic         Histosol (A1)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:							<u> </u>		
vdric Soil Indicators:       Indicators for Problematic         _ Histosol (A1)       _ Dark Surface (S7)       _ 2 cm Muck (A10) (MLRA         _ Histic Epipedon (A2)       _ Polyvalue Below Surface (S8) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Black Histic (A3)       _ Thin Dark Surface (S9) (MLRA 147, 148)       _ Coast Prairie Redox (A1         _ Hydrogen Sulfide (A4)       _ Loamy Gleyed Matrix (F2)       _ Piedmont Floodplain Soi         _ Stratified Layers (A5)       _ Depleted Matrix (F3)       _ (MLRA 136, 147)         _ 2 cm Muck (A10) (LRR N)       _ Redox Dark Surface (F6)       _ Very Shallow Dark Surface         _ Depleted Below Dark Surface (A11)       _ Depleted Dark Surface (F7)       _ Other (Explain in Remar         _ Thick Dark Surface (A12)       _ Redox Depressions (F8)       _ Iron-Manganese Masses (F12) (LRR N,       _ MLRA 136)	bil Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> :         sol (A1)	Indicators:       Indicators for Problematic Hydric Soils <sup>3</sup> Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Type:									
<ul> <li>Histosol (A1)</li> <li>Dark Surface (S7)</li> <li>Polyvalue Below Surface (S8) (MLRA 147, 148)</li> <li>Black Histic (A3)</li> <li>Thin Dark Surface (S9) (MLRA 147, 148)</li> <li>Hydrogen Sulfide (A4)</li> <li>Loamy Gleyed Matrix (F2)</li> <li>Stratified Layers (A5)</li> <li>Depleted Matrix (F3)</li> <li>Redox Dark Surface (F6)</li> <li>Depleted Below Dark Surface (A11)</li> <li>Depleted Dark Surface (F7)</li> <li>Thick Dark Surface (A12)</li> <li>Redox Depressions (F8)</li> <li>Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)</li> </ul>	Sol (A1)Dark Surface (S7)2 cm Muck (A10) (MLRA 147)Epipedon (A2)Polyvalue Below Surface (S8) (MLRA 147, 148)Coast Prairie Redox (A16)Histic (A3)Thin Dark Surface (S9) (MLRA 147, 148)MLRA 147, 148)ogen Sulfide (A4)Loamy Gleyed Matrix (F2)Piedmont Floodplain Soils (F19)fied Layers (A5)✓ Depleted Matrix (F3)(MLRA 136, 147)Muck (A10) (LRR N)Redox Dark Surface (F6)Very Shallow Dark Surface (TF12)Dark Surface (A12)Redox Depressions (F8)Other (Explain in Remarks)y Mucky Mineral (S1) (LRR N, rg Gleyed Matrix (S4)Iron-Manganese Masses (F12) (LRR N, Piedmont Floodplain Soils (F19) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.	Histosol (A1)       Dark Surface (S7)       2 cm Muck (A10) (MLRA 147)         Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓ Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       Inless disturbed or problematic.         Type:	ype: C=C	oncentration, D=D	Depletion, RN	I=Reduced Matrix, N	1S=Maske	d Sand G	ains.		
Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A1 (MLRA 147, 148))         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soi (MLRA 136, 147)         Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surfac         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remar         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remar         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 136)	Epipedon (A2)Polyvalue Below Surface (S8) (MLRA 147, 148)Coast Prairie Redox (A16)Histic (A3)Thin Dark Surface (S9) (MLRA 147, 148)	Histic Epipedon (A2)       Polyvalue Below Surface (S8) (MLRA 147, 148)       Coast Prairie Redox (A16)         Black Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       Coast Prairie Redox (A16)         Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,	dric Soil	Indicators:						Indicators for Problematic Hydric S	oils <sup>3</sup> :
Black Histic (A3)	Histic (A3)       Thin Dark Surface (S9) (MLRA 147, 148)       (MLRA 147, 148)         ogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         fied Layers (A5)	Black Histic (A3)					. ,				
Hydrogen Sulfide (A4)      Loamy Gleyed Matrix (F2)      Piedmont Floodplain Soid         Stratified Layers (A5)      Depleted Matrix (F3)      (MLRA 136, 147)         2 cm Muck (A10) (LRR N)      Redox Dark Surface (F6)      Very Shallow Dark Surface         Depleted Below Dark Surface (A11)      Depleted Dark Surface (F7)      Other (Explain in Remark         Thick Dark Surface (A12)      Redox Depressions (F8)      Other (Explain in Remark         Sandy Mucky Mineral (S1) (LRR N,      Iron-Manganese Masses (F12) (LRR N,      NLRA 136)	orgen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         fied Layers (A5)       Depleted Matrix (F3)       (MLRA 136, 147)         Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         bed Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         y Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Iron-Manganese Masses (F12) (LRR N,         RA 147, 148)       MLRA 136)       Impric Surface (F13) (MLRA 136, 122)       Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         y Redox (S5)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.	Hydrogen Sulfide (A4)       Loamy Gleyed Matrix (F2)       Piedmont Floodplain Soils (F19)         Stratified Layers (A5)       Depleted Matrix (F3)       MLRA 136, 147)         2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       Other (Explain in Remarks)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122)       3 Indicators of hydrophytic vegetation and         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         strictive Layer (if observed):						· / •			
Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)	Image: Constraint of the second system of	Stratified Layers (A5)       ✓       Depleted Matrix (F3)       (MLRA 136, 147)         2 cm Muck (A10) (LRR N)							147, 148)		
2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remark         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remark         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 136)	Muck (A10) (LRR N)	2 cm Muck (A10) (LRR N)       Redox Dark Surface (F6)       Very Shallow Dark Surface (TF12)         Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Other (Explain in Remarks)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,       MLRA 147, 148)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         Strippe:						(F2)			
<ul> <li>Depleted Below Dark Surface (A11)</li> <li>Depleted Dark Surface (F7)</li> <li>Thick Dark Surface (A12)</li> <li>Redox Depressions (F8)</li> <li>Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)</li> <li>Depleted Dark Surface (F7)</li> <li>Depleted Dark Surface (F7)</li> <li>Other (Explain in Remarking the second secon</li></ul>	ted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Dark Surface (A12)       Redox Depressions (F8)       Iron-Manganese Masses (F12) (LRR N,         MLRA 136)       Iron-Manganese Masses (F12) (LRR N,       MLRA 136)         y Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and         y Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         unless disturbed or problematic.	Depleted Below Dark Surface (A11)       Depleted Dark Surface (F7)       Other (Explain in Remarks)         Thick Dark Surface (A12)       Redox Depressions (F8)       Iron-Manganese Masses (F12) (LRR N,         MLRA 147, 148)       MLRA 136)       Iron-Manganese Masses (F12) (LRR N,         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         strictive Layer (if observed):       Type:									
Thick Dark Surface (A12)       Redox Depressions (F8)         Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,         MLRA 147, 148)       MLRA 136)	Dark Surface (A12)	<ul> <li>Thick Dark Surface (A12)</li> <li>Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)</li> <li>Sandy Gleyed Matrix (S4)</li> <li>Sandy Redox (S5)</li> <li>Stripped Matrix (S6)</li> <li>Type:</li></ul>									.)
Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,         MLRA 147, 148)       MLRA 136)	y Mucky Mineral (S1) (LRR N, Iron-Manganese Masses (F12) (LRR N, MLRA 136) y Gleyed Matrix (S4) Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and y Redox (S5) Piedmont Floodplain Soils (F19) (MLRA 148) wetland hydrology must be present, unless disturbed or problematic.	Sandy Mucky Mineral (S1) (LRR N,       Iron-Manganese Masses (F12) (LRR N,         MLRA 147, 148)       MLRA 136)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122)         Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)         estrictive Layer (if observed):       Type:         Depth (inches):       Hydric Soil Present? Yes X								Other (Explain in Remarks)	
MLRA 147, 148) MLRA 136)	RA 147, 148)MLRA 136)y Gleyed Matrix (S4)Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.y Redox (S5)Red Parent Material (F21) (MLRA 127, 147)unless disturbed or problematic.	MLRA 147, 148)       MLRA 136)         Sandy Gleyed Matrix (S4)       Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       wetland hydrology must be present, unless disturbed or problematic.         estrictive Layer (if observed):       Type:       Hydric Soil Present? Yes X No	_	· · ·							
	y Gleyed Matrix (S4)Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.y Redox (S5)Red Parent Material (F21) (MLRA 127, 147)wetland hydrology must be present, unless disturbed or problematic.	_ Sandy Gleyed Matrix (S4)       _ Umbric Surface (F13) (MLRA 136, 122) <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.         _ Stripped Matrix (S6)       _ Red Parent Material (F21) (MLRA 127, 147)       wetland hydrology must be present, unless disturbed or problematic.         strictive Layer (if observed):       Type:       _         Depth (inches):       _       Hydric Soil Present? Yes X No _			) (LKK N,	-		ses (F12)	LKK N,		
	y Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present,         ved Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.	Sandy Redox (S5)       Piedmont Floodplain Soils (F19) (MLRA 148)       wetland hydrology must be present, unless disturbed or problematic.         Stripped Matrix (S6)       Red Parent Material (F21) (MLRA 127, 147)       unless disturbed or problematic.         strictive Layer (if observed):        Type:          Depth (inches):        Hydric Soil Present? Yes X No			N N				06 100)	<sup>3</sup> Indiactors of hydrophytic vogstation	and
	med Matrix (S6)	_ Stripped Matrix (S6) Red Parent Material (F21) (MLRA 127, 147) unless disturbed or problematic.  strictive Layer (if observed): Type: Depth (inches): Hydric Soil Present? Yes X No			)						
		Extrictive Layer (if observed):         Hydric Soil Present?         Yes X         No	-								ι,
		Type:		( )	ed):		material (				
		Depth (inches):         Hydric Soil Present?         Yes X         No									
				ches):						Hvdric Soil Present? Yes X No	
	(inches):	Hydric soil indicator was met.								,	
			H	lydric soil in	dicator w	/as met.					
Depth (inches): Hydric Soil Present? Yes		<sup>marks:</sup> Hydric soil indicator was met.								Hydric Soil Present? Yes <u>^</u> No	
		Tyunc son mulcator was met.	marks:	lydric soil in	dicator w	ias mot					
				iyunc son m		as met.					
<sup>emarks:</sup> Hydric soil indicator was met.											

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Ac	ams	Sampling Date: 11/14/2017
Applicant/Owner:		State: PA	Sampling Point: DP-15-UPL
Investigator(s): CPN, GE	Section, Township, Rang	ge: <u>Conewago Township</u>	
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, conve		Slope (%): <u>&lt;1</u>
Subregion (LRR or MLRA): MLRA 148 Lat:	39º 49' 06" N Long	77º0'42" W	Datum: WGS84
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classif	fication: N/A
Are climatic / hydrologic conditions on the site typical for	this time of year? Yes X No	(If no, explain in	Remarks.)
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_significantly disturbed? Are "N	ormal Circumstances"	' present? Yes X No
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	_naturally problematic? (If nee	ded, explain any answ	vers in Remarks.)

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					
Upland plot to the west of	WET-15 in	woodland ar	ea.		

	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	
Field Observations:	
Surface Water Present?         Yes         No X         Depth (inches):           Water Table Present?         Yes         No X         Depth (inches):           Saturation Present?         Yes         No X         Depth (inches):	Wetland Hydrology Present? Yes No $\frac{\chi}{2}$
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec Google Earth 2017, Web Soil Survey of Adams County.	, , , , , , , , , , , , , , , , , , , ,
(includes capillary fringe) Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspec	, , , , , , , , , , , , , , , , , , , ,

Sampling Point: DP-15-UPL

Tree Stratum (Piot size: <sup>15 Monte</sup>		Absolute	Dominant	Indicator	Dominance Test worksheet:
1. And schorthrum         15         Yes         PACW         That Are OBL, FACW, of PAC, 2         (A)           3.	Tree Stratum (Plot size: 15' Radius )				
2	1. Acer saccharinum	15	Yes	FACW	
3.     Can wrunder Stratum     5     (B)       4.     Second A Stratum     5     (B)       6.     15     Total Cover     Total A CORE, FACW, or FAC     (A)     (A)       7.     Social cover     25     20% of total cover     3     Total A CORE, FACW, or FAC     Multiply by:       8.     Social cover     75     20% of total cover     3     Total A CORE, FACW, or FAC     Multiply by:       9.     Social cover     75     20% of total cover     3     Total X-CORE, FACW, or FAC     Multiply by:       9.     Social cover     75     20% of total cover     3     Total X-CORE     Total X-CORE, FACW, or FAC       9.     Social cover     72     20% of total cover     74     Total X-CORE, FACW, or FAC     Multiply by:       9.     Social cover     20% of total cover     20% of total cover     74     Total X-CORE, FACW, or FAC     1       9.     Total Cover     20% of total cover     20% of total cover     1	2				
5.					Species Across All Strata: <u>5</u> (B)
5.	4				Percent of Dominant Species
6.	5				
"Iss         Total Cover           Saping Stratum (Plot size: 15 Rada         Multiply by:           1         5         5         7         20% of total cover         5         7					
Soly of total cover: 75       20% of total cover: 3         Total %. Cover of			- Total Cov	or	Prevalence Index worksheet:
Saping Stratum (Plot size: 10 Redue       10 Redue       X =	7.5				Total % Cover of: Multiply by:
Sabla Statum (Plot size: 10 Model)       FACU species       x 2 =		20% of	total cover:	3	OBL species x 1 =
1	Sapling Stratum (Plot size: 15' Radius )				
2       X =	1				
3.       PACU Splutes       I = I         4.       Image: Splute splut splute splut sp					
4					FACU species x 4 =
5.       Column Treate:       (v)       (v)         6.					UPL species x 5 =
5.					Column Totals: (A) (B)
	5				
50% of total cover:       20% of total cover:       1       1       Rapid Test for Hydrophytic Vegetation         Shub Stratum (Plot size:       15       10       Yes       NU         3.       10       Yes       NU       2       Deminance Test is 50%         3.       10       Yes       NU       4       Horphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)         5.       1       -	6				Prevalence Index = B/A =
50% of total cover:       20% of total cover:       1       1       Rapid Test for Hydrophytic Vegetation         Shub Stratum (Plot size:       15       10       Yes       NU         3.       10       Yes       NU       2       Deminance Test is 50%         3.       10       Yes       NU       4       Horphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)         5.       1       -		:	= Total Cov	er	Hydrophytic Vegetation Indicators:
Shrub Stratum (Plot size: 15 Radua )       35       Yes       FACU		000/ /			
1       35       Yes       FACU         2       Rubus psp.       10       Yes       NI         3		20% of	total cover:		
2       Rubus sp.       10       Yes       NI	Shrub Stratum (Plot size: 15' Radius )				
3		35	Yes	FACU	
3	2. Rubus sp.	10	Yes	NI	4 - Morphological Adaptations <sup>1</sup> (Provide supporting
4					data in Remarks or on a separate sheet)
5.					Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
6.					
8.       45       = Total Cover         50% of total cover:       22.5       20% of total cover:       9         1.       35       Yes       FAC         2.       Setaria faberi       10       Yes       FAC         3.       Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and is. (7.6 cm) or larger in diameter at breast height (DBH).       Saping – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 31 in. (7.6 cm) DBH.         4.       5       No       FACU         6.       Cirsium arvense       5       No       FACU         7.       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 31 in. (7.6 cm) DBH.         8.       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         9.       -       -       -       -       -         10.       -       -       -       -       -         9.       -       -       -       -       -         9.       -       -       -       -       -         10.       -       -       -       -       -       -	5				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
45       = Total Cover         50% of total cover:       22.5         20% of total cover:       25         20% of total cover:       25         20% of total cover:       25         20% of total cover:       26         40       35       Yes         41       6       No         5       No       FACU         5       No       FACU         6       5       No         7	6				be present, unless disturbed or problematic.
50% of total cover: <sup>22.5</sup> 20% of total cover: <sup>9</sup> 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).         2       Setaria faberi       10       Yes       UPL         3.       Phytolacca americana       5       No       FACU         4.       Galum mollugo       10       Yes       FACU         5       No       FACU       Spring - Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7, 6 cm) DBH.         4.       Saturia petiolata       5       No       FACU         6.       Cirstum aivense       5       No       FACU         7.       Saturia petiolata       5       No       FACU         8.       Situm aivense       5       No       FACU         9.       Saturia petiolata       5       No       FACU         10.       Trace - All herbaceous vines, regardless of size, and woody vines, approximately 3 to 20 tf (1 to 6 m) in height.         11.       Total cover:       20% of total cover: 14       Woody vine - All woody vines, regardless of height.         12.       Total cover:       35       20% of total cover:       4         3.       Statu		45 :	= Total Cov	er	
Herb Stratum (Plot size: 5' Radius       1       Microstegium vimineum       35       Yes       FAC         2. Setaria fabeiri       10       Yes       UPL       Sapling – 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).         3. Phytolacca americana       5       No       FACU         4. Galium mollugo       10       Yes       FACU         5. Allaria petiolata       5       No       FACU         6. Cirsium arvense       5       No       FACU         7.	500 of total accuracy $22.5$	200% af	4-4-1	9	Demitions of the vegetation of ata.
1       Microstegium vimineum       35       Yes       FAC       (7.6 cm) or larger in diameter at breast height (DBH).         2       Setaria fiaberi       10       Yes       VPL         3       Phytolacca americana       5       No       FACU         4       Galium mollugo       10       Yes       FACU         5       No       FACU       FACU       saproximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.         5.       No       FACU       saproximately 20 ft (1 to 6 m) in height.         6.       Cirsium arvense       5       No       FACU         7.       5       No       FACU       saproximately 20 ft (1 to 6 m) in height.         10.		20% 01	total cover.		Tree – Woody plants, excluding woody vines,
2. Setaria faberi       10       Yes       UPL         3. Phytolacca americana       5       No       FACU       approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.         5. Millaria petiolata       5       No       FACU       sproximately 20 ft (1 to 6 m) in height and less than 3 in. (7.6 cm) DBH.         6. Cirsium arvense       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         8.	Herb Stratum (Plot size: 5 Radius )				
3. Phytolacca americana       5       No       FACU       approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.         4. Galium mollugo       5       No       FACU       spring metrical (6 m) or more in height and less than 3 in. (7.6 cm) DBH.         5. Alliaria petiolata       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height.         6. Cirsium arvense       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         7	••	35	Yes	FAC	(7.6 cm) or larger in diameter at breast height (DBH).
3. Phytolacca americana       5       No       FACU       approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.         4. Galium mollugo       5       No       FACU       FACU       than 3 in. (7.6 cm) DBH.         5. Cirsium arvense       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         8.	2. Setaria faberi	10	Yes	UPL	Sapling – Woody plants, excluding woody vines
4. Galium mollugo       10       Yes       FACU       than 3 in. (7.6 cm) DBH.         5. Alliaria petiolata       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         6. Cirsium arvense       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         7.	3. Phytolacca americana	5	No	FACU	
5. Alliaria petiolata       5       No       FACU       Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.         6. Cirisium arvense       5       No       FACU       American approximately 3 to 20 ft (1 to 6 m) in height.         7	⊿ Galium mollugo	10	Yes	FACU	than 3 in. (7.6 cm) DBH.
6. Cirsium arvense       5       No       FACU       approximately 3 to 20 ft (1 to 6 m) in height.         7.		5	No	FACU	
0.					Shrub – woody plants, excluding woody vines,
8.	6. Cirsium arvense	5		FACU	
0.	7				Herb – All herbaceous (non-woody) plants, including
9.	8.				
10.					
11.       70       = Total Cover         50% of total cover:       35       20% of total cover:         14       10       10         Woody Vine Stratum (Plot size:       15' Radius       )         1.					n (n m) in neight.
11.       70       = Total Cover         50% of total cover:       35       20% of total cover:         14       15' Radius       )         1.					<b>Woody vine</b> – All woody vines, regardless of height.
	11				····, ··; ···;
Woody Vine Stratum (Plot size: 15' Radius )         1		70 :	= Total Cov	er	
Woody Vine Stratum (Plot size: 15' Radius )         1	50% of total cover: 35	20% of	total covor:	14	
1.		20 % 01			
2.					
3.	1				
3.	2				
4					
5.					
= Total Cover 50% of total cover: 20% of total cover: Present? Yes No X					
= Total Cover     Vegetation       50% of total cover: 20% of total cover:     Present?     Yes No_X       Remarks: (Include photo numbers here or on a separate sheet.)     Remarks: (Include photo numbers here or on a separate sheet.)     Remarks: (Include photo numbers here or on a separate sheet.)     Remarks: (Include photo numbers here or on a separate sheet.)	5				Hydrophytic
Remarks: (Include photo numbers here or on a separate sheet.)		:	= Total Cov	er	Vegetation
Remarks: (Include photo numbers here or on a separate sheet.)	50% of total cover	20% of	total cover.		Present? Yes No $\times$

Profile Description: (Describe to the c	epth needed to document the indicator or confirm	the absence	of indicato	ors.)	
Depth Matrix	Redox Features				
(inches) Color (moist) %	Color (moist) % Type <sup>1</sup> Loc <sup>2</sup>	Texture		Remark	s
0-14 10YR 4/3 100		Silt loam			
<sup>1</sup> Type: C-Concentration D-Depletion F		<sup>2</sup> Location: Pl	–Pore Lini	na M-Matri	×
Hydric Soil Indicators:					A. Hydric Soils <sup>3</sup> :
Histosol (A1)	Dark Surface (S7)			A10) <b>(MLRA</b>	-
Histic Epipedon (A2)	Polyvalue Below Surface (S8) (MLRA 147,		•	Redox (A1	•
Black Histic (A3)	Thin Dark Surface (S9) (MLRA 147, 148)	·, <u> </u>	(MLRA 14	•	- /
Hydrogen Sulfide (A4)	Loamy Gleyed Matrix (F2)	P	•	odplain Soi	ls (F19)
Stratified Layers (A5)	Depleted Matrix (F3)		(MLRA 13	6, 147)	
2 cm Muck (A10) (LRR N)	Redox Dark Surface (F6)			Dark Surfa	
Depleted Below Dark Surface (A11)	Depleted Dark Surface (F7)	0	ther (Explai	n in Remarl	ks)
Thick Dark Surface (A12)	Redox Depressions (F8)				
Sandy Mucky Mineral (S1) (LRR N,	Iron-Manganese Masses (F12) (LRR N,				
MLRA 147, 148)	MLRA 136)	31			a sector the second
Sandy Gleyed Matrix (S4) Sandy Redox (S5)	Umbric Surface (F13) (MLRA 136, 122) Piedmont Floodplain Soils (F19) (MLRA 14)			/aropnytic v logy must b	egetation and
Stripped Matrix (S6)	Red Parent Material (F21) (MLRA 127, 147		-	ed or proble	
Restrictive Layer (if observed):		/ un			inatio.
Туре:					
Depth (inches):		Hydric Soil	Present?	Yes	No
Remarks: No hydric soil indica	tors were met.				

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Adam	ns	Sampling Date: 11/14/2017		
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point:		
Investigator(s): CPN, GE	Section, Township, Range:	Conewago Township			
Landform (hillslope, terrace, etc.):	Local relief (concave, convex,		Slope (%): _ <sup>&lt;3</sup>		
Subregion (LRR or MLRA): <u>MLRA 148</u> Lat:	39º 49' 03" N Long:	77°0' 37" W	Datum: WGS84		
Soil Map Unit Name: <sup>Dunning silty clay loam - Dy</sup>		NWI classific	ation: PEM		
Are climatic / hydrologic conditions on the site typical for th	nis time of year? Yes X No	(If no, explain in R	emarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are "Norr	mal Circumstances" p	resent? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If needed	d, explain any answei	rs in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes <u>X</u>	No		
Remarks:							
Depressional, emergent wetland to the south of WET-15 and east of WUS-8, adjacent to a large agricultural field.							

Wetland Hydrology Indicato	ors:				Secondary Indicators (minimum of two required)
Primary Indicators (minimum	of one is rec	uired; chec	k all that apply)		Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Algal Mat or Crust (B4)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aer</li> <li>Water-Stained Leaves (B</li> <li>Aquatic Fauna (B13)</li> </ul>	0,	(B7)	True Aquatic Plants (B14) Hydrogen Sulfide Odor (C1) Oxidized Rhizospheres on Livin Presence of Reduced Iron (C4) Recent Iron Reduction in Tilled Thin Muck Surface (C7) Other (Explain in Remarks)	,	<ul> <li>Sparsely Vegetated Concave Surface (B8)</li> <li>Drainage Patterns (B10)</li> <li>Moss Trim Lines (B16)</li> <li>Dry-Season Water Table (C2)</li> <li>Crayfish Burrows (C8)</li> <li>Saturation Visible on Aerial Imagery (C9)</li> <li>Stunted or Stressed Plants (D1)</li> <li>Geomorphic Position (D2)</li> <li>Shallow Aquitard (D3)</li> <li>Microtopographic Relief (D4)</li> <li>FAC-Neutral Test (D5)</li> </ul>
Field Observations:					· · ·
Surface Water Present? Water Table Present? Saturation Present? (includes capillary fringe)	Yes <u>X</u> Yes <u>X</u>	_ No _ No	_ Depth (inches): <u>1-2"</u> _ Depth (inches): <u>3"</u> _ Depth (inches): <u>2"</u>		Hydrology Present? Yes X No
			well, aerial photos, previous inspe	ections), if ava	ailable:
Google Earth 2017, W	/eb Soil S	Survey o	of Adams County.		
Flags: WET 16-1 to	ed by a s WET 16	easona 5-10.	I water table and surfa		f perched atop a dense clay layer. ough episaturated conditions.

Sampling Point: DP-16-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: <sup>5' Radius</sup> )		Species?		Number of Dominant Species	4	
1				That Are OBL, FACW, or FAC:	1	(A)
2				Total Number of Dominant	4	
3				Species Across All Strata:	1	(B)
4				Percent of Dominant Species	100	
5				That Are OBL, FACW, or FAC:	100	(A/B)
6				Prevalence Index worksheet:		
		= Total Cov		Total % Cover of:	Multiply by:	
50% of total cover:	20% of	total cover:		OBL species	: 1 = <u> </u>	
Sapling Stratum (Plot size: 5' Radius )				FACW species x	( 2 = <u> </u>	
1				FAC species	x 3 =	
2				FACU species >	<u> </u>	
3				UPL species	x 5 =	
4				Column Totals: (/	۹)	(B)
5				Prevalence Index = B/A =		
6		= Total Cov		Hydrophytic Vegetation Indic		_
				<ul> <li>1 - Rapid Test for Hydrophy</li> </ul>		
50% of total cover:	20% of	total cover:		✓ 2 - Dominance Test is >509	e e	
Shrub Stratum (Plot size: <sup>5' Radius</sup> )				3 - Prevalence Index is ≤3.0		
1				4 - Morphological Adaptatic		nortina
2				data in Remarks or on a	separate sheet)	porting
3				Problematic Hydrophytic Ve	egetation <sup>1</sup> (Expla	in)
4						
5				<sup>1</sup> Indicators of hydric soil and we		must
6		= Total Cov		be present, unless disturbed or	-	
				Definitions of Five Vegetation	Strata:	
50% of total cover: Herb Stratum (Plot size: 5' Radius )	20% of	total cover:	<u> </u>	Tree - Woody plants, excluding		
1 Phalaris arundinacea	95	Yes	FACW	approximately 20 ft (6 m) or mo (7.6 cm) or larger in diameter at		
2						,
3				Sapling – Woody plants, exclude approximately 20 ft (6 m) or mo		
4				than 3 in. (7.6 cm) DBH.		
5				Shrub – Woody plants, excludir	na woody vines.	
6				approximately 3 to 20 ft (1 to 6		
7				Herb – All herbaceous (non-wo	odv) plants inclu	Idina
8.				herbaceous vines, regardless o	f size, and woody	y Ű
9				plants, except woody vines, less ft (1 m) in height.	s than approxima	ately 3
10						
11				Woody vine – All woody vines,	regardless of he	ight.
	05	= Total Cov	er			
50% of total cover: 47.5	20% of	total cover	19			
Woody Vine Stratum (Plot size: 5' Radius )	2070 01					
1)						
2						
3						
4						
5						
		= Total Cov	er	Hydrophytic Vegetation		
50% of total cover:				Present? Yes $\frac{X}{X}$	No	
Remarks: (Include photo numbers here or on a separate s						
Ludren butie us potetien in die ster use	,					

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

S	Ο	I	L
<b>U</b>	~		_

				ox Feature				
inches)	Color (moist)		Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks
-4	10YR 4/2	95	5YR 4/6	5	С	M, PL	Silt loam	
-12	10YR 4/2	90	5YR 4/6	10	С	M, PL	Clay	
		<u> </u>			<u> </u>			
					<u> </u>	·		
						·		
	oncentration, D=D	Depletion, RN	I=Reduced Matrix, M	S=Maske	d Sand Gr	ains.		ore Lining, M=Matrix. s for Problematic Hydric Soils <sup>3</sup>
_ Black Hi _ Hydroge _ Stratified	(A1) bipedon (A2) stic (A3) en Sulfide (A4) d Layers (A5) uck (A10) <b>(LRR N</b> )	)	Dark Surface Polyvalue Be Thin Dark Se Loamy Gleye ✓ Depleted Ma Redox Dark	elow Surfa urface (SS ed Matrix atrix (F3)	9) <b>(MLRA</b> <sup>-</sup> (F2)		, 148) Coast (ML Piedm (ML	Muck (A10) <b>(MLRA 147)</b> Prairie Redox (A16) <b>.RA 147, 148)</b> nont Floodplain Soils (F19) <b>.RA 136, 147)</b> Shallow Dark Surface (TF12)
_ Depleted _ Thick Da _ Sandy M	d Below Dark Sur ark Surface (A12) Jucky Mineral (S1 A 147, 148)	face (A11)	Depleted Da Redox Depr Iron-Mangar MLRA 13	irk Surfac essions (F nese Mase	e (F7) =8)	LRR N,		(Explain in Remarks)
_ Sandy G _ Sandy R	Bleyed Matrix (S4) Redox (S5) Matrix (S6)	)	Umbric Surfa Piedmont Fl Red Parent	ace (F13) oodplain \$	Soils (F19)	(MLRA 1	48) wetland	ors of hydrophytic vegetation and d hydrology must be present, disturbed or problematic.
	Layer (if observe	ed):						
Type:		,						
Depth (in	ches):						Hydric Soil Pres	sent? Yes X No
omarka:	ydric soil in	dicator w	/as met.					

Project/Site: Eisenhower Drive Extension	City/County: Han	City/County: <u>Hanover/Adams</u>			14/2017
Applicant/Owner: PennDOT District 8-0			State: PA	Sampling Point:	DP-16-UPL
Investigator(s): CPN, GE	Section, Townshi	p, Range: C	onewago Township		
Landform (hillslope, terrace, etc.): <u>Terrace</u>	Local relief (concave	e, convex, no	ne): <u>None</u>	Slope	(%): <u>&lt;1</u>
Subregion (LRR or MLRA): MLRA 148 Lat:	39°49' 02" N	Long:	77º0'37" W	Datum:	WGS84
Soil Map Unit Name: <sup>Dunning silty clay loam - Dy</sup>			NWI classificat	ion: N/A	
Are climatic / hydrologic conditions on the site typical for this	time of year? Yes X	No	(If no, explain in Rer	marks.)	
Are Vegetation <u><sup>No</sup></u> , Soil <u><sup>No</sup></u> , or Hydrology <u><sup>No</sup></u> sig	nificantly disturbed?	Are "Norma	I Circumstances" pre	esent? Yes X	No
Are Vegetation <u><sup>No</sup></u> , Soil <u><sup>No</sup></u> , or Hydrology <u><sup>No</sup></u> na	turally 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? Hydric Soil Present? Wetland Hydrology Present?	Yes <u>×</u> Yes Yes	No No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>×</u>	
Remarks:						
Upland plot located just west of WET-16.						

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is require	d; check all that apply)	Surface Soil Cracks (B6)
Surface Water (A1)	True Aquatic Plants (B14)	Sparsely Vegetated Concave Surface (B8)
High Water Table (A2)	Hydrogen Sulfide Odor (C1)	Drainage Patterns (B10)
Saturation (A3)	Oxidized Rhizospheres on Living	Roots (C3) Moss Trim Lines (B16)
Water Marks (B1)	Dry-Season Water Table (C2)	
Sediment Deposits (B2)	bils (C6) Crayfish Burrows (C8)	
Drift Deposits (B3)	Saturation Visible on Aerial Imagery (C9)	
Algal Mat or Crust (B4)	Stunted or Stressed Plants (D1)	
Iron Deposits (B5)	Geomorphic Position (D2)	
Inundation Visible on Aerial Imagery (B7)		Shallow Aquitard (D3)
Water-Stained Leaves (B9)		Microtopographic Relief (D4)
Aquatic Fauna (B13)		FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes No	o <u>X</u> Depth (inches):	
	o X Depth (inches):	
	D X Depth (inches):	Wetland Hydrology Present? Yes No $\frac{\chi}{2}$
Describe Recorded Data (stream gauge, mon	itoring well, aerial photos, previous inspec	tions), if available:
Google Earth 2017, Web Soil Sur	vey of Adams County.	
Remarks:		
No wetland hydrology indicator	s were met.	
, ,,		

Sampling Point: DP-16-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:
Tree Stratum (Plot size: 15' Radius )		Species?		Number of Dominant Species
1. <u>Acer saccharinum</u>	50	Yes	FACW	That Are OBL, FACW, or FAC: <u>3</u> (A)
2. Fraxinus pennsylvanica	40	Yes	FACW	Total Number of Dominant
3				Total Number of Dominant Species Across All Strata: <sup>4</sup> (B)
4				
				Percent of Dominant Species
5				That Are OBL, FACW, or FAC: 75% (A/B)
6				Prevalence Index worksheet:
	90	= Total Cov	er	Total % Cover of: Multiply by:
50% of total cover: 45	20% of	total cover:	18	
Sapling Stratum (Plot size: 15' Radius )				OBL species x 1 =
1				FACW species x 2 =
2				FAC species x 3 =
				FACU species x 4 =
3				UPL species x 5 =
4				Column Totals: (A) (B)
5				
6				Prevalence Index = B/A =
		= Total Cov	er	Hydrophytic Vegetation Indicators:
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation
	20 % 01			✓ 2 - Dominance Test is >50%
Shrub Stratum (Plot size: 15' Radius )				$3$ - Prevalence Index is $\leq 3.0^1$
1				
2				4 - Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)
3				
4				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)
5				
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must
0			~~~	be present, unless disturbed or problematic.
		= Total Cov		Definitions of Five Vegetation Strata:
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding woody vines,
Herb Stratum (Plot size: <sup>5' Radius</sup> )				approximately 20 ft (6 m) or more in height and 3 in.
1. Alliaria petiolata	10	Yes	FACU	(7.6 cm) or larger in diameter at breast height (DBH).
2. Rosa multiflora	5	No	FACU	Sapling – Woody plants, excluding woody vines,
3. Grass sp.	10	Yes	NI	approximately 20 ft (6 m) or more in height and less
4. Geum canadense	3	No	FACU	than 3 in. (7.6 cm) DBH.
-				
5				<b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.
6				
7				Herb - All herbaceous (non-woody) plants, including
8				herbaceous vines, regardless of size, and woody
				plants, except woody vines, less than approximately 3
				tt (1 m) in height
9				ft (1 m) in height.
9 10				tt (1 m) in height. Woody vine – All woody vines, regardless of height.
9				
9 10				
9 10	28	= Total Cov	er	
9 10 11 50% of total cover: <u>14</u>	28	= Total Cov	er	
9	28 20% of	= Total Cov total cover:	er 5.6	
9	28 20% of	= Total Cov total cover: Yes	er 5.6	
9	28 20% of 10	= Total Cov total cover: Yes	er 5.6	
9	28 20% of 10	= Total Cov total cover: Yes	er 5.6	
9	28 20% of 	= Total Cov total cover: Yes	er 5.6 FAC	
9	28 20% of 10	= Total Cov total cover: Yes	er 5.6 FAC	Woody vine – All woody vines, regardless of height.
9	28 20% of 	Total Cover: total cover: Yes	er 5.6 FAC	Woody vine – All woody vines, regardless of height.
9	28 20% of     	Total Cov total cover: Yes Total Cov	er 5.6 FAC  er	Woody vine – All woody vines, regardless of height. Hydrophytic Vegetation
9	28 20% of     	Total Cov total cover: Yes Total Cov	er 5.6 FAC  er	Woody vine – All woody vines, regardless of height.

SOIL	
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Profile Desc	cription: (Describe	to the de	pth needed to docur	nent the	indicator	or confirm	n the absenc	e of indicato	ors.)	
Depth	Matrix		Redo	x Feature	es1		_			
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture		Remark	
0-9	10YR 4/3	100			<u></u>		Silt loam	Medium si	zed rock fra	gments
9-12	10YR 4/2	96	7.5YR 4/6	4	С	M, PL	Silt loam			
			·					_		
					- <u> </u>					
					<u> </u>					
					·					
					- <u></u>					
					<u></u>					
								_		
					·					
<sup>1</sup> Type: C=C	oncentration, D=Dep	pletion, RM	I=Reduced Matrix, MS	S=Maske	d Sand Gi	ains.	<sup>2</sup> Location:	PL=Pore Lini	ng, M=Matr	ix.
Hydric Soil	Indicators:						Indi	cators for Pr	oblematic	Hydric Soils <sup>3</sup> :
Histosol	(A1)		Dark Surface	e (S7)				2 cm Muck (/	A10) (MLRA	A 147)
	pipedon (A2)		Polyvalue Be		ace (S8) <b>(I</b>	MLRA 147		Coast Prairie		
	istic (A3)		Thin Dark Su				· · · <u> </u>	(MLRA 14		,
	en Sulfide (A4)		Loamy Gleye			. ,		Piedmont Flo		ls (F19)
	d Layers (A5)		Depleted Ma					(MLRA 13	6, 147)	
2 cm Mu	uck (A10) (LRR N)		Redox Dark	Surface (I	F6)			Very Shallow	Dark Surfa	ce (TF12)
Deplete	d Below Dark Surfac	e (A11)	Depleted Dar	rk Surface	e (F7)			Other (Expla		
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)					
Sandy N	/lucky Mineral (S1) <b>(</b>	LRR N,	Iron-Mangan	ese Mass	ses (F12)	LRR N,				
MLR	A 147, 148)		MLRA 13	6)						
Sandy G	Bleyed Matrix (S4)		Umbric Surfa	ce (F13)	(MLRA 1	36, 122)	<sup>3</sup> lr	dicators of h	ydrophytic v	regetation and
Sandy F	Redox (S5)		Piedmont Flo	odplain S	Soils (F19)	(MLRA 14	<b>48)</b> v	etland hydro	logy must b	e present,
Stripped	l Matrix (S6)		Red Parent N	Naterial (F	-21) <b>(MLF</b>	A 127, 14	<b>7)</b> u	nless disturb	ed or proble	matic.
	Layer (if observed)	:								
Type: roc	ky substrate									
Depth (in	ches): <u>&gt; 12</u>						Hydric So	il Present?	Yes	No
Remarks:										
Н	ydric soil indi	cator w	as not met.							
А	uger refusal o	due to r	ocky substrate	and c	dense i	ootmat	ts.			
	- <b>5</b> -		,				_			

Project/Site: Eisenhower Drive Extension	_ City/County: Hanover/Ad	dams Sa	Sampling Date: 11/14/2017		
Applicant/Owner: PennDOT District 8-0		State: PA	Sampling Point: DP-17-WET		
Investigator(s): CPN, GE	Section, Township, Ran				
Landform (hillslope, terrace, etc.): Depressional	Local relief (concave, conve				
	AL 4 AL 1	g:77°0' 16" W	Datum: WGS84		
Soil Map Unit Name: Dunning silty clay loam - Dy		NWI classification	on: PEM		
Are climatic / hydrologic conditions on the site typical for this time of	year? Yes X No	(If no, explain in Rem	arks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> significant	tly disturbed? Are "N	Normal Circumstances" pres	sent? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u> naturally p	problematic? (If nee	eded, explain any answers i	n Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes X Yes X Yes X	No No No	Is the Sampled Area within a Wetland?	Yes X	No			
Remarks:			·					
Wetland located within a depressional channel between an upland area and a large agricultural field.								

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	Surface Soil Cracks (B6)
<ul> <li>Surface Water (A1)</li> <li>High Water Table (A2)</li> <li>Saturation (A3)</li> <li>Water Marks (B1)</li> <li>Sediment Deposits (B2)</li> <li>Drift Deposits (B3)</li> <li>Iron Deposits (B5)</li> <li>Inundation Visible on Aerial Imagery (B7)</li> <li>Water Fauna (B13)</li> </ul>	Dry-Season Water Table (C2)
Field Observations:	<u> </u>
Surface Water Present?       Yes X       No       Depth (inches): 1-2"         Water Table Present?       Yes No       Depth (inches): 0-4"       Wetland         Saturation Present?       Yes X       No       Depth (inches): 0-4"       Wetland         (includes capillary fringe)       Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if       Google Earth 2017, Web Soil Survey of Adams County.       Wetland         Remarks:       Multiple wetland hydrology indicators were met.       Hydrology supplied by a seasonally high water table and overlar Saturated soils are perched atop a dense clay layer (episaturation Saturation Saturated soils are perched atop a dense clay layer (episaturations)       Describe Record (episaturations)	nd/agricultural runoff.

Sampling Point: DP-17-WET

	Absolute	Dominant	Indicator	Dominance Test worksheet:		
Tree Stratum (Plot size: <sup>5' Radius</sup> )		Species?		Number of Dominant Species	1	
1				That Are OBL, FACW, or FAC:	1	(A)
2				Total Number of Dominant	4	
3				Species Across All Strata:	1	(B)
4				Percent of Dominant Species	100	
5				That Are OBL, FACW, or FAC:	100	(A/B)
6				Prevalence Index worksheet:		
		= Total Cov		Total % Cover of:	Multiply by:	
50% of total cover:	20% of	total cover:		OBL species x	1 =	
Sapling Stratum (Plot size: 5' Radius )				FACW species x	2 =	
1				FAC species x	3 =	
2				FACU species x	4 =	
3				UPL species x	5 =	
4				Column Totals: (A	A)	_ (B)
5				Prevalence Index = B/A =		
6		= Total Cov		Hydrophytic Vegetation Indica		_
				<ul> <li>1 - Rapid Test for Hydrophy</li> </ul>		
50% of total cover:	20% of	total cover:		✓ 2 - Dominance Test is >50%	0	
Shrub Stratum (Plot size: <sup>5' Radius</sup> )				3 - Prevalence Index is ≤3.0		
1				4 - Morphological Adaptatio		nortina
2				data in Remarks or on a	separate sheet)	porting
3				Problematic Hydrophytic Ve	egetation <sup>1</sup> (Explai	in)
4						
5				<sup>1</sup> Indicators of hydric soil and we		nust
6		= Total Cov	or	be present, unless disturbed or		
500/ // /				Definitions of Five Vegetation	Strata:	
50% of total cover:	20% of	total cover:		Tree – Woody plants, excluding		
<u>Herb Stratum</u> (Plot size: <sup>5' Radius</sup> ) 1 Phalaris arundinacea	85	Yes	FACW	approximately 20 ft (6 m) or more (7.6 cm) or larger in diameter at		
						,
2				Sapling – Woody plants, exclud approximately 20 ft (6 m) or more		
3			·	than 3 in. (7.6 cm) DBH.		000
4 5				Shrub – Woody plants, excludir	na woody vines	
6				approximately 3 to 20 ft (1 to 6 r		
7				Herb – All herbaceous (non-woo	ody) plants inclu	Idina
8.				herbaceous vines, regardless of		
9				plants, except woody vines, less ft (1 m) in height.	s than approxima	tely 3
10						
11.				Woody vine – All woody vines,	regardless of he	ight.
	05	= Total Cov	er			
50% of total cover: 42.5	20% of	total cover:	17			
Woody Vine Stratum (Plot size: 5' Radius )	20 % 01	total cover.				
1						
2						
3						
4						
5						
		= Total Cov	er	Hydrophytic Vegetation		
EDD/ of total acular				Present? Yes $\frac{X}{X}$	No	
50% of total cover:		total cover:	<u> </u>			
Remarks: (Include photo numbers here or on a separate	,					

Hydrophytic vegetation indicator was met. Plot sizes adjusted due to small size of wetland.

Depth	Matrix			ox Features	. 2	_			
(inches)	Color (moist)		Color (moist)	<u>%</u> Type <sup>1</sup>	Loc <sup>2</sup>	Texture	Remarks		
0-6	10YR 4/1	100				Silt loam	Small rock fragments (5%)		
6-12	10YR 4/1	95	10YR 5/6	<u>5</u> C	М	Silt loam	Small rock fragments (5%)		
				· ·					
			<u> </u>	· ·	·				
				· ·					
		Depletion, RN	A=Reduced Matrix, N	S=Masked Sand G	rains.		PL=Pore Lining, M=Matrix.		
•	Indicators:						cators for Problematic Hydric Soils <sup>3</sup>		
Histoso	. ,		Dark Surfac				2 cm Muck (A10) (MLRA 147)		
	pipedon (A2)			elow Surface (S8) (		′, 148) <u> </u>	Coast Prairie Redox (A16)		
	listic (A3)			urface (S9) (MLRA	147, 148)		(MLRA 147, 148)		
	en Sulfide (A4)			ed Matrix (F2)			Piedmont Floodplain Soils (F19)		
	d Layers (A5)	n.	✓ Depleted Ma	( )			(MLRA 136, 147)		
	uck (A10) (LRR N	•		Surface (F6)			Very Shallow Dark Surface (TF12)		
·	ed Below Dark Sur	. ,		ark Surface (F7)			Other (Explain in Remarks)		
	ark Surface (A12)			essions (F8)					
	Mucky Mineral (S1 <b>A 147, 148)</b>	) (LKK N,	MLRA 1	nese Masses (F12)	(LKK N,				
	Gleyed Matrix (S4	)		ace (F13) <b>(MLRA 1</b>	26 122)	<sup>3</sup> In	dicators of hydrophytic vegetation and		
	Redox (S5)	)		oodplain Soils (F19			vetland hydrology must be present,		
	d Matrix (S6)			Material (F21) (ML	, <b>.</b>	•	nless disturbed or problematic.		
	Layer (if observe	ad).			\A 127, 14	u u	mess distanced of problematic.		
Type:									
Depth (ir	nches):					Hydric So	il Present? Yes X No		
Remarks:	lydric soil in	dicator w	las mot						
1		ulcator w	103 11101.						

Project/Site: Eisenhower Drive Extension	City/County: Hanover/Adar	ns	Sampling Date: 11/13/2017		
Applicant/Owner:		State: PA	Sampling Point:		
Investigator(s): CPN, GE	Section, Township, Range	Section, Township, Range: Conewago Township			
Landform (hillslope, terrace, etc.): Terrace	Local relief (concave, convex,				
Subregion (LRR or MLRA): MLRA 148 La	t:39°48' 45" N Long:	77º 0' 11" W	Datum: WGS84		
Soil Map Unit Name: Penlaw silt loam - Pa		NWI classifi	cation: N/A		
Are climatic / hydrologic conditions on the site typical	for this time of year? Yes X No	(If no, explain in F	Remarks.)		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	significantly disturbed? Are "Nor	mal Circumstances"	present? Yes X No		
Are Vegetation <u>No</u> , Soil <u>No</u> , or Hydrology <u>No</u>	naturally problematic? (If neede	d, explain any answe	ers in Remarks.)		

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

Hydrophytic Vegetation Present? Hydric Soil Present? Wetland Hydrology Present?	Yes Yes Yes	No_X No_X No_X	Is the Sampled Area within a Wetland?	Yes	No <u>X</u>
Remarks:					
Upland plot located north	east of WU	S-8 on the no	rth side of Kindig La	ne.	
			Ū		

Wetland Hydrology Indicato	rs:	Secondary Indicators (minimum of two required)					
Primary Indicators (minimum of	of one is required; chec	Surface Soil Cracks (B6)					
Surface Water (A1)		Sparsely Vegetated Concave Surface (B8)					
High Water Table (A2)		Hydrogen Sulfide Odor (C1)		Drainage Patterns (B10)			
Saturation (A3)		Oxidized Rhizospheres on Living	Roots (C3)	Moss Trim Lines (B16)			
Water Marks (B1)		Presence of Reduced Iron (C4)		Dry-Season Water Table (C2)			
Sediment Deposits (B2)		Recent Iron Reduction in Tilled Sc	oils (C6)	Crayfish Burrows (C8)			
Drift Deposits (B3)		Thin Muck Surface (C7)		Saturation Visible on Aerial Imagery (C9)			
Algal Mat or Crust (B4)		Other (Explain in Remarks)		Stunted or Stressed Plants (D1)			
Iron Deposits (B5)				Geomorphic Position (D2)			
Inundation Visible on Aeri	al Imagery (B7)			Shallow Aquitard (D3)			
Water-Stained Leaves (B)	9)			Microtopographic Relief (D4)			
Aquatic Fauna (B13)				FAC-Neutral Test (D5)			
Field Observations:							
Surface Water Present?	Yes No X	_ Depth (inches):					
Water Table Present?		Depth (inches):					
Saturation Present?	Yes No _X	_ Depth (inches):	Wetland H	Hydrology Present? Yes No $\frac{X}{X}$			
(includes capillary fringe)							
(includes capillary fringe) Describe Recorded Data (stre	am gauge, monitoring	well, aerial photos, previous inspec	tions), if ava	ilable:			
			tions), if ava	ilable:			
Describe Recorded Data (stre			tions), if ava	ilable:			
Describe Recorded Data (stre Google Earth 2017, W	eb Soil Survey o	of Adams County.	tions), if ava	ilable:			
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					
Describe Recorded Data (stre Google Earth 2017, W Remarks: No wetland hydrolog	veb Soil Survey of the soil Surv	of Adams County.					

Sampling Point: DP-C-UPL

	Absolute	Dominant	Indicator	Dominance Test worksheet:	
Tree Stratum (Plot size: 15' Radius )		Species?		Number of Dominant Species	
1. Fraxinus pennsylvanica	15	No	FACW	That Are OBL, FACW, or FAC: 1 (A)	)
2. Acer negundo	65	Yes	FAC		
3				Total Number of Dominant Species Across All Strata: <sup>6</sup> (B)	)
4					·
				Percent of Dominant Species	( <b>-</b> )
5			·	That Are OBL, FACW, or FAC: $16.7\%$ (A/	В)
6	80		·	Prevalence Index worksheet:	
		= Total Cov		Total % Cover of: Multiply by:	
50% of total cover: 40	20% of	total cover:	. 16	OBL species         x 1 =	
Sapling Stratum (Plot size: 15' Radius )					
1				FACW species x 2 =	
2				FAC species x 3 =	
				FACU species x 4 =	
3				UPL species x 5 =	
4			·	Column Totals: (A) (E	3)
5			·		
6			·	Prevalence Index = B/A =	
		= Total Cov	rer	Hydrophytic Vegetation Indicators:	
50% of total cover:	20% of	total cover		1 - Rapid Test for Hydrophytic Vegetation	
Shrub Stratum (Plot size: 15' Radius )				2 - Dominance Test is >50%	
1. Lonicera morrowii	40	Yes	FACU	3 - Prevalence Index is ≤3.0 <sup>1</sup>	
2 Ligustrum vulgare	10	Yes	FACU	4 - Morphological Adaptations <sup>1</sup> (Provide supporti	ina
			1400	data in Remarks or on a separate sheet)	ing
3				Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
4			·		
5				1. All set and set the set of a set of set of the set o	
6				<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	•
	50	= Total Cov	er	Definitions of Five Vegetation Strata:	
50% of total cover: <sup>25</sup>				Deminitions of Five vegetation Strata.	
	20% 0	total cover		Tree – Woody plants, excluding woody vines,	
Herb Stratum (Plot size: <sup>5' Radius</sup> )	45	Mar.	FAOL	approximately 20 ft (6 m) or more in height and 3 in.	
1. Alliaria petiolata	15	Yes	FACU	(7.6 cm) or larger in diameter at breast height (DBH).	•
2. Ligustrum vulgare	10	Yes	FACU	Sapling – Woody plants, excluding woody vines,	
3. Allium canadense	5	No	FACU	approximately 20 ft (6 m) or more in height and less	
4				than 3 in. (7.6 cm) DBH.	
5.				Shrub – Woody plants, excluding woody vines,	
6				approximately 3 to 20 ft (1 to 6 m) in height.	
			·		-
7			·	Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody	1
8			·	plants, except woody vines, less than approximately	3
9			·	ft (1 m) in height.	
10				Woody vine – All woody vines, regardless of height.	
11				Woody vine – All woody vines, regardless of height.	
	30	= Total Cov	er		
50% of total cover: <sup>15</sup>	20% of	total cover	. 6		
	20 /8 01				
<u>Woody Vine Stratum</u> (Plot size: <sup>15' Radius</sup> ) 1 Lonicera japonica	40	Yes	FACU		
			·		
2. Toxicodendron radicans	5	No	FAC		
3					
4					
5			_		
	45	= Total Cov	rer	Hydrophytic Vegetation	
00 F				Present? Yes <u>No X</u>	
50% of total cover: 22.5		total cover:			
Remarks: (Include photo numbers here or on a separate	sheet.)				

No hydrophytic vegetation indicators were met. Plot sizes reduced due to narrow area.

Profile Desc	ription: (Describe	to the dept	h needed to docu	nent the i	ndicator o	or confirn	n the abser	nce of indicato	ors.)	
Depth	Matrix		Redo	x Feature	s					
(inches)	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>	Texture	<u> </u>	Remarks	
0-12	10YR 4/2	100					Silt loam			
				<u> </u>	<u> </u>					
. <u></u> .										
		. <u> </u>								
1							2			
	oncentration, D=Dep	letion, RM=	Reduced Matrix, M	S=Masked	I Sand Gra	ains.		: PL=Pore Lini		
Hydric Soil	ndicators:							dicators for Pr	•	
Histosol			Dark Surface					_ 2 cm Muck (A	<i>,</i> .	47)
Histic Ep	vipedon (A2)		Polyvalue Be				148)	Coast Prairie	Redox (A16)	
Black Hi	stic (A3)		Thin Dark Su	urface (S9)	) <b>(MLRA 1</b>	47, 148)		(MLRA 14		
Hydroge	n Sulfide (A4)		Loamy Gleye	ed Matrix (	F2)			Piedmont Flo	odplain Soils (	F19)
Stratified	l Layers (A5)		Depleted Ma					(MLRA 13	6, 147)	
2 cm Mu	ick (A10) <b>(LRR N)</b>		Redox Dark	Surface (F	6)			Very Shallow	Dark Surface	(TF12)
	d Below Dark Surfac	e (A11)	Depleted Da	rk Surface	(F7)			Other (Explai	in in Remarks)	
Thick Da	ark Surface (A12)		Redox Depre	essions (F	8)					
Sandy M	lucky Mineral (S1) <b>(I</b>	LRR N,	Iron-Mangan	ese Mass	es (F12) <b>(l</b>	_RR N,				
MLRA	A 147, 148)		MLRA 13	6)						
Sandy G	ileyed Matrix (S4)		Umbric Surfa	ace (F13) <b>(</b>	(MLRA 13	6, 122)	3	Indicators of hy	drophytic veg	etation and
Sandy R	edox (S5)		Piedmont Flor	odplain S	oils (F19)	(MLRA 14	48)	wetland hydro	logy must be p	resent,
Stripped	Matrix (S6)		Red Parent I	Material (F	21) <b>(MLR</b>	A 127, 14	7)	unless disturb	ed or problema	atic.
Restrictive I	_ayer (if observed):									
Type:										
Depth (inc	chas).						Hydric S	Soil Present?	Yes	No <u>×</u>
							Tiyuno e	Joint resent?	103	
Remarks: N	o hydric soil i	ndicator	s were met.							



# Appendix D PNDI Environmental Review Receipt and Bog Turtle Habitat Evaluation Field Forms



## **1. PROJECT INFORMATION**

Project Name: Eisenhower Drive Extended Date of Review: 3/18/2018 11:40:34 PM Project Category: Transportation, Roads, New construction/ New alignment Project Area: 3,635.72 acres County(s): Adams; York Township/Municipality(s): CONEWAGO; HANOVER; MCSHERRYSTOWN; MOUNT PLEASANT; OXFORD; PENN; UNION ZIP Code: 17331; 17340; 17344 Quadrangle Name(s): HANOVER; MC SHERRYSTOWN Watersheds HUC 8: Lower Susquehanna Watersheds HUC 12: Headwaters South Branch Conewago Creek; Plum Creek-South Branch Conewago Creek Decimal Degrees: 39.811941, -77.023242 Degrees Minutes Seconds: 39° 48' 42.9874" N, 77° 1' 23.6710" W

This is a draft receipt for information only. It has not been submitted to jurisdictional agencies for review.

## 2. SEARCH RESULTS

	and the second se
No Known Impact	No Further Review Required
Potential Impact	FURTHER REVIEW IS REQUIRED, See Agency Response
No Known Impact	No Further Review Required
No Known Impact	No Further Review Required
	No Known Impact

As summarized above, Pennsylvania Natural Diversity Inventory (PNDI) records indicate there may be potential impacts to threatened and endangered and/or special concern species and resources within the project area. If the response above indicates "No Further Review Required" no additional communication with the respective agency is required. If the response is "Further Review Required" or "See Agency Response," refer to the appropriate agency comments below. Please see the DEP Information Section of this receipt if a PA Department of Environmental Protection Permit is required.

Note that regardless of PNDI search results, projects requiring a Chapter 105 DEP individual permit or GP 5, 6, 7, 8, 9 or 11 must comply with the bog turtle habitat screening requirements of the PASPGP.

### **Eisenhower Drive Extended**

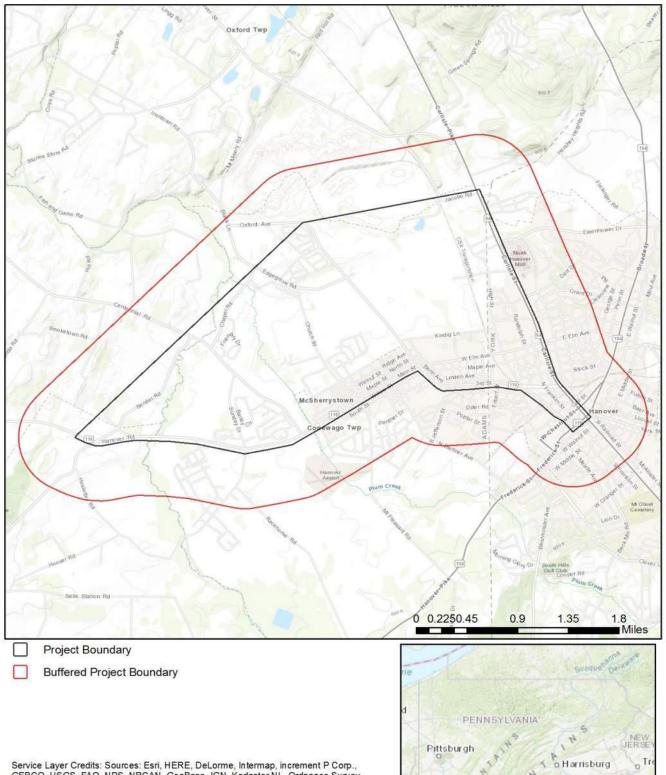


Project Boundary

Buffered Project Boundary



Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Esri, HERE, Garmin, © OpenStreetMap contributors, and the GIS user community



## **Eisenhower Drive Extended**

Service Layer Credits: Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS,

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# **RESPONSE TO QUESTION(S) ASKED**

**Q1:** Will the entire project area (including any discharge), plus a 300 feet buffer around the project area, all occur in or on an existing building, parking lot, driveway, road, road shoulder, street, runway, paved area, railroad bed, maintained (periodically mown) lawn, crop agriculture field or maintained orchard? **Your answer is:** No

**Q2:** The proposed project is in the range of the Indiana bat. Describe how the project will affect bat habitat (forests, woodlots and trees) and indicate what measures will be taken in consideration of this. Round acreages up to the nearest acre (e.g., 0.2 acres = 1 acre).

Your answer is: The project will affect 1 to 39 acres of forests, woodlots and trees.

**Q3:** Is tree removal, tree cutting or forest clearing of 40 acres or more necessary to implement all aspects of this project?

Your answer is: No

## **3. AGENCY COMMENTS**

Regardless of whether a DEP permit is necessary for this proposed project, any potential impacts to threatened and endangered species and/or special concern species and resources must be resolved with the appropriate jurisdictional agency. In some cases, a permit or authorization from the jurisdictional agency may be needed if adverse impacts to these species and habitats cannot be avoided.

These agency determinations and responses are **valid for two years** (from the date of the review), and are based on the project information that was provided, including the exact project location; the project type, description, and features; and any responses to questions that were generated during this search. If any of the following change: 1) project location, 2) project size or configuration, 3) project type, or 4) responses to the questions that were asked during the online review, the results of this review are not valid, and the review must be searched again via the PNDI Environmental Review Tool and resubmitted to the jurisdictional agencies. The PNDI tool is a primary screening tool, and a desktop review may reveal more or fewer impacts than what is listed on this PNDI receipt. The jurisdictional agencies **strongly advise against** conducting surveys for the species listed on the receipt prior to consultation with the agencies.

#### PA Game Commission RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

#### PA Department of Conservation and Natural Resources RESPONSE:

Further review of this project is necessary to resolve the potential impact(s). Please send project information to this agency for review (see WHAT TO SEND).

**DCNR Species:** (Note: The Pennsylvania Conservation Explorer tool is a primary screening tool, and a desktop review may reveal more or fewer species than what is listed below. After desktop review, if a botanical survey is required by DCNR, we recommend the DCNR Botanical Survey Protocols, available here: <a href="https://conservationexplorer.dcnr.pa.gov/content/survey-protocols">https://conservationexplorer.dcnr.pa.gov/content/survey-protocols</a>)

Scientific Name	Common Name	Current Status	<b>Proposed Status</b>	Survey Window
Quercus shumardii	Shumard's Oak	Endangered	Endangered	Fruits September - October

# PA Fish and Boat Commission RESPONSE:

No Impact is anticipated to threatened and endangered species and/or special concern species and resources.

# U.S. Fish and Wildlife Service RESPONSE:

No impacts to **federally** listed or proposed species are anticipated. Therefore, no further consultation/coordination under the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq. is required. Because no take of federally listed species is anticipated, none is authorized. This response does not reflect potential Fish and Wildlife Service concerns under the Fish and Wildlife Coordination Act or other authorities.

\* Special Concern Species or Resource - Plant or animal species classified as rare, tentatively undetermined or candidate as well as other taxa of conservation concern, significant natural communities, special concern populations (plants or animals) and unique geologic features.

\*\* Sensitive Species - Species identified by the jurisdictional agency as collectible, having economic value, or being susceptible to decline as a result of visitation.

## WHAT TO SEND TO JURISDICTIONAL AGENCIES

If project information was requested by one or more of the agencies above, upload\* or email\* the following information to the agency(s). Instructions for uploading project materials can be found here. This option provides the applicant with the convenience of sending project materials to a single location accessible to all three state agencies. Alternatively, applicants may email or mail their project materials (see AGENCY CONTACT INFORMATION). \*Note: U.S.Fish and Wildlife Service requires applicants to mail project materials to the USFWS PA field office (see AGENCY CONTACT INFORMATION). USFWS will not accept project materials submitted electronically (by upload or email).

#### Check-list of Minimum Materials to be submitted:

\_\_\_\_\_Project narrative with a description of the overall project, the work to be performed, current physical characteristics of the site and acreage to be impacted.

\_\_\_\_\_A map with the project boundary and/or a basic site plan(particularly showing the relationship of the project to the physical features such as wetlands, streams, ponds, rock outcrops, etc.)

#### In addition to the materials listed above, USFWS REQUIRES the following

SIGNED copy of a Final Project Environmental Review Receipt

#### The inclusion of the following information may expedite the review process.

\_\_\_\_Color photos keyed to the basic site plan (i.e. showing on the site plan where and in what direction each photo was taken and the date of the photos)

Information about the presence and location of wetlands in the project area, and how this was determined (e.g., by a qualified wetlands biologist), if wetlands are present in the project area, provide project plans showing the location of all project features, as well as wetlands and streams.

## 4. DEP INFORMATION

The Pa Department of Environmental Protection (DEP) requires that a signed copy of this receipt, along with any required documentation from jurisdictional agencies concerning resolution of potential impacts, be submitted with applications for permits requiring PNDI review. Two review options are available to permit applicants for handling PNDI coordination in conjunction with DEP's permit review process involving either T&E Species or species of special concern. Under sequential review, the permit applicant performs a PNDI screening and completes all coordination with the appropriate jurisdictional agencies prior to submitting the permit application. The applicant will include with its application, both a PNDI receipt and/or a clearance letter from the jurisdictional agency if the PNDI Receipt shows a Potential Impact to a species or the applicant chooses to obtain letters directly from the jurisdictional agencies. Under concurrent review, DEP, where feasible, will allow technical review of the permit to occur concurrently with the T&E species consultation with the jurisdictional agency. The applicant must still supply a copy of the PNDI Receipt with its permit application. The PNDI Receipt should also be submitted to the appropriate agency according to directions on the PNDI Receipt. The applicant and the jurisdictional agency will work together to resolve the potential impact(s). See the DEP PNDI policy at https://conservationexplorer.dcnr.pa.gov/content/resources.

## 5. ADDITIONAL INFORMATION

The PNDI environmental review website is a preliminary screening tool. There are often delays in updating species status classifications. Because the proposed status represents the best available information regarding the conservation status of the species, state jurisdictional agency staff give the proposed statuses at least the same consideration as the current legal status. If surveys or further information reveal that a threatened and endangered and/or special concern species and resources exist in your project area, contact the appropriate jurisdictional agency/agencies immediately to identify and resolve any impacts.

For a list of species known to occur in the county where your project is located, please see the species lists by county found on the PA Natural Heritage Program (PNHP) home page (<u>www.naturalheritage.state.pa.us</u>). Also note that the PNDI Environmental Review Tool only contains information about species occurrences that have actually been reported to the PNHP.



# USFWS / PFBC Bog Turtle Habitat Evaluation Field Form<sup>1</sup> (revised 06/01/2006)

	Project/Property Name: Ersenhawer Prive Extension Project
	Project type: <u>New Readway Construction</u>
	Applicant/Landowner Name: Penn POT 8-0
	County: Adams Quad: Mc Sherry stown Township/Municipality: Canada T
	PNDI # $PNDI - 602909$ Potential conflict with USFWS species? • • Y XN
•	ACTION AREA <sup>2</sup> Action area size: ニュクラ、 ろろ ユ Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY・ N <sup>3</sup>
	WETLAND ID: WET_1 PHOTOS TAKEN: Yes $\cdot$ No WETLAND SIZE: 3, 843 acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\cdot < 0.1$ acre $\cdot 0.1-0.5$ acre $\cdot >0.5$ to $<1$ acre $\cdot \cdot 1-2$ acres $\checkmark 2-4$ acres $\cdot \cdot 5+$ acres $\cdot \cdot 10+$ acres
	WETLAND LOCATION: Lat 39,807689°N Long -77,038041°W (approximate center of wetland) GPS Datum (check one): ••NAD 27 KNAD 83 ••WGS 84
	SURVEY CONDITIONS & LIMITATIONS
	Date of survey: $12/27/2016$ Time In: $10:00$ Area Time Out: $2:30$ Production: $\cdot < 24$ hours $1-7$ days $\cdot > 1$ week $\cdot$ unknown Drought conditions? $\cdot Y \times N \cdot \cdot Unknown$
	<ul> <li>How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)?</li> <li>Xnone of it – the entire wetland is within the property boundaries (skip next 2 questions)</li> <li>some of it – acres or% of the wetland appears to be located off-site</li> </ul>
	If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)? • none of it • all of it • part of it (% or acres of the off-site portion)
	How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)? • all of it • part of it (at least acres) • none of it
	Are there any wetlands located off-site and close enough to be affected by this project? • Y • N XUnknown If yes, <i>could</i> they be potential bog turtle habitat? • Y • N XUnknown
	Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
	Agricultural fields, forested repartan corridors, residential properties
	WETLAND CHARACTERISTICS
	Wetland type(s) present and % cover: XPEM × 10 • PSS XPFO × 90 • POW
	XY · N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe <u>Ditching / a Herattan af stream between Ag Fields in PEM pertion</u> XY · N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe <u>Maintenance of Ag. Fields adjacent to wetland ditch/watercourse</u> In PEM partien.
PEM W Inta do	etland drainage between large agricultural fields continues larger forested portron of wetland as a stream that rains into Plum Creek.

Surf	ce water / observed hydrology limited to dramage channel/stream that bisects wetland			
	roject Name Ersenhower Orive Extension Project Wetland WET-1(con't)			
	Hydrology•YSprings or seeps • visible or • likely?Watercress present? • Yes No•YSpring houses in or adjacent to wetland?Saturated SatUs restricted fa dramage channe)•YNSaturated soils present? If yes, year-round? • Likely Unlikely • Unknown•YNSaturated soils present? If yes, year-round? • Likely Unlikely • Unknown•YNWater visible on surface? Check all that apply: • small puddles/depressions ( " deep)• rivulets ( " deep)• larger pools/ponds ( " deep) dramage channel only = 1-5 "• YNEvidence of flooding? If yes, describe indicatorsSoils Mapping Unit (optional): $Pa = Pen[aw stilt (aamField observations confirm mapped type?• YES• YESNO$			
	Soils - PEM Portion of WetlandMucky soils rangeMost of the mucky part(s) of $Mucky^4$ ?How much of it (PEM) is mucky?in depth from:the wetland can be probed <sup>5</sup> : $\checkmark$ YES • NO• 50-70%• >70% $5 7 0$ $2 to 6$			
	Non-mucky <sup>6</sup> ? How much of it (PEM) is non-mucky? Mucky sails highly limited, • <10% • 10-29% • 30-49% restricted to small partien of • YES • NO • • 50-70% • >70% 9570 dratnage channel			
	Soils - PSS and PFO Portions of WetlandMucky soils rangeMost of the mucky part(s) of $Mucky^4$ ?How much of it is mucky?Mucky soils rangeMost of the mucky part(s) of $\cdot YES$ NO $\cdot 50-70\%$ $\cdot 50-70\%$ $\cdot 70\%$ $O$ $7_O$ $mucky = 10^{-1}$ $\cdot 3-5^{-1} \cdot 6-8^{-1} \cdot 9-11^{-1} \cdot 212^{-1}$			
	nesting/overnintering habitat highly (mited Vetland Vegetation (characterize the wetland as a whole) Lick (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage). Subsurface structural characteristics observed see characteristics observed sensitive fern • rice cutgrass • tearthumb Oreed canary grass • Phragmites • purple loosestrife alder * dogwood Ored maple • willow • poison sumac • multiflora rose • additional dominant species: Green ash, oaks, bax elder, Japanese heneysuckle, garlic mustard			
	<u>Herptiles</u> Were any bog turtles observed? • •YES <sup>7</sup> XNO If yes, how many? Other herptiles • •observed • • previously observed: <u>none abserved</u>			
	Additional Comments/Observations: (use additional sheets if necessary) arge PFO perfron w/ small PEM wetland consisting of drainage Channel area between Ag Frelds.			
	INVESTIGATOR'S OPINION         • YES       ★NO       • UNSURE       The hydrology criterion <sup>8</sup> for bog turtle habitat is met.         • YES       ★NO       • UNSURE       The soils criterion <sup>8</sup> for bog turtle habitat is met.         • YES       ★NO       • UNSURE       The vegetation criterion <sup>8</sup> for bog turtle habitat is met.         • YES       ★NO       • UNSURE       The vegetation criterion <sup>8</sup> for bog turtle habitat is met.         • YES       ★NO       • UNSURE       This wetland is potential bog turtle habitat.			
	I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.			
·	Investigator's Name (print)			
	Investigator's Name (print) Investigator's Signature Contact info: <u>Cnerne Int. com</u> , <u>717-741-6252</u>			

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#### USFWS / PFBC Bog Turtle Habitat Evaluation Field Form<sup>1</sup> (revised 06/01/2006)

Project/Property Name: Ersenhewer Prove Extension Project Project type: New Readway Construction Applicant/Landowner Name: Penn Dar 8-0 County: Adams Quad: McSherrystewn Township/Municipality: Conewage Twp PNDI # <u>CNOE- 602909</u> Potential conflict with USFWS species? • Y • X ACTION AREA<sup>2</sup> Action area size:  $\sqrt{205.33}$  Coes the Phase 1 survey include <u>all</u> wetlands in the action area?  $\sqrt{2}$  ·  $N^3$ WETLAND ID: WET-Z PHOTOS TAKEN: Yes No WETLAND SIZE: 5.057 acres Wetland size estimation - If actual acreage is not known at time of investigation, check one: • < 0.1 acre • •0.1-0.5 acre • •>0.5 to <1 acre • •1-2 acres • •2-4 acres >•5+ acres • •10+ acres WETLAND LOCATION: Lat 39.806975  $^{\circ}N$  Long  $-7.7.032685 {^{\circ}W}$  (approximate center of wetland) GPS Datum (check one):  $\cdot\cdot$ NAD 27  $\checkmark$ NAD 83  $\cdot\cdot$ WGS 84 SURVEY CONDITIONS & LIMITATIONS Date of survey: 11/18/2016 Time In: 9200 AM Time Out: 2200 PM Last precipitation: <24 hours >1-7 days <>1 week < unknown Drought conditions? <Y < N >1 unknown V < Percent V < N > Unknown <math>V < Percent <17 He Xnone of it - the entire wetland is within the property boundaries (skip next 2 questions) • some of it – \_\_\_\_\_\_ acres or \_\_\_\_\_\_% of the wetland appears to be located off-site If part of this wetland continues off-site, how much of the off-site portion was surveyed (on foot)? • mone of it • all of it • part of it (\_\_\_\_\_% or \_\_\_\_\_ acres of the off-site portion) How much of the off-site portion of this wetland is visible (e.g., from the subject property or from a public road)? • all of it • part of it (at least \_\_\_\_\_\_ acres) • none of it Are there any wetlands located off-site and close enough to be affected by this project? • Y • N 🔆 Unknown If yes, *could* they be potential bog turtle habitat?  $\cdot Y \cdot N \times Unknown$ Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.): Forested fleadplans, agencutural fields, high-density residential properates, Industrial (sub-station) WETLAND CHARACTERISTICS Wetland type(s) present and % cover: XPEM 4 10 • PSS \_\_\_\_ PFO 490 • POW \_\_\_ YY • N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Deatrage from adjacent developed properties, excavated/altered ditch XY · N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe Impifed mowing of pathways within/adjacent to wefland Wetland consists of concentrated wet areas and large partiens of primarily dry areas.

· Pratnage channel and groundwater-fed wetland areas drarn towards Plum Creek to the northwest of wetland.

Proiect Name	Ersenheuer Drive Exte	norm froject	Wetland WET-2 (con't)				
<u>Hydrology</u> XY • N	Springs or seeps * Visible or • • • • • • • • • • • • • • • • • •	Watercress present?	· Yes XNo but groundwater ted				
	• Y XN Spring houses in or adjacent to wetland? Vikely • Unlikely • Unknown						
<ul> <li>Y • N Water visible on surface? Check an that apply. / Level</li> <li>Y • N Water visible on surface? Check an that apply. / Level</li> <li>• Arivulets (<u>1-3</u>" deep) • larger poels/ponds (<u>2-6</u>" deep) - marn channel</li> <li>• Y • N Evidence of flooding? If yes, describe indicators</li> </ul>							
			laam				
Field observatio	Unit (optional): $D = Ounning$ ns confirm mapped type? XYES • NO	•Unknown	· · · · ·				
	ortion of Wetland		3-8"				
Mucky <sup>4</sup> ?	How much of it (PEM) is mucky?	Mucky soils range in depth from:	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> :				
YES · NO	$\cdot < 10\%$ $\cdot 10-29\%$ $\times 30-49\%$ $\cdot 50-70\%$ $\cdot >70\%$ $3 \le 74$	$3_{to} 12$ "	• • • • • • • • • • • • • • • • • • •				
	How much of it (PEM) is non-mucky?						
Non-mucky <sup>6</sup> ?	• <10% • 10-29% • •30-49%	Mucky so	rts observed in partrans				
YES · NO	·×10% ·10-25% 65%	graundenator	-fed PERN/PFO areas,				
Soils – PSS an	d PFO Portions of Wetland						
Mucky <sup>4</sup> ?	How much of it is mucky?	Mucky soils range in depth from:	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> :				
YES NO	• <10% №10-29% • 30-49% • •50-70% • >70% ( ) 24	<u>3</u> to <u>8</u> "	• • • • • • • • • • • • • • • • • • •				
	• • 50-70% • • 70% (0 74						
<u>Wetland Veget</u> Check (X) if pre	ation (characterize the wetland as a whole esent ( $\geq$ 5% areal coverage), and also circle :	le) جريدي في الع if dominant (≥ 20% cc	derate diversity of vegetative/ face structure in surfable iverage). sparse sphagnum				
Vsedges Virushes • skunk cabbage · Cattail • sweet flag • jewelweed • sphagnum moss • sensitive fern Virice cutgrass • tearthumb <del>Greed canary grass</del> • <i>Phragmites</i> • purple loosestrife • alder dogwood · Yed maple • willow • poison sumac multiflora ross • Additional dominant species: <u>Green ash, bax elder new york rranweed, buch honeysuchte</u> blue vervain, galdenred							
Herptiles							
Herptiles Were any bog turtles observed? • YES <sup>7</sup> NO If yes, how many? Other herptiles • observed • previously observed: <u>hone abserved</u>							
Additional Comments/Observations: (use additional sheets if necessary) Marginal patential habitat -> a partian of the wetland contains greundweter-fed hydrology and suitable sails.							
INVESTIGATOR'S OPINION•XYES•NO•UNSURE•XYES•NO•UNSURE•YES•NO•UNSURE•YES•NO•UNSURE•YES•NO•UNSURE•YES•NO•UNSUREThe vegetation or the solid of the so							
I certify that to the best of my knowledge, all of the information provided herein is accurate and complete.							
Crarg Retterson Hern View Putterson Ceria 11/18/2016 Investigator's Name (print) Investigator's Signature Date Contact info: <u>cnerne Jmt. com</u> , 717-241-6252							
Contact mile. <u>Cherner Junite Contact and the second secon</u>							

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Project/Property Name: Ersenhewer Orne Extension Project
nourype. <u>Hew Readway Censtruction</u>
$\frac{1}{2} \frac{1}{2} \frac{1}$
County: Adams Quad: McSherrystown Township/Municipality: Conewage Twp
PNDI # $PNDI = 602909$ Potential conflict with USFWS species? • Y · N
ACTION AREA <sup>2</sup>
Action area size: $(3, 205, 33)$ Does the Phase 1 survey include <u>all</u> wetlands in the action area? $(3, 3)$ $(1, 3)$
WETLAND ID: $\psi \in \tau - 3$ PHOTOS TAKEN: Yes • No WETLAND SIZE: $0.047$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\times < 0.1$ acre • $\cdot 0.1$ -0.5 acre • $\cdot >0.5$ to $< 1$ acre • $\cdot 1$ -2 acres • $\cdot 2$ -4 acres • $\cdot 5$ + acres • $\cdot 10$ + acres
WETLAND LOCATION: Lat <u>39.818223<sup>°</sup>N</u> Long <u>-77,038954<sup>°</sup>W</u> (approximate center of wetland) GPS Datum (check one): ••NAD 27 MAD 83 ••WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: <u><math>11/18/2016</math></u> Time In: <u><math>2:15</math> PM</u> Time Out: <u><math>2:45</math> PM</u> Last precipitation: $<24$ hours $\times 1-7$ days $<>1$ week $<$ unknown Drought conditions? $\cdot Y \cdot N \times Unknown$ How much of this wetland is located off-site (i.e., outside the property boundaries or right of would
How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)? • Mone of it – the entire wetland is within the property boundaries (skip next 2 questions) • some of it – acres or% of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)? • none of it • all of it • part of it (% or acres of the off-site portion)
<ul> <li>How much of the <i>off-site portion</i> of this wetland is visible (<i>e.g.</i>, from the subject property or from a public road)?</li> <li>• all of it • part of it (at least acres) • none of it</li> </ul>
Are there any wetlands located off-site and close enough to be affected by this project? • Y • N ≫ Unknown If yes, <i>could</i> they be potential bog turtle habitat? • Y • N ≫ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag Frelds, Waadlands, Muntcipal (church),
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: YPEM 100 • PSS • PFO • POW
••Y YM Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe
· ·Y ·XN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe Potentral mawing upslape of the wetland

- All observed surface water observed within vegetated wetland parties of watercourse, with primarily rocky substrate

Project Name	Ersenhawer Ortve Extension Project Welland WET-3 (cont)	
$\begin{array}{c c} \underline{\mathrm{Hydrology}}\\ \hline \mathbf{W}\\ $	Springs or seeps • <u>visible</u> or • <u>likely</u> ? Watercress present? • Yes XNo Spring houses in or adjacent to wetland? Saturated soils present? If yes, year-round? XLikely • Unlikely • Unknown Water visible on surface? Check all that apply: • small puddles/depressions ( "deep) • rivulets ("deep) • larger pools/ponds ("deep) wFHTT channe) = 1 - 4 Thches Evidence of flooding? If yes, describe indicators <u>dramage pattern</u> , <u>metted</u> vegetation	

Soils Mapping Unit (optional):  $D \neq = 0$  uniting sitty clay learn Field observations confirm mapped type? • YES • NO • • Unknown

Soils - PEM Pc	rtion of Wetland	Mucky soils range	Most of the mucky part(s) of
	How much of it (PEM) is mucky?	1	
Mucky⁴?	(00)	in depth from:	the wetland can be probed <sup>5</sup> :
-	• <b>1</b> 0-29% • • <b>3</b> 0-49%	3 to 5 "	<b>3</b> -5"••6-8"••9-11"••≥12"
YES · NO	• • 50-70% • • > 70% 5 9 a		
	1 C' (DEM) is non mucky?	1 Entration	to within vegetated
Non-mucky <sup>6</sup> ?	How much of it (PEM) is non-mucky?	- mucky solo	to within reacted
11011-11110109	• <10% • 10-29% • •30-49%		
XYES • NO	· ·50-70% X>70% 95%	wetland po	artran of watercourse
/	1010 1010	······································	

		PFO Portions of Wetland	Mucky soils range	
H/A	$Mucky^{4}?$ • •YES • •NO	How much of it is mucky? • ←10% • 10-29% • •30-49% • •50-70% • •>70%	in depth from: to"	the wetland can be probed <sup>5</sup> : • •3-5" • •6-8" • •9-11" • •≥12"
			- Sub	surface structural

highly limited.

characteristics Wetland Vegetation (characterize the wetland as a whole) Check (X) if present ( $\geq$  5% areal coverage), and also circle if dominant ( $\geq$  20% coverage).

SPASSE

- sedges Yrushes skunk cabbage cattail sweet flag jewelweed sphagnum moss
- sensitive fern rice cutgrass (rearthumb) reed canary grass Phragmites purple loosestrife
- alder dogwood red maple willow poison sumac multiflora rose •

Additional dominant species:

#### Herptiles

Herpfiles		IG how many?	
Were any bog turtles observed?	• YES' YNU	If yes, how many?	
Other herntiles • phserved •	previously observed:	nane abserved	
Offici herpfilles observed	providence		

Additional Comments/Observations: (use additional sheets if necessary)

Automic Commence Cost	
a il a martial with the burgery le that are	a
Small finge wetland a space ated with Tributary to Plum creck	,
ZITCH SCHERKY SCILL	
lack of persistent groundwater sources (mucky sails	
ACK OF BODDICIT	

• •YES • •YES	•XNO •XNO	<ul> <li>•UNSURE</li> </ul>	The <u>hydrology</u> criterion <sup>8</sup> for bog turtle habitat is met. The <u>soils</u> criterion <sup>8</sup> for bog turtle habitat is met. The vegetation criterion <sup>8</sup> for bog turtle habitat is met.
<ul> <li>YES</li> </ul>	•XNO	<ul><li>UNSURE</li><li>UNSURE</li></ul>	The vegetation criterion for bog fullie habitat is met.
• YES	· NO	<ul> <li>UNSURE</li> </ul>	This wetland is potential bog turtle habitat.

Crarg Patterson Mem_ Investigator's Name (print)	hog Patters New Investigator's Signature	<u>) /18/20</u> 16 Date
Contact info: <u>CAETAEJM</u> +	.com, 717-741-625	2

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Project/Property Name: Essenhower Orre Extension Project
Project type: <u>New Readway Construction</u>
Appricant Landowner Name: <u>rennvar</u> 8-0
County: Adams Quad: McSherrystewn Township/Municipality: (One
PNDI # $PHOI = 602909$ Potential conflict with USFWS species? • Y M
ACTION AREA <sup>2</sup> Action area size: <u>ふ この5,33 a</u> c Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY・N <sup>3</sup>
WETLAND ID: WET-Y PHOTOS TAKEN: Yes No WETLAND SIZE: 6-437 acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: • < 0.1 acre • 0.1-0.5 acre • >0.5 to <1 acre • 1-2 acres • 2-4 acres 5+ acres • 10+ acres
WETLAND LOCATION: Lat $39.812605^{\circ}H$ Long $-77.037180^{\circ}W$ (approximate center of wetland) GPS Datum (check one): ••NAD.27 ×NAD.83 ••WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $12/7/2016$ Time In: $10:00$ And Time Out: $2:00$ PM Last precipitation: $\times < 24$ hours $\cdot \cdot 1-7$ days $\cdot > 1$ week $\cdot \cdot unknown$ Drought conditions? $\cdot Y \cdot \times N \cdot \cdot Unknown$
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? Xnone of it – the entire wetland is within the property boundaries (skip next 2 questions) • "some of it –acres or% of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)? • none of it • all of it • part of it (% or acres of the off-site portion)
<ul> <li>How much of the <i>off-site portion</i> of this wetland is visible (<i>e.g.</i>, from the subject property or from a public road)?</li> <li>• all of it • part of it (at least acres) • •none of it</li> </ul>
Are there any wetlands located off-site and close enough to be affected by this project? • Y • N × Unknown If yes, <i>could</i> they be potential bog turtle habitat? • Y • N × Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag. Frelds, Weadlands, martin floodplans
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: PEM 100 · PSS · PFO · POW
$\cdot XY \cdot \cdot N$ Are there any signs of disturbance to high $-1$ (1) is a set
<u>Excavated difch alongside western boundary of wetland</u> XY · N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe <u>Mawing maintenance of Ag Freld adjacent to wetland</u>

No persistent springs/seeps - hydrology perched atop frae clay layer Wetland <u>WEF-4</u> (con't) Project Name Ersenhewer Prive Extension Project Hydrology Springs or seeps • •<u>visible</u> or • •<u>likely</u>? Watercress present? • •Yes XNo Y XN Spring houses in or adjacent to wetland? • Y 📉 Saturated soils present? If yes, year-round? • Likely Mulikely • Unknown  $\times Y \cdot N$ Water visible on surface? Check all that apply: X small puddles/depressions (<u>-3</u>" deep) Water visible on surface? Check all that apply. Asman putation depresentation of dramage ditch, • rivulets (\_\_\_\_\_ deep) Xlarger pools/ponds (\_\_\_\_\_ deep) > excavated dramage ditch, Z-& Inches XY N Evidence of flooding? If yes, describe indicators · Y XN Soils Mapping Unit (optional): Dy = Dunntmy sr[+y clay laam Field observations confirm mapped type? XYES • NO • Unknown Soils – PEM Portion of Wetland Mucky soils range Most of the mucky part(s) of How much of it (PEM) is mucky? the wetland can be probed<sup>5</sup>:  $Mucky^4$ ? in depth from: • 10-29% • •30-49% ₩<10% \_\_\_\_\_ to \_ ••3-5"••6-8"••9-11"••≥12" · YES XNO · •50-70% · •>70% 0 70 Na mucky sorts observed How much of it (PEM) is non-mucky? Non-mucky<sup>6</sup>? • •30-49% - Excavated ditch and small • 10-29% • <10% puddles the methand are XYES . NO 100% • •50-70% •**>>**70% - battomed substrated har a 11 Soils - PSS and PFO Portions of Wetland Mucky soils range Most of the mucky part(s) of How much of it is mucky? the wetland can be probed': Mucky<sup>4</sup>? in depth from: N/A • 10-29% • 30-49% • **<**10% to " • 3-5" • •6-8" • •9-11" • •≥12" •YES • •NO • •50-70% • •>70% - No subsurface structural characteristics observed. Wetland Vegetation (characterize the wetland as a whole) Check (X) if present ( $\geq$  5% areal coverage), and also circle if dominant ( $\geq$  20% coverage). very sparse •Xeedges Xrushes • skunk cabbage • cattail • sweet flag • jewelweed • sphagnum moss • sensitive fern • rice cutgrass • tearthumb reed canary grass • Phragmites • purple loosestrife • alder • dogwood • red maple • willow • poison sumac • inultiflora rose • • Additional dominant species: goldenrods, brant Ragweed, sparse shrubs Were any bog turtles observed? • YES<sup>7</sup> XNO If yes, how many? Other herptiles • observed • previously observed: \_\_\_\_\_\_\_ Herptiles Additional Comments/Observations: (use additional sheets if necessary) agricultural use. No persistent groundwater-fed by drology/ mucky satts abserved. INVESTIGATOR'S OPINION The hydrology criterion<sup>8</sup> for bog turtle habitat is met. • XNO UNSURE • YES The soils criterion<sup>8</sup> for bog turtle habitat is met. ЖNО UNSURE • YES The vegetation criterion<sup>8</sup> for bog turtle habitat is met. ÝYES UNSURE • •NO This wetland is potential bog turtle habitat. YES XNO • •UNSURE

Crarg Patterson Nern hay	Palttees Ceta 12/7/2016
Investigator's Name (print)	Investigator's Signature Date
Contact info: <u>Cherne Jmt. com</u>	717-741-6252

Project/Property Name: Ersenhawer Orive Extension Project
The reading construction
Applicant/Landowner Name: Penn DqT 8-0
County: Adams Quad: McSherrystown Township/Municipality: Canewaga Twp
PNDI # $PM PI = 60 Z909$ Potential conflict with USFWS species? • Y $N$
ACTION AREA <sup>2</sup> Action area size: $\Delta 205, 33$ Does the Phase 1 survey include <u>all</u> wetlands in the action area? Y • N <sup>3</sup>
WETLAND ID: WETLAND SIZE: PHOTOS TAKEN: Yes • No WETLAND SIZE: OOGO acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: X<0.1 acre • 0.1-0.5 acre • >0.5 to <1 acre • 1-2 acres • 2-4 acres • 5+ acres • 10+ acres
WETLAND LOCATION: Lat <u>39.8175549</u> Long <u>-77.03888</u> $\xrightarrow{2}$ $\xrightarrow{2}$ (approximate center of wetland) GPS Datum (check one): $\cdot \cdot NAD.27$ $\times NAD.83 \cdot \cdot WGS.84$
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $12/07/2016$ Time In: $9:00$ Are Time Out: $9:50$ Are Last precipitation: • < 24 hours ×1-7 days • > 1 week • • unknown Drought conditions? • Y ×N • • Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? recent rans from of it – the entire wetland is within the property boundaries (skip next 2 questions) • some of it – acres or% of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)? • none of it • all of it • part of it (% or acres of the off-site portion)
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)? • all of it • part of it (at least acres) • none of it
Are there any wetlands located off-site and close enough to be affected by this project? • Y • N XUnknown If yes, <i>could</i> they be potential bog turtle habitat? • Y • N XUnknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag Fields, weedlands, repairin carridor, church
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: YPEM 100 • PSS • PFO • POW
• N Are there any signs of disturbance to hydrology (ditching filling pends meds and a start No. 10.
<u>Depression adjacent to Ag. Freld and Plum Creek</u> , Access Road for X.Y. N Are there any signs of disturbance to <i>vegetation</i> (mowing, pasturing, burning, etc.)? If yes, describe <u>Mawing</u> / <u>Maintenance of Ag. Freld adjacent to wetland</u>

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	$P \rightarrow a \rightarrow b$ Wetland WET-STcon't)
Project Name	Ersenheurer Drive Extension Project Wetland WET-S(con't)
	email depressional seep immediately adjacent to
N N	Springs or seeps • visible or Xikely? Watercress present? • Tes / to
XY N	Spring houses in or adjacent to we tand? Saturated soils present? If yes, year-round? *Likely • Unlikely • Unknown Water visible on surface? Check all that apply: • small puddles/depressions ('' deep)
Y N	
Ý · N	Evidence of flooding? If yes, describe indicators law-lyrng depressional area
	• rivulets ( deep) «larger pools ponds ( <u></u> depressional area Evidence of flooding? If yes, describe indicators <u>low -lyma</u> <u>depressional</u> area immediately adjacent to Plum Creek
Soils Mapping	Unit (optional): $D_{y} = D_{unntrg} g_{Flty} c_{lay} (2a_{m})$ ns confirm mapped type? • YES • NO • • Unknown
Field observatio	ns confirm mapped type? • •YES • •NO • •Onknown
	Portion of Wetland
	IVILICRY Solis fange Wost of the mucky part(o) of
Mucky <sup>4</sup> ?	How much of it (FEW) is much y: in depth from: the wetland can be probed <sup>5</sup> :
YES · NO	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
Non-mucky <sup>6</sup> ?	How much of it (PEM) is non-mucky? -85 % hara-battamed to small seep •<10% •10-29% •30-49% - Mucky set restricted to small seep • \$50,70% •\$270% 8579 - Mucky set restricted to stream,
	· · 50-70% · 10-2570 8570 area right adjacent to sticuly · · 50-70% · 10-2570% 8570 consisted of mucky' mineral series,
Soils – PSS ar	nd PFO Portions of Wetland Mucky soils range Most of the mucky part(s) of
Mucky <sup>4</sup> ?	How much of it is mucky? in depth from: the wetland can be probed <sup>5</sup> :
JUDO NO	How much of it is mucky? • $<10\%$ • $10-29\%$ • $30-49\%$ • $50-70\%$ • $>70\%$ Mucky solis range Most of the indexly part(s) of the wetland can be probed <sup>5</sup> : 
• • 1 E 5 • • 1 • C	· · · · · · · · · · · · · · · · · · ·
	tation (characterize the wetland as a whole) arverstry and subsurface
Wetland Vegel	tation (characterize the wetland as a whole) $arge (> 5\% areal coverage)$ , and also circle if dominant ( $\geq 20\%$ coverage). Structure observed,
• •sedges • •ru	ishes • skunk cabbage • Ccattail • sweet flag • jewelweed • sphagnum moss
··· · · · ·	shes • skunk cabbage • cattan • <u>sweet nag</u> journmeet - purple loosestrife • • rice cutgrass • tearthumb • reed canary grass • <i>Phragmites</i> • purple loosestrife gwood • red maple • willow • poison sumac • multiflora rose • •
• alder • dog	wood • red maple • willow • poison sum o mana
Additional dom	esting habitat, no tunnels abserved
TT 4!!	
Were any bog t	urtles observed? • YES <sup>7</sup> • NO If yes, how many?
Other herptiles	• observed • • previously observed:
Additional Co	mments/Observations: (use additional sheets if necessary)
Small w	etland impacted by flacting from Plum Creek, epprovides small area of mucky mineral sorts,
Small se	ep provides small area of mucky mineral salls
but his	ep provides small area at muchy multice hly unstable due to fleeding from Plum Creek, one small seep, but core small seep, but
INVESTIGAT	h & unstable due to flading from I (un Creek, <u>OR'S OPINION</u> O • UNSURE The <u>hydrology</u> criterion <sup>8</sup> for bog turtle habitat is met. flading from stream O • UNSURE The <u>soils</u> criterion <sup>8</sup> for bog turtle habitat is met. marginal sails and veg. O • UNSURE The <u>vegetation</u> criterion <sup>8</sup> for bog turtle habitat is met. O • UNSURE The <u>vegetation</u> criterion <sup>8</sup> for bog turtle habitat is met.
YES XN	0 • UNSURE The soils criterion <sup>®</sup> for bog turtle habitat is met marginal sarts and veg.
XYES N	<ul> <li>•UNSURE The <u>soils</u> criterion<sup>8</sup> for bog turtle habitat is met.</li> <li>•UNSURE The <u>vegetation</u> criterion<sup>8</sup> for bog turtle habitat is met.</li> </ul>
YES XN	<ul> <li>•UNSURE This wetland is potential bog turtle habitat.</li> </ul>
I certify that to	the best of my knowledge, all of the information provided herein is accurate and complete.
1 D.	<u>is Name (print)</u> <u>has patteen Ran</u> <u>12/07/2016</u> <u>Investigator's Signature</u> Date
Investigator	r's Name (print) Investigator's Signature Date
Contacting	: _ <u>Cnern@Jmt.com</u> , 717-741-6252
Contact IIIIC	- CHEINE JULI - CONFILMENT

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Project/Property Name: ETSenhewer Drive Extension Project Project type: New Readway Extens Construction Applicant/Landowner Name: Pennegt 8-0 County: Adams Quad: McSherrystown Township/Municipality: Conewaga Twp PNDI # PNOI - 602909 Potential conflict with USFWS species? • Y XN ACTION AREA<sup>2</sup> Action area size:  $295,33_{ac}$  Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY  $\cdot N^3$ WETLAND ID: WET-G PHOTOS TAKEN: Yes No WETLAND SIZE: 8,229 acres Wetland size estimation - If actual acreage is not known at time of investigation, check one: • < 0.1 acre • •0.1-0.5 acre • •>0.5 to <1 acre • •1-2 acres • •2-4 acres 5+ acres • •10+ acres WETLAND LOCATION: Lat  $39.809643^{\circ}M$  Long  $-77.036118^{\circ}W$ (approximate center of wetland) GPS Datum (check one):  $\cdot \cdot \text{NAD 27}$  NAD 83  $\cdot \cdot \text{WGS 84}$ SURVEY CONDITIONS & LIMITATIONS Date of survey:  $\frac{2}{2}$   $\frac{2}{2}$   $\frac{2}{2}$   $\frac{2}{6}$  Time In:  $\frac{2}{3}$   $\frac{3}{4}$  Time Out:  $\frac{1}{2}$   $\frac{3}{2}$   $\frac{6}{2}$  Time In:  $\frac{2}{3}$   $\frac{3}{4}$  Time Out:  $\frac{1}{2}$   $\frac{3}{2}$   $\frac{6}{4}$  Compared to  $\frac{6}{4}$  Last precipitation:  $\frac{3}{4}$   $\frac{3}{4}$   $\frac{6}{4}$   $\frac{1}{4}$   $\frac{3}{4}$   $\frac{6}{4}$   $\frac{6}{4}$   $\frac{1}{4}$   $\frac{1}{4}$ How much of this wetland is located off-site (i.e., outside the property boundaries or right-of-way)? Xnone of it – the entire wetland is within the property boundaries (skip next 2 questions)
some of it – \_\_\_\_\_\_ acres or \_\_\_\_\_\_% of the wetland appears to be located off-site If part of this wetland continues off-site, how much of the off-site portion was surveyed (on foot)? • mone of it • all of it • part of it (\_\_\_\_\_% or \_\_\_\_\_ acres of the off-site portion) How much of the off-site portion of this wetland is visible (e.g., from the subject property or from a public road)? • all of it • part of it (at least \_\_\_\_\_\_ acres) none of it Are there any wetlands located off-site and close enough to be affected by this project? • Y • N 🔆 Unknown If yes, could they be potential bog turtle habitat? • Y • N • Unknown Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.): Ag. Freids, Waadlands, Residential properties WETLAND CHARACTERISTICS YY Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Patentral Arstuchance from residentral developments to the south of wetland • Y XN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe This wetland is contraucus with WET-4 to the north

M	atorthy at	f wetland sails are by perch above fine clay within wetland largely b	hardbettem	ed, and some season	a				
hyde	alogy mas	y perch above frae clay	r layer Su	face water abserved	lm				
bep	ressrans nature	within wetland largely "	na cobettamed	, which is a part of the					
	Project Name	Ersenhower Drive Ext	enstan Projec	Wetland <u>WET-G</u> (con't)					
		One small :	spring within	n wetland					
	<u>Hydrology</u> XY • N		117 L	Vec VNO	ve.				
	Y YN	Spring houses in or adjacent to wetland?	Vitikely Unlike	ely · Unknown	P				
				depressions (1-2' deep)					
		• rivulets ( "deep) X larger pools ponds (7-2 deep)							
	Y XN	Evidence of flooding? If yes, describe man							
	Soils Mapping Field observatio	Unit (optional): $0y = 0$ unning ns confirm mapped type? YES • NO	STITY CAY	/ laam					
	Soils – PEM P	Portion of Wetland		Mart of the music part(s) of					
	Mucky <sup>4</sup> ?	How much of it (PEM) is mucky?	Mucky soils range in depth from:	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> :					
ĺπ.	1	• <10% • 10-29% • •30-49%		• •3-5" • •6-8" • •9-11" • ≥12"					
H/A	• •YES • •NO				princi				
	Non-mucky <sup>6</sup> ?	How much of it (PEM) is non-mucky? • <10% • 10-29% • •30-49%	Mucky sail	restructed to one small spinorth within hard-batton	red				
	• YES • NO		depression	al area					
		NDO D. (	Λ						
	Soils – PSS an	nd PFO Portions of Wetland	Mucky soils range	Most of the mucky part(s) of					
	Mucky <sup>4</sup> ?	How much of it is mucky? X<10% • 10-29% • 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :					
	• YES • NO	· · · 50-70% · · >70% -1 %	<u>3</u> to <u>24</u> "	$\frac{(3.5)^{\circ} \cdot (6.8)^{\circ} \cdot (9-11)^{\circ} \cdot (212)^{\circ}}{3 - 12^{\circ} - (3.5)^{\circ}}$					
		- 99% non-mucky		3-12 . VACIANCE					
	Wetland Veget		if dominant (≥ 20% co	verage).					
V	Check (A) is pro	shes Skunk cabbage • cattail • sweet		Serbagnum moss					
	•X sedges • ru	shes skunk cabbage • cattail • sweet	ary grass • Phragmi	tes • purple loosestrife					
	• sensitive term	wood red maple • willow • poison s	umac Kmultiflora ros		orvet				
	Additional dom	shes Skunk cabbage • cattail • sweet • rice cutgrass • tearthumb • reed can wood Ared maple • willow • poison s inant species: <u>Green ash</u> , wh	The cakes, bas	x elder, parsan ivy, P					
	Herntiles								
		urtles observed? • YES <sup>7</sup> NO If y	es, how many?	ed					
		• observed • • previously observed:							
	Additional Co	mments/Observations: (use additional she	ets if necessary)	retland (WET-4) tathe	north,				
	Large fo	mments/Observations: (use additional she arested wetland contrance spring observed, but lac y sorts throughout major OR'S OPINION	k of persons	fest groundwater and					
l	Muche	y soits throughout majo	rity of wet	land,					
		OR'S OPINION	n <sup>8</sup> for bog turtle habita	it is met. one small spring observed et lack of mucky soil	1.				
	· YES XNO	O • UNSURE The <u>hydrology</u> criterio O • UNSURE The <u>soils</u> criterion <sup>8</sup> for	bog turtle habitat is m	et lack of mucky soil et lack of mucky soil throughout vast at is met. majority of wet	- 11				
	YES XN	O • UNSURE The <u>vegetation</u> criterio O • UNSURE This wetland is potenti	n° for bog turtle habitat.	it is me. majority of wer	andr				
	/			the and complete					
		the best of my knowledge, all of the inform			~				
	Crara Pa	Herson Nero Clar In	Vatter Cert	12/21/2016 Date	>				
	Contact info	: _ <u>cnern@Jmt.com</u> , <del>2</del>	17-741-62	52					
		/							

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Project/Property Name: Essenhower Drive Extension Project Project type: New Readway / Roadway Improvements Applicant/Landowner Name: PennDot 8-0
Project type: New Readway / Roadway Improvements
County: <u>Adouns</u> Quad: <u>McSherrystaun</u> Township/Municipality: <u>Conewaga</u> Township
PNDI # $\frac{9}{100}$ = 602909 Potential conflict with USFWS species? $\Box$ Y $\Box$ N
ACTION AREA <sup>2</sup> Action area size: $593$ acces Does the Phase 1 survey include <u>all</u> wetlands in the action area? $XY \square N^3$
WETLAND ID:       WET-7       PHOTOS TAKEN:       XYes □ No       WETLAND SIZE:       0.350       acres         Wetland size estimation – If actual acreage is not known at time of investigation, check one:       0.1 acre       0.1-0.5 acre       >0.5 to <1 acres
WETLAND LOCATION:Lat $39.801750^{\circ}$ NLong $-77.046041^{\circ}$ W(approximate center of wetland)GPS Datum (check one): $\Box$ NAD 27 $\checkmark$ NAD 83 $\Box$ WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $1(8/2012)$ Time In: $1200$ Time Out: $1230$ Last precipitation: $24$ hours $\Box 1-7$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y \times N \Box$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? $\Box$ none of it – the entire wetland is within the property boundaries (skip next 2 questions) $\Box$ some of it – acres or $\underline{100}$ % of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \searrow \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Agercultural frelds, woodlands
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: XPEM (00 PSS PFO PFO PFO
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe <u>Difching/Stream alteration between Ag. Frelde</u> XY IN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe <u>Agricultural activity almost immediately adjoint to watland</u> Corn frelds along Sauth, saybean freld to north
south, south, souther theld to north

	nd - srited thto stream undwater spring/seeps Etsenhouser Drive Ex							
<u>Hydrology</u>								
$\Box Y \times N$ Springs or seeps $\Box visible$ or $\Box likely$ ? Watercress present? $\Box Yes \times No$								
Y N Spring houses in or adjacent to wetland? within stream channel XY N Saturated soils present? If yes, year-round? Likely Unlikely Unknown								
XY □N       Water visible on surface? Check all that apply: □ small puddles/depressions (" deep)         □ rivulets (" deep)       I larger pools/ponds (1-5" deep)         □ Y XN       Evidence of flooding? If yes, describe indicators								
~		an a						
	Unit (optional): <u>Penlass Sitt</u> ns confirm mapped type? XYES DNO							
	ł.							
Solis – PEM P	ortion of Wetland	Mucky soils range	Most of the mucky part(s) of					
Mucky4?	How much of it (PEM) is <b>mucky</b> ?	TIPO-DOCUMENTONIC DESCRIPTION						
	×<10% 5 7010-29% □ 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :					
XYES DNO	□ 50-70% □>70%	<u></u>	<b>3</b> -5" □ 6-8" □ 9-11" □ ≥12"					
Non-mucky <sup>6</sup> ?	How much of it (PEM) is <b>non-mucky</b> ?							
XYES DNO	□<10% □10-29% □30-49%							
AILS LINO	50-70% ×>70% 95%							
Soils – PSS and PFO Portions of Wetland								
1 4 2	How much of it is <b>mucky</b> ?	Mucky soils range	Most of the mucky part(s) of					
Mucky <sup>4</sup> ?	□ <10% □10-29% □30-49%	in depth from:	the wetland can be probed <sup>5</sup> :					
□YES □NO	□ 50-70% □ >70%	to"	□ 3-5" □ 6-8" □ 9-11" □ ≥12"					
Wetland Vegetation(characterize the wetland as a whole) $\mathcal{W}$ (X) if present ( $\geq 5\%$ areal coverage), and also circle if dominant ( $\geq 20\%$ coverage). $\mathcal{W}$ ( $\approx w$ ( $\approx w$ )								
Hauntilas			no raeal nestina					
Herptiles Were any bog tu	rtles observed? $\Box$ YES <sup>7</sup> XNO If ye	es, how many?	habitat					
Other herntiles	observed previously observed:	0.0 <i>P</i>						
Other herptiles 🗆 observed 🗆 previously observed: <u>none</u>								
	( (O) ( ( 11'() - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Additional Comments/Observations: (use additional sheets if necessary)						
Additional Con	ments/Observations: (use additional she	ets if necessary)	changed balances					
Additional Con	Inents/Observations: (use additional she land within stream/de	pressional (	channel between					
Additional Com PEM Wet	land within stream/ dep 19. Freids, Features	pressional i	channel between eflow, but no					
Additional Com PEM Wet	land within stream/ dep 19. Freids, Features	pressional i	channel between eflow, but na					
Additional Com <u><u><u></u><u></u><u><u></u><u></u><u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u>	land within stream/der 19. Frelds. Features of seeps in adjacent of DR'S OPINION	pressional des stream bas	<u> </u>					
Additional Com <u><u><u></u><u></u><u><u></u><u><u></u><u><u></u><u></u><u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u></u></u>	Jand within stream/der 19. Frelds, Features alseeps in adjacent of DR'S OPINION UNSURE The hydrology criterion	pressional stream bac area. 8 for bog turtle habitat i	s met.					
Additional Com PEM wet	and within stream/der 19. frelds. Features 2/seeps in adjacent OR'S OPINION UNSURE The hydrology criterion UNSURE The soils criterion <sup>8</sup> for b	stream bac acrea. 8 for bog turtle habitat i bog turtle habitat is met	s met.					
Additional Com <u>PEM</u> <u>Wet</u> <u>9</u> <u>1000000000000000000000000000000000000</u>	and within stream/der 9. frelds. Features 0/seeps in adjacent 0 UNSURE The hydrology criterion 0 UNSURE The soils criterion <sup>8</sup> for b 0 UNSURE The vegetation criterion	stream bac stream bac area. <sup>8</sup> for bog turtle habitat is pog turtle habitat is met <sup>8</sup> for bog turtle habitat	s met.					
Additional Com <u><u><u></u></u><u><u></u><u><u></u><u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u>	And within stream/der 9. Freids. Features 0. Sopinion 0. UNSURE The hydrology criterion 0. UNSURE The soils criterion 0. UNSURE The vegetation criterion 0. UNSURE The vegetation criterion 0. UNSURE The soils cr	pressional sfream bac area. <sup>8</sup> for bog turtle habitat is prog turtle habitat is met bog turtle habitat is met bog turtle habitat.	s met.					
Additional Com <u><u><u></u><u></u><u><u></u><u><u></u><u><u></u><u></u><u><u></u><u><u></u><u></u><u></u><u><u></u><u></u><u></u><u></u><u></u></u></u></u></u></u></u></u></u>	and within stream/der 9. frelds. Features 0/seeps in adjacent 0 UNSURE The hydrology criterion 0 UNSURE The soils criterion <sup>8</sup> for b 0 UNSURE The vegetation criterion	for bog turtle habitat is for bog turtle habitat is bog turtle habitat is met for bog turtle habitat l bog turtle habitat. ation provided herein is	s met.					

Investig	ator's Name	(print)

Investigator's Signature 6

Date

(revised 00/01/2000)					
Project/Property Name: Ersenhower Drive Extension Project					
Project type: New Roadway/ Road Improvements					
Applicant/Landowner Name: Penn Por 8-a					
County: Adams Quad: McSherrystawn Township/Municipality: Conewago Township					
PNDI # $QNOI - 602909$ Potential conflict with USFWS species? $Y$					
ACTION AREA <sup>2</sup> Action area size: $593$ acres Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY $\Box N^3$					
WETLAND ID: WETLAND SIZE: $O_{1}$ ( $44$ ) acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: 0 < 0.1 acres $0.1-0.5$ acres $0 > 0.5$ to $< 1$ acres $0 - 1-2$ acres $0 - 2-4$ acres $0 - 10 + 10 + 10 + 10 + 10 + 10 + 10 + 1$					
WETLAND LOCATION: Lat <u>39.86600</u> Long <u>-77.030420°</u> W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 X NAD 83 $\Box$ WGS 84					
SURVEY CONDITIONS & LIMITATIONS					
Date of survey: $1/2/2012$ Time In: $1500$ Time Out: $1530$ Last precipitation: $24$ hours $\Box 1-7$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y > N \Box$ Unknown					
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? □ none of it – the entire wetland is within the property boundaries (skip next 2 questions) ✓ some of it – acres or $\checkmark$ ( $\bigcirc \bigcirc$ % of the wetland appears to be located off-site					
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?					
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)? Sall of it					
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \nearrow N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown					
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):					
Pasture lands, Ag. Freids, residential properties					
WETLAND CHARACTERISTICS					
Wetland type(s) present and % cover: XPEM ( 1 - PSS PFO PFO POW					
We thand type(s) present and % cover: XPEM <u>(GG</u> PSS PFO PFO POW We than type(s) present and % cover: XPEM <u>(GG</u> PSS PFO PFO POW We than type(s) present and % cover: XPEM <u>(GG</u> PSS PFO PFO POW YY ON Are there any signs of disturbance to <i>hydrology</i> (ditching, filling, ponds, roads, etc.)? If yes, describe XY ON Are there any signs of disturbance to <i>vegetation</i> (mowing, pasturing, burning, etc.)? If yes, describe Pasture successfully we thand					

7)

Project Name	Ersenhower Drive Extension Project Welland (con't)
Hydrology	
XY DN	Springs or seeps xvisible or likely? Watercress present? Yes No
IY XN	Spring houses in or adjacent to wetland?
YY DN	Saturated soils present? If yes, year-round? XLikely Unlikely Unknown
XY DN	Water visible on surface? Check all that apply: $\forall$ small puddles/depressions (1-2' deep)
	rivulets (_"deep) Klargerpootsponds (2-6" deep) - spirnghead upwelling
IY X	Evidence of flooding? If yes, describe indicators

### Soils Mapping Unit (optional): Dunning Stilty clay lean - Dy Field observations confirm mapped type? XYES INO Unknown

Soils - PEM Pe	ortion of We	etland			
Mucky <sup>4</sup> ? XYES □NO	How much □ <10% □ 50-70%	□10-29%	is mucky? 730-49% 35 /	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box$ 3-5" $\checkmark$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "
Non-mucky <sup>6</sup> ?		and the second s	is non-mucky?		2
XYES DNO	□<10% ¥50-70%	□10-29% □>70%	□ 30-49% 65 %		

#### Soils - PSS and PFO Portions of Wetland

Mucky <sup>4</sup> ?	How much	of it is muc	ky?		Frider of the match, Prive, of
□YES □NO	□<10% □ 50-70%	□10-29% □>70%	□ 30-49%	in depth from: to"	the wetland can be probed <sup>5</sup> : $\Box$ 3-5" $\Box$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "

#### Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present ( $\geq$  5% areal coverage), and also circle if dominant ( $\geq$  20% coverage).

						🗆 sphagnum moss
🗆 sensitiv	e fern 🗆 ri	ce cutgrass 🗆 te	arthumb 🛪	reed canary	grass Phragm	nites 🗆 purple loosestrife
	•			•	ic 🗆 multiflora ro	
Additiona	l dominan	t species: 🔀	nthice	m at 4	ringes	watercress

#### Herptiles

Were any bog turtles observed?  $\Box$  YES<sup>7</sup> NO If yes, how many? Other herptiles  $\Box$  observed  $\Box$  previously observed:

Additional Comments/Observations: (use additional sheets if necessary) <u>Sperrage fed emergent wetland east of Church Road</u> <u>feeds</u> rate WUS-3, which continues for the west

#### INVESTIGATOR'S OPINION

YES	□NO	UNSURE	The hydrology criterion <sup>8</sup> for bog turtle habitat is met.
YES	□NO	<b>UNSURE</b>	The soils criterion <sup>8</sup> for bog turtle habitat is met.
YYES	□NO	□ UNSURE	The <u>vegetation</u> criterion <sup>8</sup> for bog turtle habitat is met.
YES	□NO	□ UNSURE	This wetland is potential bog turtle habitat.

Crarg Patterson Nem	Eray	Patters New	41/8/2017
Investigator's Name (print)	0	Investigator's Signature	Date

USFWS / PFBC Bog Turtle Habitat Evaluation Field Form<sup>1</sup>

(revised	06/01/2006)
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( <i>revised</i> 00/01/2000)
Project/Property Name: Ersenhower Drive Extension Project Project type: New Roadway / Road Improvements Applicant/Landowner Name: Penn DOT 8-0
Project type: New Roadway / Road Improvements
Applicant/Landowner Name: PRANDOT 8-0
County: Adams Quad: McSherrystawn Township/Municipality: Conewage Township
PNDI # $PHOF = 602909$ Potential conflict with USFWS species? $\Box Y M$
ACTION AREA <sup>2</sup> Action area size: $592$ accessible Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY $\Box N^3$
WETLAND ID: $4 = 7$ PHOTOS TAKEN: Yes $\Box$ No WETLAND SIZE: $0, 0, 25$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\Box < 0.1$ acre $\Box 0.1-0.5$ acre $\Box > 0.5$ to $< 1$ acres $\Box 1-2$ acres $\Box 2-4$ acres $\Box 5+$ acres $\Box 10+$ acres
WETLAND LOCATION: Lat $39.815139^{\circ}$ M Long $-77.035275^{\circ}$ W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 SNAD 83 $\Box$ WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $1/8/2017$ Time In: $1545$ Time Out: $1615$ Last precipitation: $24$ hours $1-7$ days $> 1$ week $\square$ unknown Drought conditions? $Y$ $\square$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? $\Box$ none of it – the entire wetland is within the property boundaries (skip next 2 questions) $\checkmark$ some of it – acres or $\bigcirc \bigcirc \%$ of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \gg \Box Unknown$ If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box Unknown$
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag. Frelds, riparran stream corridor
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: XPEM 100 PSS PFO PFO POW
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe AG, Freids adjacent to westand XY IN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe AG, Freids adjacent to west and

	Project Name	Essenhower Price E	Ext. Project	Wetland 9 (con't)
	Hydrology XY IN Y XI XY IN YY IN From sele Y XN	Springs or seeps Xisible or <u>likely</u> ? Spring houses in or adjacent to wetland? Saturated soils present? If yes, year-round Water visible on surface? Check all that ap Xisibles ( <u>1-4</u> " deep) <u>larger pools/po</u> Evidence of flooding? If yes, describe ind Unit (optional): <u>Vunning Still</u> as confirm mapped type? XYES <u>NO</u>	Watercress present? ? Likely Unlike ply: small puddles, onds (" deep) icators	Yes No Seep channel Iy Unknown /depressions (" deep)
de-				
/	Soils – PEM Pe $Mucky^4$ ? $\Delta YES \square NO$	How much of it (PEM) is mucky?           □ <10%	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $3-5$ " $\Box$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "
	Non-mucky <sup>6</sup> ? ∑YES □NO	How much of it (PEM) is <b>non-mucky</b> ? □ <10% □ 50-29% □ 30-49% □ 50-70% □ >70% ♀ 5 70	- Utmitted	nucky sort
	Soils – PSS and	d PFO Portions of Wetland	omail ha	abottomed trib to V
A	$\frac{Mucky^4?}{\Box YES \ \Box NO}$	How much of it is <b>mucky</b> ? □ <10% □10-29% □ 30-49% □ 50-70% □ >70%	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box 3-5" \Box 6-8" \Box 9-11" \Box \ge 12"$
	Check (X) if pres	tion (characterize the wetland as a who sent (≥ 5% areal coverage), and also circle es skunk cabbage cattail sweet f rice cutgrass tearthumb reed can od red maple willow poison sur nant species: $Tage horey suchdegwoodthes observed? YES7 - NO If yeobserved previously observed: N$	if dominant ( $\geq 20\%$ co ag jewelweed y grass <i>Phragmites</i> nac multiflora rose <i>kle</i> , <i>Rubus</i> s, how many?	sphagnum moss subsectaring purple loosestrife
		ments/Observations: (use additional she wetland in depression a g into trib to WUS	diarent to	Ag. Freid,
Firel	INVESTIGATO XYES □ NO □ YES XNO YES □ NO □ YES XNO	OR'S OPINION       The hydrology criterion <sup>8</sup> UNSURE       The soils criterion <sup>8</sup> for b         UNSURE       The vegetation criterion         UNSURE       The vegetation criterion	og turtle habitat is met <sup>3</sup> for bog turtle habitat	
	I certify that to th	ne best of my knowledge, all of the informa	tion provided herein is	s accurate and complete.

Crarg Patterson Nern	Cisy Patters New
Investigator's Name (print)	Investigator's Signature

111/8/2017 Date

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Successive and subscription of the second
Project/Property Name: Ersenhower Prove Extension Project Project type: New Roadway / Road Improvements
Project type: New Roadway / Road Improvements
Applicant/Landowner Name: Penn Dar 8-0
County: Adams Quad: McSherrystown Township/Municipality: Conewaga Township
PNDI # $PHOI - 602909$ Potential conflict with USFWS species? $\Box Y X N$
ACTION AREA <sup>2</sup> Action area size: $-593$ acres Does the Phase 1 survey include <u>all</u> wetlands in the action area? $XY \square N^3$
WETLAND ID: $V \in [-1] \bigcirc PHOTOS TAKEN: Ves \square No$ WETLAND SIZE: $\bigcirc , 0 \le 50$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\sim 0.1$ acre $\square 0.1-0.5$ acre $\square >0.5$ to <1 acre $\square 1-2$ acres $\square 2-4$ acres $\square 5+$ acres $\square 10+$ acres
WETLAND LOCATION: Lat 39.815393° N Long $-77.034802°$ W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 XNAD 83 $\Box$ WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $11/9/2017$ Time In: $0920$ Time Out: $0950$ Last precipitation: $24$ hours $\Box 1-7$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y > 1$ $\Box$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? none of it – the entire wetland is within the property boundaries (skip next 2 questions) some of it – acres or % of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \nearrow N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag, Frelds, riparran woodlands
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: YPEM 100 PSS PFO PFO PFO
Y □N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Ag. frelds adjacent to wetland Y □N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe Ag. actrosfres (cleasing/planting) adjacent to wetland
- energent wetland adjacent to stpartan corridor, branches from adjacent canopy overhanging

Project Name	Ersenhower Drive Ext. Project Wetland 10 (con't)
Hydrology	
	Springs or seeps <u>visible</u> or <u>likely</u> ? Watercress present? Yes No Spring houses in or adjacent to wetland? <u>Seturated</u> for the first series of the second s
Y XN	Spring houses in or adjacent to wetland?
XY DN	Saturated soils present? If yes, year-round? Likely XUnlikely Unknown
Y ON	Water visible on surface? Check all that apply: Xsmall puddles/depressions (1 "deep)
-	□ rivulets (" deep) □ larger pools/ponds (" deep)
□Y XN	Evidence of flooding? If yes, describe indicators

MET-

### Soils Mapping Unit (optional): Dunning stilty clay lagn - Dy Field observations confirm mapped type? XYES NO Unknown

Soils - PEM P	ortion of Wetland			
Mucky <sup>4</sup> ? □ YES <mark>X</mark> NO	How much of it (PEI ★<10% □10-299 □ 50-70% ★70%	6 □ 30-49%	Mucky soils range in depth from: to"	<ul> <li>Most of the mucky part(s) of the wetland can be probed<sup>5</sup>:</li> <li>□ 3-5" □ 6-8" □ 9-11" □ ≥12"</li> </ul>
Non-mucky <sup>6</sup> ? XYES □NO	How much of it (PEI 	6 □ 30-49%		

	1	1
N		4

Soils - PSS and	I PFO Portions of Wetland		
$Mucky^4?$ $\Box YES \Box NO$	How much of it is <b>mucky</b> ?	Mucky soils range	Most of the mucky part(s) of
	□ <10% □10-29% □ 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :
	□ 50-70% □ >70%	to"	$\Box 3-5" \Box 6-8" \Box 9-11" \Box \ge 12"$

#### Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present ( $\geq$  5% areal coverage), and also circle if dominant ( $\geq$  20% coverage).

 $\Box$  sedges  $\Box$  rushes  $\Box$  skunk cabbage  $\Box$  cattail  $\Box$  sweet flag  $\Box$  jewelweed  $\Box$  sphagnum moss sensitive fern rice cutgrass tearthumb reed canary grass Phragmites purple loosestrife alder Xdogwood ared maple willow poison sumac multiflora rose \_\_\_\_\_\_ Additional dominant species: Rubus on fornges

#### Herptiles

Were any bog turtles observed?  $\Box$  YES<sup>7</sup> XNO If yes, how many? Other herptiles observed previously observed:

Additional Comments/Observations: (use additional sheets if necessary)

Marginal emergent wetland adjacent to reparison corridor and AG freid. No perennial groundwater sources presed

#### INVESTIGATOR'S OPINION

□ YES	NO	UNSURE	The hydrology criterion <sup>8</sup> for bog turtle habitat is met.
□ YES	XNO	UNSURE	The soils criterion <sup>8</sup> for bog turtle habitat is met.
□ YES	XNO	UNSURE	The vegetation criterion <sup>8</sup> for bog turtle habitat is met.
$\Box$ YES	XNO	□ UNSURE	This wetland is potential bog turtle habitat.

11/9/2017 Investigator's Name (print) Hern Ung Postter Neci Investigator's Signature

(revised 06/01/2006)
Project/Property Name: Ersenhaurer Dorve Extension Project
Project type: New roadway / Randway Improvements
Applicant/Landowner Name: Penn Day 8-0
County: Adams Quad: McSherrystawn Township/Municipality: Conewago Township
PNDI # $PNDI - 602909$ Potential conflict with USFWS species? $\Box Y = Y$
ACTION AREA <sup>2</sup> Action area size: $593$ acces Does the Phase 1 survey include <u>all</u> wetlands in the action area? $XY \square N^3$
WETLAND ID: WET-1 (PHOTOS TAKEN: Yes $\Box$ No WETLAND SIZE: $\bigcirc$ ,
WETLAND LOCATION: Lat $39.814317^{\circ}$ Long $-77.005817^{\circ}$ W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 XNAD 83 $\Box$ WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $11/13/17$ Time In: $130$ Time Out: $1745$ Last precipitation: X < 24 hours $1-7$ days $> 1$ week $1$ unknown Drought conditions? $Y$ N $100$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? $\Box$ none of it – the entire wetland is within the property boundaries (skip next 2 questions) Some of it – acres or $100$ % of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \nearrow N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.): Wood lands, fallow frelds, recreational sports frelds
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: XPEM 100 PSS PFO PFO PFO
XY N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Adjacent disturbance / development of recreational frects to east YXN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe

.

Project Name	Etsenhower Porve Ext	- Project	WET- Wetland <u>11</u> (con't)		
Hydrology 5	nullaw seep feeds intermittent 3	trein	some turther down in		
XY DN	Springs of seeps Xvisible or Dikely?	Watercress present?	Yes No		
UY XN	Spring houses in or adjacent to wetland?	In seep channel	• )		
XY IN	Saturated soils present? If yes, year-round	1? XLikely Unlike	ly Unknown		
Y DN	Water visible on surface? Check all that ap	oply: small puddles	/depressions ( "deep)		
X I UI	$\Box$ rivulets ( "deen) $\Box$ larger pools/n	ands (A-2 deep)			
Y YN	□rivulets (" deep) □ larger pools/po Evidence of flooding? If yes, describe ind	licators			
Soils Manning	Unit (optional): Dunning Silk	y day loas	m- Ov		
Field observatio	Unit (optional): <u>Dunning silk</u> ons confirm mapped type? <b>YES NO</b>	Unknown	Jay sorts observed		
Soils – PEM F	Portion of Wetland	90	10.0 1.0 11.		
	How much of it (PEM) is mucky?	Mucky soils range	Most of the mucky part(s) of		
$Mucky^4$ ?		in depth from:	the wetland can be probed <sup>5</sup> :		
XYES DNO	10% □10-29% □30-49%	<u>3</u> to <u>5</u> "			
1120 2110	hand 50 1010 have 1010 3 19				
Non-mucky <sup>6</sup> ?	How much of it (PEM) is <b>non-mucky</b> ?	-mmmal ol	Istream chapnel		
Sense and the sense of the sens	$\Box < 10\%$ $\Box 10-29\%$ $\Box 30-49\%$	with seen	Stream change		
XYES DNO	□ 50-70% \$>70% 95 Pa	- basdbatt	omed beneeth		
		WITCH V	acky substrate		
Soils - PSS an	nd PFO Portions of Wetland	1.12			
1.40	How much of it is <b>mucky</b> ?	Mucky soils range	Most of the mucky part(s) of		
A Mucky4?	Construction of the second sec	in depth from:	the wetland can be probed <sup>5</sup> :		
YES DNO	□ <10% □10-29% □ 30-49% □ 50-70% □ >70%	to"	$\square 3-5" \square 6-8" \square 9-11" \square \ge 12"$		
Wetland Veget Check (X) if pro	Exaction (characterize the wetland as a who esent (≥ 5% areal coverage), and also circle hes $\Box$ skunk cabbage $\Box$ cattail $\Box$ sweet f	ole) if dominant (≥ 20% cc	overage). Subsurface stru Outside of scan		
Xsedges □rus	hes □skunk cabbage □cattail □sweet f	lag 🗆 jewelweed 🗆	sphagnum moss		
sensitive fern	□rice cutgrass □ tearthumb xreed canar	ry grass <i>Phragmite</i> .	s 🗆 purple loosestrife		
🗆 alder 🗆 dogv	vood 🗆 red maple 🗆 willow 🗆 poison sur	mac 🗌 multiflora rose			
Additional dom	inant species: Mountern monty	NY Ironweed,	Monkey Flower		
Herptiles Were any bog tu		es, how many?	_		
Other herptiles	observed previously observed:	ane			
Additional Cor Small Se	nments/Observations: (use additional she ep wetland at headwar aws Ta forested up lan	ets if necessary)	row stream		
that fly	wis in torested uplan	ds.			
INVESTIGAT	OR'S OPINION				
		<sup>8</sup> for bog turtle habitat	is met.		
GIAN A LES UNO					
YES NO	$\Box \text{ UNSURE} \qquad \text{The soils criterion}^8 \text{ for b} \\ \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation criterion}^8 \\ \hline \Box \text{ UNSURE} \qquad \text{The segmentation}^8 \\ $				
			15 met.		
VES XNO					
I certify that to	the best of my knowledge, all of the information	ation provided herein i	s accurate and complete.		

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Cratg Patterson Hern	ny Patters Acia	11/13/2017
Investigator's Name (print)	Investigator's Signature	Date

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(**************************************
Project/Property Name: Frsenhower Drive Extension Project
Project type: New Roadway / Road Improvements
Project/Property Name: Essenhower Drive Extension Project Project type: New Roadway / Road Improvements Applicant/Landowner Name: PennDOT 8-0
County: Adams Quad: McSherrystawn Township/Municipality: Conewaga Tewnship
PNDI # $Q = 602909$ Potential conflict with USFWS species? $\Box Y \neq N$
ACTION AREA <sup>2</sup> Action area size: $\sim 593$ acceptoes the Phase 1 survey include <u>all</u> wetlands in the action area? XY $\Box N^3$
WETLAND ID: WET-12 PHOTOS TAKEN: Kyes $\Box$ No WETLAND SIZE: $0, 189$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\Box < 0.1$ acres $\Box > 0.5$ to $< 1$ acres $\Box 1 - 2$ acres $\Box 2 - 4$ acres $\Box 5 + $ acres $\Box 10 + $ acres
WETLAND LOCATION: Lat $39.815059^{\circ}$ Long $-77.006769^{\circ}$ W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 % NAD 83 $\Box$ WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $11/13/17$ Time In: $330$ Time Out: $1400$ Last precipitation: $24$ hours $1-7$ days $> 1$ week $\square$ unknown Drought conditions? $Y$ $N$ $\square$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? $\Box$ none of it – the entire wetland is within the property boundaries (skip next 2 questions) $\forall$ some of it – acres or $\Box \diamond \diamond$ . % of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \nearrow N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Woodlands, commercial properties, fallow fields
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover:  PEM PSS PFO POW POW
XY N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Patentral impacts from severime ROW XY N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe Sever line ROW clearing

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Project Name	Essenhoures Drive E	Ext Project	Wetland 12 (con't)			
Hydrology Y XN Y XN XY N XY N Y N	Hydrology       Wetfand derven by seasonal water table and surface         Y XN       Springs or seeps       visible or <a href="millikely">visible or <a href="millikely">likely</a>? Watercress present?       Yes XNo         Y XN       Spring houses in or adjacent to wetland?       Saturated soils present?       Yes Soils         XY       N       Saturated soils present?       If yes, year-round?       Likely       Unlikely       Unknown       water visible on surface?         Y N       Water visible on surface?       Check all that apply:       Xsmall puddles/depressions (I-3" deep)         rivulets       I arger pools/ponds       "deep)</a>					
□ Y X Soils Mapping Field observation	Evidence of flooding? If yes, describe in <b>Unit (optional)</b> : Dunning Sons confirm mapped type? XYES IN		am - Dy			
Soils – PEM I	Portion of Wetland					
<i>Mucky</i> <sup>4</sup> ? □YES □NO		Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box 3-5" \Box 6-8" \Box 9-11" \Box \ge 12"$			
Non-mucky <sup>6</sup> ? □ YES □ NO	How much of it (PEM) is <b>non-mucky</b> □ <10% □10-29% □ 30-49% □ 50-70% □ >70%	?				
Soils - PSS at	nd PFO Portions of Wetland	no murfer sai	is, all hard-battaned			
Mucky <sup>4</sup> ?	How much of it is <b>mucky</b> ?	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box 3-5^{\circ} \Box 6-8^{\circ} \Box 9-11^{\circ} \Box \ge 12^{\circ}$			
Check (X) if provide the sensitive form alder addressed and addressed addressed and addressed		t flag $\Box$ jewelweed $\Box$ nary grass $\Box$ <i>Phragmites</i> sumac Xinultiflora rose	sphagnum moss purple loosestrife acksum			
Additional Cor	Other herptiles observed previously observed: <u>nane</u> Additional Comments/Observations: (use additional sheets if necessary) - Marginal wetland in woodlands, no perenntal springs Or seeps, no mucky soils					
05 9						
INVESTIGAT YES NO YES NO YES NO YES NO	$\Box$ UNSUREThe soils criterion <sup>8</sup> fo $\Box$ UNSUREThe vegetation criterion	on <sup>8</sup> for bog turtle habitat i r bog turtle habitat is met on <sup>8</sup> for bog turtle habitat tial bog turtle habitat.	*			
	the best of my knowledge, all of the infor	mation provided herein is	accurate and complete.			

Investigator's Name (print)	Eres Potton Rec.	11/13/2017
Investigator's Name (print)	Investigator's Signature	Date

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(revised 06/01/2006)
Project/Property Name: Essenbouxer Orgine Extension Propert
Project/Property Name: Essenhower Drive Extension Project Project type: New Roadway / Roadway Improvements Applicant/Landowner Name: Penp DOT 8-0
Applicant/Landowner Name: Peno Pot 8-0
County: Adams Quad: McSherrystawnTownship/Municipality: Conewaga Tawnship
PNDI # $PHOI - 602909$ Potential conflict with USFWS species? $\Box Y > N$
ACTION AREA <sup>2</sup> Action area size: $593$ acres Does the Phase 1 survey include <u>all</u> wetlands in the action area? $100$ $\square$ $N^3$
WETLAND ID: WEX-13 PHOTOS TAKEN: Yes $\Box$ No WETLAND SIZE: 0.524 acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\Box < 0.1$ acre $\Box 0.1-0.5$ acre $\Box > 0.5$ to $<1$ acres $\Box 1-2$ acres $\Box 2-4$ acres $\Box 5+$ acres $\Box 10+$ acres
WETLAND LOCATION: Lat 39.817023 Long $-7.7.011222^{\circ}$ (approximate center of wetland) GPS Datum (check one): NAD 27 XNAD 83 WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: Time In: Time In: Time Out: $1615$ Last precipitation: X<24 hours 1-7 days _> 1 week unknown Drought conditions? Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? none of it – the entire wetland is within the property boundaries (skip next 2 questions) Some of it –acres or% of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \times N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag. Fields, Commercial development, spartan woodlands
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: TREM 100 PSS PFO PFO PFO
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Stre express to be ald pend that has stited in. YXN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe

Project Name	Ersenhower Drive Ext. Project Wetland 13 (con't)
Hydrology	na parenneal graundwater springs/seeps abserved Springs or seeps Disible or Dikely? Watercress present? Dyes XNo
UY XN	Springs or seeps visible or likely? Watercress present? Yes XNo
$\Box Y \times N$	Spring houses in or adjacent to wetland?
XY DN	Saturated soils present? If yes, year-round? Likely XUnlikely Unknown
XY DN	Water visible on surface? Check all that apply: X small puddles/depressions Q-4" deep) □ rivulets (" deep) □ larger pools/ponds (" deep) □ a 1d gand haldrng Evidence of flooding? If yes, describe indicators
UY XN	Evidence of flooding? If yes, describe indicators <u>susface</u> water

Soils Mapping Unit (optional): <u>Punntng stity clay laam - Dy</u> Field observations confirm mapped type? XYES NO Unknown

Soils – PEM Pe	Formula         Wetland           How much of it (PEM) is mucky?           X<10%         □10-29%         □ 30-49%           □ 50-70%         □>70%         1         7	Mucky soils range	Most of the mucky part(s) of
Mucky <sup>4</sup> ?		in depth from:	the wetland can be probed <sup>5</sup> :
XYES □NO		3 to 4.	$3-5^{\circ} \square 6-8^{\circ} \square 9-11^{\circ} \square \ge 12^{\circ}$
Non-mucky <sup>6</sup> ? '∕XYES □NO	How much of it (PEM) is <b>non-mucky</b> □ <10% □10-29% □ 30-49% □ 50-70% ▼>70% 9 9 %	Mincst er	strrely hard battane

#### Soils - PSS and PFO Portions of Wetland

Mucky <sup>4</sup> ?	How much	of it is muc	ky?		Most of the mucky part(s) of
	□<10%	□10-29%	□ 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :
$\Box$ YES $\Box$ NO	□ 50-70%	□>70%		to"	□ 3-5" □ 6-8" □ 9-11" □ ≥12"

#### Wetland Vegetation (characterize the wetland as a whole)

Check (X) if present ( $\geq$  5% areal coverage), and also circle if dominant ( $\geq$  20% coverage).

sparse

X sedges I rushes I skunk cabbage R cattail sweet flag I jewelweed Sphagnum moss

□ sensitive fern □ rice cutgrass □ tearthumb ≪ reed canary grass □ Phragmites □ purple loosestrife □ alder □ dogwood □ red maple □ willow □ poison sumac □ multiflora rose □\_\_\_\_\_

Additional dominant species: Bax elder on fringes

#### Herptiles

Were any bog turtles observed?  $\Box$  YES<sup>7</sup> XNO If yes, how many? \_\_\_\_\_ Other herptiles  $\Box$  observed  $\Box$  previously observed: <u>vrone</u>

### Additional Comments/Observations: (use additional sheets if necessary)

PEM wetland west of WUS-S, north of Clarks Building, Appears to be an old pand with surface connection to WUS-S from channel flowing north.								
INVES'	INVESTIGATOR'S OPINION							
$\Box$ YES	$\Box$ YES XNO $\Box$ UNSURE The <u>hydrology</u> criterion <sup>8</sup> for bog turtle habitat is met.							
$\Box$ YES XNO $\Box$ UNSURE The <u>soils</u> criterion <sup>8</sup> for bog turtle habitat is met.								
$\times$ YES $\Box$ NO $\Box$ UNSURE The <u>vegetation</u> criterion <sup>8</sup> for bog turtle habitat is met.								
□ YES	XNO	UNSURE	This wetland is potential bog turtle habitat.					

Investigator's Name (print) 11/13/2017

(revised 06/01/2006)
Project/Property Name: Ersenhower Dreve Extension Project Project type: <u>New Roadway / Roadway Improvements</u> Applicant/Landowner Name: <u>Penn Pot 8-0</u> County: <u>Hdams</u> Quad: <u>McSherrystow</u> Township/Municipality: <u>Conewaga Township</u>
PNDI # $PHDI - GOZ909$ Potential conflict with USFWS species? $\Box Y = X$
ACTION AREA <sup>2</sup> Action area size: $593$ acres Does the Phase 1 survey include <u>all</u> wetlands in the action area? $XI \square N^3$
WETLAND ID: WET-19 PHOTOS TAKEN: XYes $\Box$ No WETLAND SIZE: $\bigcirc$ ,
WETLAND LOCATION:Lat $39.810993^{\circ}$ Long $-77.013862^{\circ}$ (approximate center of wetland)GPS Datum (check one):NAD 27XNAD 83WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $1/14/17$ Time In: $0945$ Time Out: $1915$ Last precipitation: $24$ hours 1-7 days $> 1$ week $2$ unknown Drought conditions? $Y$ N $2$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? none of it – the entire wetland is within the property boundaries (skip next 2 questions) Some of it – acres or & of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)? Xall of it $\Box$ part of it (at least acres) $\Box$ none of it
Are there any wetlands located off-site and close enough to be affected by this project? □Y
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.): Ag. frelds, fallow frelds, residentral properties
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: XPEM 100 PSS PFO PFO PFO
YY N Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe <u>AZTACENT to roadway frit slope</u> YY N Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe <u>AZTACENT to Ag. fre.(d., mowed) cleared for Ag. up to edge</u>

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	5		D	WET-				
	Project Name	Ergenhauer Prive Ext.	resject	Wetland 19 (con't)				
	Yes XNo atls below surface for brigh water table y Unknown depressions (1-2" deep)							
	Y XN       Evidence of flooding? If yes, describe indicators         Soils Mapping Unit (optional):       Conestoga stit laam - CnA         Field observations confirm mapped type?       YES NO Unknown							
	Soils – PEM P	ortion of Wetland	r					
	Mucky <sup>4</sup> ?	How much of it (PEM) is mucky? ✓<10% □10-29% □30-49% □ 50-70% □>70% ∩ %	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box$ 3-5" $\Box$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "				
14.	Non-mucky <sup>6</sup> ? ≰YES □NO	How much of it (PEM) is <b>non-mucky</b> ? □ <10% □10-29% □ 30-49% □ 50-70% ►>70% □ 00 €	π. X					
	Soils – PSS and	d PFO Portions of Wetland		illes .				
-	$\frac{Mucky^{4}}{2}$	How much of it is <b>mucky</b> ? □ <10% □10-29% □ 30-49% □ 50-70% □ >70%	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : □ 3-5" □ 6-8" □ 9-11" □ ≥12"				
	Wetland Vegetation (characterize the wetland as a whole)         Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage).         sedges □rushes □skunk cabbage cattal □sweet flag □jewelweed □sphagnum moss         sensitive fern crice cutgrass □ tearthumb □reed canary grass □Phragmites □ purple loosestrife         alder □ dogwood □red maple □ willow □poison sumac □ multiflora rose □         Additional dominant species:							
	Herptiles Were any bog turtles observed? $\Box$ YES <sup>7</sup> XNO If yes, how many? Other herptiles $\Box$ observed $\Box$ previously observed: <u>None</u>							
	Additional Comments/Observations: (use additional sheets if necessary) Small wettand adjacent to KIndra lane fill slape, no perential groundwater sources							
	INVESTIGATOR'S OPINION         YES       UNSURE         The vegetation       Friterion <sup>8</sup> for bog turtle habitat is met.         YES       UNSURE         The vegetation       Friterion <sup>8</sup> for bog turtle habitat is met.         This wetland is potential bog turtle habitat.							
	I certify that to the best of my knowledge, all of the information provided herein is accurate and complete. <u>Crang</u> Patterson Hern <u>Cray</u> Potters <u>New</u> <u>H1/14/2017</u> Investigator's Name (print) <u>Date</u>							

Project/Property Name: Ersenhower Drive Extension Project					
Project type: New Roadway / Randway Improvements					
Applicant/Landowner Name: Penn Day 8-0					
County: Adams Quad: McSherrystawh Township/Municipality: Conewago Township					
PNDI # $PHOF - 60.290$ Potential conflict with USFWS species? $\Box$ YXN					
ACTION AREA <sup>2</sup> Action area size: $593$ acces Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY $\square$ N <sup>3</sup>					
WETLAND ID: WET-15 PHOTOS TAKEN: XYes $\Box$ No WETLAND SIZE: $0, 10, 4$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\Box < 0.1$ acres $0.1-0.5$ acres $\Box > 0.5$ to $< 1$ acres $\Box 1-2$ acres $\Box 2-4$ acres $\Box 5+$ acres $\Box 10+$ acres					
WETLAND LOCATION: Lat 39.8186324 N Long $-77.0114989W$ (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 X NAD 83 $\Box$ WGS 84					
SURVEY CONDITIONS & LIMITATIONS					
Date of survey: $11/14/2017$ Time In: $1130$ Time Out: $1200$ Last precipitation: $\Box < 24$ hours $17$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y$ $CN \Box$ Unknown					
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? □ none of it – the entire wetland is within the property boundaries (skip next 2 questions) ∑some of it –acres or% of the wetland appears to be located off-site					
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?					
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?					
Are there any wetlands located off-site and close enough to be affected by this project? □Y 🔊 □ Unknown If yes, <i>could</i> they be potential bog turtle habitat? □Y □ N □ Unknown					
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.): Ag. fre.lds, riparian woodlands					
WETLAND CHARACTERISTICS					
Wetland type(s) present and % cover: XPEM 100 □ PSS □ PFO □ PFO					
$XY \square N$ Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe					
<u>Compaction from past/current a artcultural activities</u> XY IN Are there any signs of disturbance to <i>vegetation</i> (mowing, pasturing, burning, etc.)? If yes, describe					
Mowing adjacent to and acress small path of wetland					

	Project Name	Ersenhower Drive Ext	- Project	Wetland $(5 \pmod{t})$		
shallow	Hvdrology         Y XN       Springs or seeps I visible or I likely?         Y XN       Spring houses in or adjacent to wetland?         Y XN       Spring houses in or adjacent to wetland?         Y XN       Saturated soils present? If yes, year-round?         Likely XUnlikely       Unknown         Y XN       Saturated soils present? If yes, year-round?         Likely XUnlikely       Unknown         Y XN       Water visible on surface? Check all that apply: Xsmall puddles/depressions (1-2)" deep)         I rivulets ( " deep)       I larger pools/ponds (" deep)         Y XN       Evidence of flooding? If yes, describe indicators         Soils Mapping Unit (optional):       Output Stress Stress Stress Class         Y YES       NO         Unknown					
	Soils - PEM P	Portion of Wetland				
	Mucky <sup>4</sup> ?	How much of it (PEM) is <b>mucky</b> ? $\Box < 10\%$ $\Box 10-29\%$ $\Box 30-49\%$	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : □ 3-5" □ 6-8" □ 9-11" □ ≥12"		
	Non-mucky <sup>6</sup> ? XYES □ NO	How much of it (PEM) is non-mucky: $\Box < 10\%$ $\Box 10-29\%$ $\Box 30-49\%$ $\Box 50-70\%$ $\Delta > 70\%$ $\Box 00$ 7 $C$		ely hardbattemed		
	Soils – PSS an	d PFO Portions of Wetland				
M/A	$\frac{Mucky^4?}{\Box \text{ YES }\Box \text{ NO}}$	How much of it is <b>mucky</b> ? □ <10% □10-29% □ 30-49% □ 50-70% □ >70%	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box$ 3-5" $\Box$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "		
98	Wetland Vegetation (characterize the wetland as a whole)       no subsurface         Check (X) if present (≥ 5% areal coverage), and also circle if dominant (≥ 20% coverage). Structural features         State         Sedges □ rushes □ skunk cabbage □ cattail □ sweet flag □ jewelweed □ sphagnum moss         □ sensitive fern □ rice cutgrass □ tearthumb & reed canary grass □ Phragmites □ purple loosestrife         □ alder □ dogwood □ red maple □ willow □ poison sumac □ multiflora rose □         Additional dominant species:       false nettle , fringed by box elder situes maple, green ast					
	HerptilesWere any bog turtles observed? $\Box$ YES7 XNOIf yes, how many?Other herptiles $\Box$ observed $\Box$ previously observed: $\frown \Box = \Box$ $\frown \Box = \Box$					
	Additional Comments/Observations: (use additional sheets if necessary) <u>PEM wettend adjacent to Ag. Freld and repartan woodlands</u> east of WUS-8. <u>Ma perenneal groundwater hydrology observed</u> .					
	INVESTIGATOR'S OPINION         YES       YES         YES					

Crata Pathessan Nem	has Patters lei	11/14/2017
Investigator's Name (print)	Investigator's Signature	Date

Project/Property Name: Etsenhower Prive Extension Project				
Project type: New Randway / Randway Improvements				
Applicant/Landowner Name: Penn Pat 8-0				
County: Adams Quad: McSherrystawn Township/Municipality: Conewaga Township				
PNDI # $\underline{PHVI} - \underline{60290}$ Potential conflict with USFWS species? $\Box$ YXN				
ACTION AREA <sup>2</sup> Action area size: $\frac{\sqrt{593}}{\sqrt{593}}$ Does the Phase 1 survey include <u>all</u> wetlands in the action area? $\boxed{\times Y} \square N^3$				
WETLAND ID: $W = 7 - 16$ PHOTOS TAKEN: $X$ Yes $\Box$ No WETLAND SIZE: $0.05$ acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $X < 0.1$ acre $\Box$ 0.1-0.5 acre $\Box > 0.5$ to <1 acre $\Box$ 1-2 acres $\Box$ 2-4 acres $\Box$ 5+ acres $\Box$ 10+ acres				
WETLAND LOCATION: Lat 39.8175050 H Long $-7.7.0102/60$ W (approximate center of wetland) GPS Datum (check one): $\Box$ NAD 27 XNAD 83 $\Box$ WGS 84				
SURVEY CONDITIONS & LIMITATIONS				
Date of survey: $1/1/201$ Time In: $1245$ Time Out: $1315$ Last precipitation: $\Box < 24$ hours $1-7$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y \not\subseteq N \Box$ Unknown				
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? □ none of it – the entire wetland is within the property boundaries (skip next 2 questions) Some of it – acres or OO_ % of the wetland appears to be located off-site				
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?				
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?				
Are there any wetlands located off-site and close enough to be affected by this project? □Y 文N □ Unknown If yes, <i>could</i> they be potential bog turtle habitat? □Y □ N □ Unknown				
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):				
Ag. frelds, riparian woodlands				
WETLAND CHARACTERISTICS				
Wetland type(s) present and % cover: PEM 100 PSS DPFO PFO PFO				
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe <u>Compaction from past/current agricultural activities</u> XY IN Are there any signs of disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe <u>Mawing adjacent to wetland</u>				

Project Name	Essenhower	Drive E	Ext. Project	WET- Wetland $16$ (con't)
Hydrology Y XN Y XN Y XN Y N Y N Y N Soils Mapping	Spring houses in or adjac Saturated soils present? Water visible on surface I rivulets (" deep) Evidence of flooding?	cent to wetland If yes, year-ro ? Check all tha □ larger pool If yes, describe	ound? □ Likely ➤ Unlike at apply: ➤ small puddles/ ls/ponds (" deep)	ly □ Unknown depressions ( <u>1 - </u> ) deep)
$\frac{\text{Solis} - \text{PEM}}{Mucky^4?}$ $\Box \text{ YES } \text{Mucky}^6$	Portion of Wetland           How much of it (PEM           □ <10%	□ 30-49%	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : $\Box$ 3-5" $\Box$ 6-8" $\Box$ 9-11" $\Box \ge 12$ "
Non-mucky <sup>6</sup> ? ❤️YES □ NO	$\Box < 10\%$ $\Box 10-29\%$		- marcing h	ardbattamed.
Soils - PSS a	nd PFO Portions of Wet	land		
$\begin{array}{c} \text{Mucky}^{4}?\\ \square \text{ YES } \square \text{ NC} \end{array}$	XX 1 C'''	cky?	Mucky soils range in depth from: to"	Most of the mucky part(s) of the wetland can be probed <sup>5</sup> : □ 3-5" □ 6-8" □ 9-11" □ ≥12"
Check (X) if pr sedges □ ru sensitive ferr alder □ dog	shes □ skunk cabbage □ □ □ rice cutgrass □ tearth wood □ red maple □ wi	e), and also circle cattail $\Box$ swe numb screed c llow $\Box$ poison	whole) rcle if dominant ( $\geq 20\%$ co cet flag $\Box$ jewelweed $\Box$ canary grass $\Box$ Phragmites a sumac $\Box$ multiflora rose $\Box \leq \Box \leq c \leq $	sphagnum moss
	urtles observed? □ YES □ observed □ previous		If yes, how many?	-
Additional Co REM in Cast of	mments/Observations: ofland adjace wus-8. Ma	(use additional ent ta : perenni	sheets if necessary) Ag, freld and ral groundwa	ter hydrology ob
	COR'S OPINION $\Box$ UNSUREThe <u>h</u> $\Box$ UNSUREThe <u>s</u> $\Box$ UNSUREThe <u>s</u>	ydrology criter oils criterion <sup>8</sup> f	rion <sup>8</sup> for bog turtle habitat i for bog turtle habitat is met rion <sup>8</sup> for bog turtle habitat i ntial bog turtle habitat.	is met.

Crarg Patterson Nero	Pra Patter	> Nein	11/14/2017
Investigator's Name (print)	Investigator's	s Signature	Date

Project/Property Name: Ersenhower Dorve Extension Project
Project type: New Roadway / Randway Improvements
Applicant/Landowner Name: Penn Dat 8-0
County: Adams Quad: McSherrystawnTownship/Municipality: Conewaga Township
PNDI # $PNPI - 602909$ Potential conflict with USFWS species? $\Box$ YNN
ACTION AREA <sup>2</sup> Action area size: $593$ acces Does the Phase 1 survey include <u>all</u> wetlands in the action area? XY $\square$ N <sup>3</sup>
WETLAND ID: WET-17 PHOTOS TAKEN: XYes $\Box$ No WETLAND SIZE: 0.865 acres Wetland size estimation – If actual acreage is not known at time of investigation, check one: $\Box < 0.1$ acre $\Box$ 0.1-0.5 acre X>0.5 to <1 acre $\Box$ 1-2 acres $\Box$ 2-4 acres $\Box$ 5+ acres $\Box$ 10+ acres
WETLAND LOCATION: Lat 39, 821773° N Long -77, 005057° V (approximate center of wetland) GPS Datum (check one): D NAD 27 Y NAD 83 D WGS 84
SURVEY CONDITIONS & LIMITATIONS
Date of survey: $11(14(20)7)$ Time In: $1500$ Time Out: $1600$ Last precipitation: $\Box < 24$ hours $17$ days $\Box > 1$ week $\Box$ unknown Drought conditions? $\Box Y = 0$ Unknown
How much of this wetland is located <i>off-site</i> ( <i>i.e.</i> , outside the property boundaries or right-of-way)? □ none of it – the entire wetland is within the property boundaries (skip next 2 questions) ∑some of it – acres or% of the wetland appears to be located off-site
If part of this wetland continues off-site, how much of the <i>off-site portion</i> was surveyed (on foot)?
How much of the <i>off-site portion</i> of this wetland is visible ( <i>e.g.</i> , from the subject property or from a public road)?
Are there any wetlands located off-site and close enough to be affected by this project? $\Box Y \nearrow N \Box$ Unknown If yes, <i>could</i> they be potential bog turtle habitat? $\Box Y \Box N \Box$ Unknown
Describe surrounding landscape (wetlands, forest, subdivision, agricultural field, fallow field, etc.):
Ag. Frelds, commercial properties, railread
WETLAND CHARACTERISTICS
Wetland type(s) present and % cover: XPEM 100 PSS PFO PFO PFO
XY IN Are there any signs of disturbance to hydrology (ditching, filling, ponds, roads, etc.)? If yes, describe Wetland formed on existing disturbance disturbance to vegetation (mowing, pasturing, burning, etc.)? If yes, describe
Wetland consists of a dramage ditch that convexs starmwater north to slagle Run

	Project Name	Ersenhower Drive E	xt. Projec	$\frac{1}{1}  \text{Wetland}  \frac{1}{2}  (\text{con't})$		
23						
	<u>Hydrology</u> ∃YXN	Springs or seeps <u>visible</u> or <u>likely</u> ? Watercress present? Yes No hydrology driven Spring houses in or adjacent to wetland?				
	Y XN	Spring houses in or adjacent to wetland?	and the second	by surface	water/	
	YXN	Saturated soils present? If yes year-round?	2 □ Likely □ Unlike	Iv Unknown Stormwate	Jan m	
		Saturated soils present? If yes, year-round? Water visible on surface? Check all that any	nly: Xsmall nuddles	depressions (0, 5" deep)	CTION	
· ·	□ rivulets ("deep) □ larger pools/ponds ( deep)					
)	⊈Y □N	Evidence of flooding? If yes, describe indi	cators bent ve	tram flows		
	Soils Mapping Field observatio	Unit (optional): <u>Unintra Stike</u> ons confirm mapped type? KYES INO	Unknown	(V)	1	
	Soils - PEM H	Portion of Wetland				
	Mucky <sup>4</sup> ?	How much of it (PEM) is mucky?	Mucky soils range	Most of the mucky part(s) of		
		□ <10% □10-29% □ 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :		
	D YES XNO	□ 50-70% □ >70% C <sup>9</sup> a	to"	□ 3-5" □ 6-8" □ 9-11" □ ≥12"		
	Non-mucky6?	How much of it (PEM) is <b>non-mucky</b> ?	entrely	hard-battamed, nucky satts		
	AVER DNO	□ <10% □10-29% □ 30-49%		welfer sails		
	XYES D NO	□ 50-70% □ >70% (0079	410 44	inchy said		
1	Soils – PSS ar	nd PFO Portions of Wetland			]	
	Mucky <sup>4</sup> ?	How much of it is <b>mucky</b> ?	Mucky soils range	Most of the mucky part(s) of		
N/A		□ <10% □10-29% □ 30-49%	in depth from:	the wetland can be probed <sup>5</sup> :		
	□ YES □ NO	□ 50-70% □ >70%	to"	□ 3-5" □ 6-8" □ 9-11" □ ≥12"		
	Wetland Vegetation (characterize the wetland as a whole)no subsurfaceCheck (X) if present ( $\geq$ 5% areal coverage), and also circle if dominant ( $\geq$ 20% coverage).Structural $\subseteq$ sedges $\Box$ rushes $\Box$ skunk cabbage $\Box$ cattail $\Box$ sweet flag $\Box$ jewelweed $\Box$ sphagnum mossStructural $\Box$ sensitive fern $\Box$ rice cutgrass $\Box$ tearthumb (Xreed canary grass) $\Box$ Phragmites $\Box$ purple loosestrifea b served. $\Box$ alder $\Box$ dogwood $\Box$ red maple $\Box$ willow $\Box$ poison sumac $\Box$ multiflora rose $\Box$ Additional dominant species: Blue version , Spasse black cherry in ditch					
	Herptiles Were any bog turtles observed?  YES <sup>7</sup> XNO If yes, how many? Other herptiles  observed  previously observed:  OOOE					
	Additional Comments/Observations: (use additional sheets if necessary) Wetland detch that conveys starmwater, no persistent graundwater-fed hydralagy of mucky sails					
	INVESTIGAT	OR'S OPINION				
	VES NO					
	$\Box$ YES NO $\Box$ UNSURE The <u>soils</u> criterion <sup>8</sup> for bog turtle habitat is met.					
	$\times$ YES $\Box$ NO $\Box$ UNSURE The <u>vegetation</u> criterion <sup>8</sup> for bog turtle habitat is met.					
110/11	□ YES XNO □ UNSURE This wetland is potential bog turtle habitat.					

Crarg Patterson Nem Cros Patters Deta 11/14/2017 Investigator's Name (print) Investigator's Signature Date



### Appendix E Site Photographs





Site Photographs 2016 Fieldwork





Photo 1: Looking southeast along Centennial Road near the southernmost end of WUS-1 in the south-central portion of the study area. Photo taken November 17, 2016.



Photo 2: Looking north (downstream) from Centennial Road toward WUS-1 in the south-central portion of the study area. Photo taken November 17, 2016.

Site Photographs, Wetland I&D and Phase 1 Bog Turtle Habitat Assessment Report





Photo 3: Looking northeast along WUS-1, located southwest of WET-1. Photo taken November 17, 2016.



Photo 4: Looking north along WUS-1 within the forested portion of WET-1. Photo taken December 27, 2016.





Photo 5: Looking northwest (downstream) along Plum Creek (WUS-2) toward the Chapel Road bridge. Photo taken December 7, 2016.



Photo 6: Looking southeast (upstream) along a section of Plum Creek (WUS-2) in the south-central portion of the study area. Photo taken November 17, 2016.

Site Photographs, Wetland I&D and Phase 1 Bog Turtle Habitat Assessment Report





Photo 7: Looking southeast (upstream) along Plum Creek (WUS-2) adjacent to northwestern end of WET-2. Photo taken November 18, 2016.



Photo 8: Looking southeast (upstream) along WUS-3 in the central portion of the study area. The southeastern end of WET-3 is visible in the foreground. Photo taken November 18, 2016.

Site Photographs, Wetland I&D and Phase 1 Bog Turtle Habitat Assessment Report





Photo 9: Looking south (upstream) along WUS-3 in the central portion of the study area. Photo taken December 7, 2016.



Photo 10: Looking west along a portion of WUS-4 located south of WET-6. Photo taken December 27, 2016.



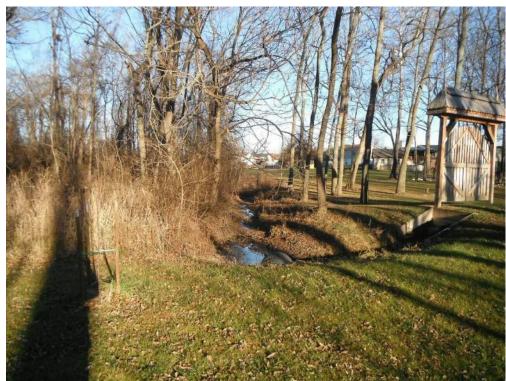


Photo 11: Looking east toward WUS-4, an intermittent tributary to Plum Creek located north of Tiffany Court. Photo taken December 27, 2016.



Photo 12: Looking southeast toward WUS-4A, a small intermittent stream that drains into WUS-4 just east of its confluence with Plum Creek. Photo taken December 27, 2016.





Photo 13: Looking north toward the DP-1-WET sample plot location within the PEM portion of WET-1. Photo taken November 17, 2016.



Photo 14: Looking northeast toward the DP-1-UPL sample plot location along WUS-1, located southwest of WET-1. Photo taken November 17, 2016.





Photo 15: Looking southwest towards the southern portion of WET-1. Photo taken November 17, 2016.



Photo 16: Looking north toward DP-1A-WET sample plot within the forested portion of WET-1, located along the western side of WUS-1. Photo taken December 27, 2016.





Photo 17: Looking west toward DP-1A-UPL sample plot facing agricultural fields located west of the forested portion of WET-1. Photo taken December 27, 2016.



Photo 18: Looking northeast toward DP-2-WET sample plot within WET-2. Photo taken November 17, 2016.





Photo 19: Looking east toward edge of DP-2-WET sample plot within WET-2. Photo taken November 18, 2016.



Photo 20: Looking west toward DP-2-UPL sample plot located in fallow field east of Plum Creek and west of WET-2. Photo taken November 18, 2016.





Photo 21: Looking southeast toward a culvert feeding a depressional mucky drainage channel within WET-2. Photo taken November 17, 2016.



Photo 22: Looking north toward PEM portion of WET-2 located south of a residential area. Photo taken November 17, 2016.





Photo 23: Looking northwest toward depressional area at the northern end of WET-2. Photo taken December 27, 2016.



Photo 24: Looking northwest toward the DP-3-WET sample plot location within WET-3, a small PEM wetland associated with WUS-3 in the north-central portion of the study area. Photo taken November 18, 2016.





Photo 25: Looking southeast toward DP-3-UPL sample plot located upslope from WET-3. Photo taken November 18, 2016.



Photo 26: Looking south toward DP-4-WET sample plot located in the northern portion of WET-4, a large PEM wetland located east of Plum Creek. Photo taken December 7, 2016.





Photo 27: Looking north toward DP-4-UPL sample plot located west of WET-4. Photo taken December 7, 2016.



Photo 28: Looking north toward WET-4 from the southernmost portion of the wetland, located north of a forested area. Photo taken December 7, 2016.





Photo 29: Looking north within an excavated, hard-bottomed drainage ditch located to the west of WET-4. Photo taken December 7, 2016.



Photo 30: Looking northwest toward DP-5-WET sample plot within WET-5, a small PEM wetland located to the west of Plum Creek in the central portion of the study area. Photo taken December 8, 2016.





Photo 31: Looking southeast toward DP-5-UPL sample plot, located to the west of WET-5. Photo taken December 7, 2016.



Photo 32: Looking southwest toward WET-5. Evidence of flooding from Plum Creek is visible in the foreground. Photo taken December 8, 2016.





Photo 33: Looking northwest toward the DP-6-WET sample plot on eastern side of WET-6, a large forested wetland located east of Plum Creek in the central portion of the study area. Photo taken December 21, 2016.



Photo 34: Looking northeast toward the DP-6-UPL sample plot to the east of WET-6. Photo taken December 21, 2016.





Photo 35: Looking south toward the northern end of WET-6, where the forested wetland meets the southern end of WET-4. Photo taken December 21, 2016.



Photo 36: Looking north toward a small spring seep within WET-6 that flows north along a hard-bottomed drainage. Photo taken December 21, 2016.





Photo 37: Looking northwest toward DP-A-UPL sample plot located in the floodplain east of Plum Creek and south of Chapel Road in the north-central portion of the study area. Photo taken December 21, 2016.



Photo 38: Looking south toward DP-B-UPL sample plot located in the floodplain to the east of Plum Creek. Photo taken December 27, 2016.





Site Photographs 2017 Fieldwork





Photo 39: Looking east along WUS-5 located just south of Hanover Road (Route 116) in the southwest portion of the study area. Photo taken November 8, 2017.



Photo 40: Looking east along WUS-6 located just north of Hanover Road in the southwest portion of the study area. Photo taken November 8, 2017.





Photo 41: Looking northwest toward the eastern end of WUS-6, which emanates from a pipe on an adjacent residential property in the southwest portion of the study area. Photo taken November 8, 2017.



Photo 42: Looking east along WUS-7 in a wooded area to the west of Sunday Drive, in the southwest portion of the study area. Photo taken November 8, 2017.





Photo 43: Looking north toward the DP-7-WET sample plot from the southern end of WET-7 in the southwest portion of the study area. Photo taken November 8, 2017.



Photo 44: Looking west toward the DP-7-UPL sample plot at the northern end of WET-7 in the southwest portion of the study area. Photo taken November 8, 2017.





Photo 45: Looking west toward the groundwater spring system within WET-8, located to the east of Church Street in the central portion of the study area. Photo taken November 8, 2017.



Photo 46: Looking northeast toward the DP-8-WET sample plot within WET-8 in the central portion of the study area. Photo taken November 8, 2017.





Photo 47: Looking north toward the DP-8-UPL sample plot, located just north of WET-8 in the central portion of the study area. Photo taken November 8, 2017.



Photo 48: Looking southwest toward the DP-9-WET sample plot within WET-9, located in the central portion of the study area. Photo taken November 8, 2017.





Photo 49: Looking northwest toward the DP-9-UPL sample plot in the central portion of the study area. Photo taken November 8, 2017.



Photo 50: Looking north toward WUS-3A which connects WET-9 to WUS-3 in the central portion of the study area. Photo taken November 8, 2017.





Photo 51: Looking northwest toward the DP-10-WET sample plot within WET-10, located in the central portion of the study area. Photo taken November 8, 2017.



Photo 52: Looking northwest toward WET-10, located to the east of WET-9 in the central portion of the study area. Photo taken November 9, 2017.





Photo 53: Looking east along WUS-8 to the north of Kindig Lane in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 54: Looking north toward the DP-C-UPL sample plot in the WUS-8 floodplain in the eastern portion of the study area. Photo taken November 13, 2017.





Photo 55: Looking southeast along WUS-8A, which flows northwest toward its confluence with WUS-8 in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 56: Looking west toward the confluence of WUS-8A and WUS-8 in the eastern portion of the study area. Photo taken November 13, 2017.





Photo 57: Looking south toward the WUS-9 culvert beneath Kindig Lane in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 58: Looking southeast toward the confluence of WUS-8 (left) and WUS-9 (right). Photo taken November 13, 2017.





Photo 59: Looking west toward the DP-11-WET sample plot in the center of WET-11, in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 60: Looking southwest toward the DP-11-UPL sample plot in the eastern portion of the study area. Photo taken November 13, 2017.





Photo 61: Looking east along WUS-10 towards the eastern side of WET-11. Photo taken November 13, 2017.



Photo 62: Looking southeast toward WET-12, located to the northeast of the Clarks building in the eastern portion of the study area. Photo taken November 13, 2017.





Photo 63: Looking southeast toward the DP-12-UPL sample plot to the north of WET-12, located in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 64: Looking south along WUS-8 to the north of WET-12. Photo taken November 13, 2017.





Photo 65: Looking south toward the DP-13-WET sample plot from the north end of WET-13, located in the eastern portion of the study area. Photo taken November 13, 2017.



Photo 66: Looking north toward the DP-13-UPL sample plot from the north end of WET-13, located in the eastern portion of the study area. Photo taken November 13, 2017.





Photo 67: Looking east toward the DP-14-WET sample plot from the western end of WET-14, at the corner of Kindig Lane and Oxford Avenue. Photo taken November 14, 2017.



Photo 68: Looking northwest toward WET-15 in the eastern portion of the study area. Photo taken November 14, 2017.





Photo 69: Looking southwest toward the DP-15-UPL sample plot in a wooded area to the west of WET-15, located in the eastern portion of the study area. Photo taken November 14, 2017.



Photo 70: Looking south along WUS-11 in the eastern portion of the study area. Photo taken November 14, 2017.





Photo 71: Looking south towards the DP-16-WET sample plot within WET-16 in the eastern portion of the study area. Photo taken November 14, 2017.



Photo 72: Looking north towards the DP-16-UPL sample plot to the southwest of WET-16, located in the eastern portion of the study area. Photo taken November 14, 2017.





Photo 73: Looking north along WET-17 to the north of Radio Road, in the eastern portion of the study area. Photo taken November 14, 2017.





Site Photographs 2018 Fieldwork





Photo 74: Looking southeast towards the confluence of WUS-2A with Plum Creek (WUS-2) in the central portion of the study area. Photo taken October 31, 2018.



Photo 75: Looking east towards the NPDES outfall pipe that drains into WUS-2A. Photo taken October 31, 2018.





Photo 76: Looking west (downstream) along WUS-8 towards beaver/debris dams diverting flow into WUS-8B. Photo taken December 21, 2018.



Photo 77: Looking northeast towards WUS-8B, an intermittent oxbow channel along the northern side of WUS-8. Photo taken December 21, 2018.

Site Photographs, Wetland I&D and Phase 1 Bog Turtle Habitat Assessment Report





## Appendix F Wetland Functional Assessment Data Forms and Key



	V	Vet	land Function-V	/alue	Evaluation Form			
Total area of wetland <u>3.843 ac</u> Human made? <u>No</u>	I	s wetl	and part of a wildlife corridor	?_No	or a "habitat island"?No	Wetland I.D. <u>Wetland 1</u> Latitude <u>39° 48' 27.</u> 7″Longitude <u>77° 02' 16.9</u> ′		
Adjacent land use Agricultural fields, forested corr	Prepared by: CPN Date01/10/17							
residential properties           Dominant wetland systems present_PFO/PEM         Contiguous undeveloped buffer zone present_Yes         Wetland Impact:								
Is the wetland a separate hydraulic system?N How many tributaries contribute to the wetland?	Evaluation based on: OfficeXFieldX Corps manual_wetland delineation							
Function/Value		abilit N	y Rationale (Reference #)*	Princij Functi		completed? Y <u>X</u> N		
Groundwater Recharge/Discharge		x						
Floodflow Alteration	x		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff and WU	S-1 flows, slowing inputs to Plum Creek		
-Fish and Shellfish Habitat		x						
🐇 Sediment/Toxicant Retention	x		1, 4, 10, 16	x	Wetland can trap sediments from s	tormwater runoff/adjacent ag. fields		
🔲 Nutrient Removal	x		3, 4, 7, 8, 10, 13	x	Wetland can filter nutrients prior to	reaching Plum Creek		
<ul> <li>Production Export</li> </ul>		x						
	x		1, 3, 4, 5, 6, 7, 9, 12, 14		Emergent and woody vegetation he	elps stabilize streambanks of WUS-1		
🖢 Wildlife Habitat	x		3, 4, 5, 6, 7, 11, 15, 21		Potential habitat for a variety of wild	dlife species (e.g., birds, small mammals)		
A Recreation		x						
🚝 Educational/Scientific Value		x						
🛨 Uniqueness/Heritage		x						
Visual Quality/Aesthetics		x						
ES Endangered Species Habitat		x						
Other		x						

Notes: PEM wetland area along WUS-1 channel flows north into large PFO wetland area

Total area of wetland <u>5.057 ac</u> Human made? <u>No</u> Adjacent land use <u>Agricultural fields</u> , forested corre residential properties, industrial Dominant wetland systems present <u>PFO/PEM</u> Is the wetland a separate hydraulic system? <u>No</u>	idors, (subs	tation	Contiguous undevelope	way oi d buff	r other development75 feet er zone presentNo	Wetland I.D. Wetland 2 Latitude 39° 48' 25.1"Longitude 77° 02' 01.3" Prepared by: <u>CPN</u> Date 01/10/17 Wetland Impact: Type <u>Fill/unknown</u> Area Unknown Evaluation based on:
How many tributaries contribute to the wetland?		OfficeXFieldX Corps manual_wetland delineation				
Function/Value	Suit: Y	abilit N		rincij uncti		omments
Groundwater Recharge/Discharge	x		2, 7, 9, 13		Spring/seeps present within a portion	on of the wetland
	x		2, 3, 5, 6, 8, 9, 10, 13, 18		Retains stormwater runoff from dev	eloped land, slowing inputs to Plum Creek
-Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	x		1, 2, 3, 4, 10, 11, 16	x	Traps sediments in stormwater rund	off from ag. fields/developed land
🌐 Nutrient Removal	x		3, 4, 7, 8, 9, 10, 11, 13, 14	x	Wetland can filter nutrients prior to	reaching Plum Creek
Production Export		x				
Sediment/Shoreline Stabilization		x				
🖢 Wildlife Habitat	x		5, 6, 7, 10, 11, 13, 15,20,21	x	Potential habitat for variety of wildlif	ie (e.g., birds, small mammals, amphibians)
A Recreation		x				
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
isual Quality/Aesthetics		x				
ES Endangered Species Habitat		x			Marginal potential bog turtle habitat	present, but species occurrence unknown
Other		x				

Notes: Wetland contains man-made/altered drainage channel, as well as groundwater-fed areas draining to Plum Creek

\* Refer to backup list of numbered considerations.

## Wetland Function-Value Evaluation Form

	V	Vet	land Function-V	/alue	Evaluation Form				
Total area of wetland <u>0.047 ac</u> Human made? <u>No</u>	I	s wetl:	and part of a wildlife corridor?	No	or a "habitat island"?No	Wetland I.D. Wetland 3 Latitude <u>39° 49' 05.6</u> "Longitude <u>77° 02' 20.2'</u>			
Adjacent land use Agricultural fields, forested corr developed lands	idors,	fields,	Distance to nearest ro	oadway oi	other development <u>150 feet</u>	Prepared by: CPN Date 01/10/17			
Dominant wetland systems present_PEM Contiguous undeveloped buffer zone presentNo       Wetland Impact:									
Is the wetland a separate hydraulic system? <u>No</u> If not, where does the wetland lie in the drainage basin? <u>Upper</u> Evaluation based on: How many tributaries contribute to the wetland? <u>1</u> Wildlife & vegetation diversity/abundance (see attached list) Evaluation based on: Corps manual wetland delineation completed? Y X N									
Function/Value		abilit N	y Rationale (Reference #)*	Functi		omments			
I Groundwater Recharge/Discharge	x		7		Minor potential groundwater discha	rge adjacent to watercourse			
	x		2, 5, 6, 9, 13, 18		Minor potential of dense vegetation	to slow inputs into Plum Creek			
→Fish and Shellfish Habitat		x							
🐇 Sediment/Toxicant Retention	х		1, 3, 4, 10, 11, 16	x	Traps sediments in stormwater rund	ff from ag. fields/developed land			
🌐 Nutrient Removal	x		3, 4, 7, 8, 9, 10, 13	x	Wetland can filter nutrients prior to	eaching Plum Creek			
Production Export		x							
	x		1, 3, 4, 6, 9, 12, 15	x	Dense vegetation slows stream velo	pcities			
🖢 Wildlife Habitat	x		5, 7, 8, 13		Minor potential wildlife habitat				
A Recreation		x							
🚝 Educational/Scientific Value		x							
🛨 Uniqueness/Heritage		x							
Visual Quality/Aesthetics		x							
ES Endangered Species Habitat		x							
Other		x							

Notes: Small PEM wetland within vegetated portion of intermittent stream and low-lying fringe

Total area of wetland <u>6.437 ac</u> Human made? <u>No</u> Adjacent land use <u>Agricultural fields</u> , woodlands for corridors Dominant wetland systems present <u>PEM</u>				adway or	other development_1,000 feet	Wetland I.D. Wetland 4 Latitude <u>39° 48' 45.4"Longitude 77° 02' 13.8"</u> Prepared by: <u>CPN</u> Date <u>01/10/17</u> Wetland Impact: Type Fill/unknown <u>Area Unknown</u>
Is the wetland a separate hydraulic system? <u>No</u> How many tributaries contribute to the wetland?	Evaluation based on: OfficeX FieldX Corps manual_wetland delineation					
Function/Value	Suita Y	abilit N X		Princip Functi		completed? Y_X_ N omments
Floodflow Alteration Fish and Shellfish Habitat	х		2, 3, 5, 6, 8, 9, 10, 15, 18		Can retain floodwaters from Plum C entering stream	creek, and slow stormwater runoff from
Sediment/Toxicant Retention	x	X	1, 3, 4, 16	x	Traps sediments in stormwater rund	off from ag. fields/developed land
<ul> <li>Nutrient Removal</li> <li>Production Export</li> </ul>	x	x	3, 4, 7, 8, 9, 10, 11, 13	x	Wetland can filter nutrients prior to	reaching watercourses
Sediment/Shoreline Stabilization		x				
₩ Wildlife Habitat	x		3, 4, 5, 7, 8, 13, 21	x	Potential habitat for a variety of wild	llife species (e.g., birds, small mammals)
Recreation     Educational/Scientific Value		x x				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat Other		x x				

Notes: Large PEM wetland, has been impacted by excavated drainage ditch running along western side

	V	Vet	land Function-V	/alue	Evaluation Form				
Total area of wetland <u>0.060 ac</u> Human made? <u>No</u>	I	s wetla	and part of a wildlife corridor	?No	or a "habitat island"?No Wetland I.DWetland 5 Latitude 39° 49' 03.2"Longitude 77° 02' 20.0"				
Adjacent land use Agricultural fields, woodlands for corridors, developed lands	other development_325 feet Prepared by: CPN Date_01/10/17								
Dominant wetland systems present_PEM Contiguous undeveloped buffer zone presentNo       Wetland Impact: Type Fill/unknown Area Unk									
Is the wetland a separate hydraulic system?N How many tributaries contribute to the wetland?	ainage basin? Upper Evaluation based on: once (see attached list) Office X Field X Corps manual wetland delineation completed? Y_X N_								
Function/Value	Y	N	(Reference #)*	Functi	on(s)/Value(s) Comments				
Groundwater Recharge/Discharge	X		7, 13	X	Small groundwater spring/seep present adjacent to Plum Creek				
	x		2, 3, 5, 8, 9, 10, 13, 18		Can retain floodwaters from Plum Creek, and slow stormwater runoff from entering stream				
→Fish and Shellfish Habitat		x							
🐇 Sediment/Toxicant Retention	x		1, 3, 4, 10, 16	x	Traps sediments in stormwater runoff from ag. fields/developed land				
🌐 Nutrient Removal	x		3, 4, 7, 8, 9, 10, 11, 13	x	Wetland can filter nutrients prior to reaching Plum Creek				
Production Export		x							
Sediment/Shoreline Stabilization	x		2, 3, 4, 6, 13, 15		Emergent vegetation provides minor streambank stabilization				
🖢 Wildlife Habitat	x		4, 5, 7, 8, 13, 17, 21		Minor potential wildlife habitat (meadow voles observed)				
A Recreation		x							
🚝 Educational/Scientific Value		x							
🛨 Uniqueness/Heritage		x							
Visual Quality/Aesthetics		x							
ES Endangered Species Habitat		x							
Other		x							

Notes: Small PEM wetland adjacent to Plum Creek, flooding from stream impacts wetland

Total area of wetland <u>8.229 ac</u> Human made? <u>No</u>	I	s wetl:	and part of a wildlife corridor?	Yes	or a "habitat island"?No	Wetland I.DWetland 6 Latitude <u>39° 48' 34.7</u> "Longitude 77° 02' 10.0"
Adjacent land use Agricultural fields, woodlands, for	Prepared by: CPN Date 01/10/17					
corridors, residential properties Dominant wetland systems present_PFO	Wetland Impact: Type_Fill/unknownArea_Unknown					
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	Evaluation based on: Office_XX					
Function/Value	Corps manual wetland delineation completed? Y <u>X</u> N omments					
I Groundwater Recharge/Discharge	x		13		Small groundwater spring/seep pre	sent at southern end of wetland
	x		2, 3, 5, 6, 7, 8, 9, 10			creek, and slow stormwater runoff from
→Fish and Shellfish Habitat		x			entering stream	
🐇 Sediment/Toxicant Retention	x		1, 3, 4, 5	x	Traps sediments in stormwater rund	off from ag. fields/developed land
🌐 Nutrient Removal	x		3, 4, 7, 8, 9, 10		Wetland can filter nutrients prior to	reaching Plum Creek
Production Export		x				
		x				
🖢 Wildlife Habitat	x		3, 4, 5, 7, 8, 11, 13, 14, 15,	x	Potential habitat for variety of wildli	e (birds, small mammals, amphibians)
A Recreation		x	20, 21			
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
isual Quality/Aesthetics		x				
ES Endangered Species Habitat		x				
Other		x				

Notes: Large PFO wetland contiguous with WET-4 to the north; vernal pool features observed throughout wetland

\* Refer to backup list of numbered considerations.

## Wetland Function-Value Evaluation Form

	V	vel	land Function-	value	Evaluation Form	
Total area of wetland <u>.35 ac</u> Human made? <u>No</u>	I	s wetla	and part of a wildlife corridor	n?No	_ or a "habitat island"?No	Wetland I.DWetland 7 Latitude <u>39° 48' 06</u> " Longitude <u>77° 02' 46</u> "
Adjacent land use Agricultural fields, forested corr residential properties Dominant wetland systems present_PEM Is the wetland a separate hydraulic system?N How many tributaries contribute to the wetland?	Prepared by: <u>GME</u> Date <u>12/19/17</u> Wetland Impact: Type <u>Fill/unknown</u> <u>Area Unknown</u> Evaluation based on: Office <u>X</u> Field <u>X</u>					
Function/Value	pal	Corps manual wetland delineation completed? Y_X_ N omments				
I Groundwater Recharge/Discharge		x				
	x		3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adja	acent ag. fields, slowing inputs to WUS-7
-Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	x		1, 4, 10, 16	x	Wetland can trap sediments from s	tormwater runoff/adjacent ag. fields
🔲 Nutrient Removal	x		3, 4, 7, 8, 10, 13	x	Wetland can filter nutrients prior to	continuing down WUS-7
Production Export		x				
	x		1, 3, 4, 5, 7, 9, 12, 15		Emergent vegetation helps stabilize	e streambanks of WUS-7
🖢 Wildlife Habitat	x		3, 4, 5, 6, 7, 21		Potential habitat for a variety of wild	dlife species (e.g., birds, small mammals)
A Recreation		x				
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
www.Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		x				

### Watland Exaction Walne Evaluation Form

Notes: PEM wetland situated west of Sunday Drive and fed by WUS-7 from the east.

Х

ES

Other

Total area of wetland <u>.15 ac</u> Human made? <u>No</u>	I	wetla	and part of a wildlife corridor	<u>n No</u>	or a "habitat island"?No	Wetland I.DWetland 8 Latitude 39° 48' 58.0°Longitude 77° 01' 49.0"
Adjacent land use Agricultural fields, fenced pastu properties	Prepared by: <u>GME</u> Date 12/19/17					
Dominant wetland systems present_PEM	er zone present <u>No</u>	Wetland Impact: Type_Fill/unknownArea_Unknown				
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	Evaluation based on: OfficeX FieldX Corps manual wetland delineation completed? Y_X N					
Function/Value	Suita Y	abilit N	y Rationale (Reference #)*	Princij Functi		omments
I Groundwater Recharge/Discharge	х		13		Wetland is fed by a groundwater sp	ring system.
	х		2, 3, 5, 6, 7, 8, 9, 10, 13		Retains stormwater runoff from adja inputs to WUS-3	acent ag. fields and pastures, slowing
-Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	x	Wetland can trap sediments from s	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	х		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to	reaching WUS-3
Production Export		х				
Sediment/Shoreline Stabilization		х				
🖢 Wildlife Habitat	х		3, 4, 5, 6, 7, 15, 21		Potential habitat for a variety of wild	llife species (e.g., birds, small mammals)
A Recreation		х				
Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		х				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		x			Marginal potential bog turtle habitat	present, but species occurrence unknown
Other		x				

Notes: PEM, spring-fed wetland east of Church Street, surrounded by a fenced pasture.

Total area of wetland <u>.02 ac</u> Human made? <u>No</u>	I	s wetla	and part of a wildlife corridor?	No	or a "habitat island"?	Wetland I.DWetland 9 Latitude <sup>39° 48' 54.0</sup> " Longitude <sup>77° 02' 7.00"</sup>
Adjacent land use Agricultural fields, woodlands			Distance to nearest ro	Prepared by GME Date_12/19/17		
Dominant wetland systems present			Contiguous undevelo	ped buff	er zone presentYes	Wetland Impact: Type <sup>F</sup> ill/unknownArea <sup>U</sup> nknown
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	1		Wildlife & vegetation diversit	ince (see attached list)	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN	
Function/Value		abilit N	y Rationale (Reference #)*	Princij Functi		omments
I Groundwater Recharge/Discharge		x				
← Floodflow Alteration	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adjac and WUS-3A	cent ag. fields, slowing inputs to WUS-3
-Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	Х	Wetland can trap sediments from sto	rmwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		8, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-3 and WUS-3A
Production Export		x				
		x				
🖢 Wildlife Habitat	х		3, 5, 6, 7		Marginal habitat for a variety of wildli	fe species
A Recreation		x				
Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		x				
wwww.Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		x				
Other		x				

Notes: PEM wetland located along the southern side of WUS-3.

\* Refer to backup list of numbered considerations.

Total area of wetland 05 ac Human made?	I	wetla	and part of a wildlife corridor?	No	or a "habitat island"?No	Wetland I.DWetland 10 Latitud <sup>29°</sup> 48' 55.0" Longitud <sup>77°</sup> 02' 6.00"
Adjacent land use Agricultural fields, wooded areas			Distance to nearest road	Prepared by GME Date 12/19/17		
Dominant wetland systems present_PEM			Contiguous undevelop	ed buff	er zone presentYes	Wetland Impact: Type <sup>F</sup> ill/unknownArea <sup>U</sup> nknown
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	none	_	ot, where does the wetland lie ir Wildlife & vegetation diversity	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN		
Function/Value	Suita Y	bilit N		Princi Functi		omments
Groundwater Recharge/Discharge		х				
	х		2, 3, 5, 6, 8, 9, 10		Retains stormwater runoff from adja	cent ag. fields, slowing inputs to WUS-3
➡Fish and Shellfish Habitat		х				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	x	Wetland can trap sediments from sto	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-3
Production Export		х				
		х				
🖢 Wildlife Habitat	х		3, 4, 5, 6, 7		Marginal habitat for a variety of wildli	fe species
<b>A</b> Recreation		х				
🚝 Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics						
ES Endangered Species Habitat		х				
Other		х				

Notes: Small PEM wetland located east of WET-9, along the southern side of WUS-3.

\* Refer to backup list of numbered considerations.

Total area of wetland <u>03 ac</u> Human made? <u>Human made</u>	I	s wetla	and part of a wildlife corridor?_	No	or a "habitat island"?No	Wetland I.D. Wetland 11 Latitud <sup>29°</sup> 48' 51.0" Longitude <sup>77°</sup> 02' 21.0"
Adjacent land use Agricultural fields, wooded areas			Distance to nearest roa	dway oi	r other development_500 feet	Prepared by GME Date 12/19/17
Dominant wetland systems present			Contiguous undevelop	ed buff	er zone present Yes	Wetland Impact: TypeFill/unknownAreaUnknown
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	1		Wildlife & vegetation diversity	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed? Y_X N		
Function/Value		N		Princi Functi		omments
I Groundwater Recharge/Discharge	x		13		Wetland hydrology is supplied by a s	small seep.
← Floodflow Alteration	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adjace and WUS-10	cent ag. fields, slowing inputs to WUS-8
-Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	x	Wetland can trap sediments from sto	rmwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-8 and WUS-10
Production Export		x				
		Х				
🖢 Wildlife Habitat	х		3, 5, 6, 7		Marginal habitat for a variety of wildli	fe species
A Recreation		x				
🚝 Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: Small PEM wetland located east of WUS-8 and west of recreational fields.

Total area of wetland	I	s wetla	and part of a wildlife corridor?	No	or a "habitat island"?No	Wetland I.D. Wetland 12 Latitud <sup>29°</sup> 48' 51.0" Longitude <sup>77°</sup> 02' 21.0"
Adjacent land use Agricultural fields, wooded areas			Distance to nearest roa	Prepared by GME Date 12/19/17		
Dominant wetland systems present			Contiguous undevelop	Wetland Impact: Type <sup>F</sup> ill/unknownArea <sup>U</sup> nknown		
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	none		ot, where does the wetland lie in Wildlife & vegetation diversity	Evaluation based on: Office_XField_X Corps manual wetland delineation completed? Y_XN		
Function/Value	Suita Y	abilit N		Princi Functi		omments
I Groundwater Recharge/Discharge		x				
← Floodflow Alteration	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adja	cent ag. fields, slowing inputs to WUS-8
←Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	x	Wetland can trap sediments from sto	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-8
Production Export		x				
🖢 Wildlife Habitat	х		3, 5, 6, 7, 15, 21		Potential habitat for a variety of wildl	ife species (e.g., birds, amphibians)
<b>A</b> Recreation		x				
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: PEM PFO wetland located east of WUS-8 at the north end of the Clarks building.

Wetland Function-Value Evaluation For
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Total area of wetland <u>.52 ac</u> Human made? <u>No</u>	I	s wetla	and part of a wildlife corridor?	10	or a "habitat island"?No	Wetland I.DWetland 13 Latitude <sup>39° 49' 01.0</sup> " Longitude <sup>77° 00' 40.0"</sup>
Adjacent land use Agricultural fields, wooded areas	;		Distance to nearest road	Prepared by GME Date 12/19/17		
Dominant wetland systems present			Contiguous undevelope	Wetland Impact: TypeFill/unknownAreaUnknown		
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	1		ot, where does the wetland lie in Wildlife & vegetation diversity/	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN		
Function/Value	Suita Y	abilit N		rinci uncti		omments
I Groundwater Recharge/Discharge		x				
	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adjac	cent ag. fields, slowing inputs to WUS-8
➡Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	x		1, 4, 10, 16	x	Wetland can trap sediments from sto	rmwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-8
Production Export		x				
🖢 Wildlife Habitat	x		3, 5, 6, 7, 15, 21		Potential habitat for a variety of wildli	ife species (e.g., birds, amphibians)
A Recreation		x				
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: PEM wetland located west of WUS-8 and north of the Clarks building.

	V	Vet	land Function-Va	lue	Evaluation Form			
Total area of wetland	I	s wetl	and part of a wildlife corridor?	No	or a "habitat island"?No	Wetland I.D. Wetland 14 Latitude <sup>29°</sup> 48' 49.0" Longitude <sup>77°</sup> 00' 50.0"		
Adjacent land use Agricultural fields, wooded areas	s, resio	dentia	Distance to nearest road	lway o	r other development10 feet	Prepared by GME Date 12/19/17		
Dominant wetland systems present       PEM       Contiguous undeveloped buffer zone present       No       Wetland Impact: Type_ill/unknown       AreaUnknown								
Is the wetland a separate hydraulic system? <u>No</u> If not, where does the wetland lie in the drainage basin? <u>Upper</u> Evaluation based on:								
How many tributaries contribute to the wetland? none Wildlife & vegetation diversity/abundance (see attached list) Office X Field X Corps manual wetland delineation								
Function/Value	Suit Y	abilit N	ty Rationale H (Reference #)* H	rinci unct		omments		
I Groundwater Recharge/Discharge		x						
- Floodflow Alteration		x						
→Fish and Shellfish Habitat		x						
Sediment/Toxicant Retention	x		1, 4, 10, 16	x	Wetland can trap sediments from st	ormwater runoff/adjacent ag. fields		
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients from ag.	runoff		
Production Export		x						
Sediment/Shoreline Stabilization		x						
🖢 Wildlife Habitat		x						
A Recreation		x						
🚝 Educational/Scientific Value		x						
🛨 Uniqueness/Heritage		x						
Visual Quality/Aesthetics		x						
ES Endangered Species Habitat		x						
Other		x						

Notes: PEM located west of the Clarks building at the corner of Oxford Avenue and Kindig Lane.

Total area of wetland <u>10 ac</u> Human made? <u>No</u>	I	s wetla	and part of a wildlife corridor?	No	or a "habitat island"?	Wetland I.D. Wetland 15 Latitud <sup>29°</sup> 49' 07.0" Longitude <sup>77°</sup> 00' 41.0"
Adjacent land use Agricultural fields, wooded areas			Distance to nearest road	Prepared by GME Date 12/19/17		
Dominant wetland systems present			Contiguous undevelop	Wetland Impact: Type_ill/unknownArea_Unknown		
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	none		ot, where does the wetland lie in Wildlife & vegetation diversity	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN		
Function/Value	Suita Y	abilit N		Princi Functi		omments
I Groundwater Recharge/Discharge		x				
	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adja	cent ag. fields, slowing inputs to WUS-8
←Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	x	Wetland can trap sediments from sto	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-8
Production Export		x				
🖢 Wildlife Habitat	х		3, 5, 6, 7, 15, 21		Potential habitat for a variety of wildl	ife species (e.g., birds, amphibians)
<b>A</b> Recreation		x				
🚝 Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: PEM wetland located east of WUS-8 adjacent to large agricultural fields.

Total area of wetland.05 acHuman made?	I	s wetla	and part of a wildlife corridor?_	No	or a "habitat island"?No	Wetland ID_Wetland 16 Latitud <sup>29°</sup> 49' 03.0" Longitud <sup>77°</sup> 00' 37.0"
Adjacent land use Agricultural fields, wooded areas	5		Distance to nearest roa	Prepared by: GME Date_12/19/17		
Dominant wetland systems present			Contiguous undevelo	Wetland Impact: Type_ill/unknownArea_Unknown		
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	none		ot, where does the wetland lie i Wildlife & vegetation diversity	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN		
Function/Value	Suita Y	abilit N		Princij Functi		omments
Groundwater Recharge/Discharge		x				
	x		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adjac	cent ag. fields, slowing inputs to WUS-8
➡Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	x		1, 4, 10, 16	x	Wetland can trap sediments from sto	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching WUS-8
Production Export		x				
		х				
🖢 Wildlife Habitat	x		3, 5, 6, 7, 15, 21		Potential habitat for a variety of wildl	ife species (e.g., birds, amphibians)
<b>A</b> Recreation		x				
🚝 Educational/Scientific Value		х				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: PEM wetland located east of WUS-8 adjacent to large agricultural fields.

Total area of wetland	I	s wetla	and part of a wildlife corridor?_	No	or a "habitat island"?No	Wetland I.D. Wetland 17 Latitud <sup>29° 49' 13.0</sup> " Longitude <sup>77° 00' 16.0</sup> "
Adjacent land use Agricultural fields, wooded areas			Distance to nearest roa	Prepared by: GME Date 12/19/17		
Dominant wetland systems present			Contiguous undevelop	Wetland Impact: Type <sup>F</sup> ill/unknownArea <sup>U</sup> nknown		
Is the wetland a separate hydraulic system?No How many tributaries contribute to the wetland?	1		Wildlife & vegetation diversity	Evaluation based on: OfficeXFieldX Corps manual wetland delineation completed?_Y_XN		
Function/Value		abilit N		Princi Functi		omments
I Groundwater Recharge/Discharge		x				
	х		2, 3, 5, 6, 8, 9, 10, 13		Retains stormwater runoff from adjac	cent ag. fields, slowing inputs to stream
←Fish and Shellfish Habitat		x				
🐇 Sediment/Toxicant Retention	х		1, 4, 10, 16	х	Wetland can trap sediments from sto	ormwater runoff/adjacent ag. fields
🌐 Nutrient Removal	x		3, 4, 5, 7, 8, 10, 13	x	Wetland can filter nutrients prior to re	eaching downstream watercourse
Production Export		x				
🖢 Wildlife Habitat	x		3, 5, 6, 7, 15, 21		Potential habitat for a variety of wildli	ife species (e.g., birds, small mammals)
A Recreation		x				
🚝 Educational/Scientific Value		x				
🛨 Uniqueness/Heritage		x				
Visual Quality/Aesthetics		x				
ES Endangered Species Habitat		х				
Other		x				

Notes: PEM wetland located north of Radio Road adjacent to large agricultural fields.

\* Refer to backup list of numbered considerations.

# Appendix A

# Wetland evaluation supporting documentation; Reproducible forms.

Below is an example list of considerations that was used for a New Hampsbire highway project. Considerations are flexible, based on best professional judgment and interdisciplinary team consensus. This example provides a comprehensive base, bowever, and may only need slight modifications for use in other projects.



GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of eitber.

#### CONSIDERATIONS/QUALIFIERS

- 1. Public or private wells occur downstream of the wetland.
- 2. Potential exists for public or private wells downstream of the wetland.
- 3. Wetland is underlain by stratified drift.
- 4. Gravel or sandy soils present in or adjacent to the wetland.
- 5. Fragipan does not occur in the wetland.
- 6. Fragipan, impervious soils, or bedrock does occur in the wetland.
- 7. Wetland is associated with a perennial or intermittent watercourse.
- 8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
- 9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet.
- 10. Wetland contains only an outlet, no inlet.
- 11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
- 12. Quality of water associated with the wetland is high.
- 13. Signs of groundwater discharge are present (e.g., springs).
- 14. Water temperature suggests it is a discharge site.
- 15. Wetland shows signs of variable water levels.
- 16. Piezometer data demonstrates discharge.
- 17. Other



FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.



#### CONSIDERATIONS/QUALIFIERS

1.

- Area of this wetland is large relative to its watershed.
- 2. Wetland occurs in the upper portions of its watershed.
- 3. Effective flood storage is small or non-existent upslope of or above the wetland.
- 4. Wetland watershed contains a high percent of impervious surfaces.
- 5. Wetland contains hydric soils which are able to absorb and detain water.
- 6. Wetland exists in a relatively flat area that has flood storage potential.
- 7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
- 8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
- 9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
- 10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
- 11. Valuable properties, structures, or resources are located in or near the floodplain downstream from the wetland.
- 12. The watershed has a history of economic loss due to flooding.
- 13. This wetland is associated with one or more watercourses.
- 14. This wetland watercourse is sinuous or diffuse.
- 15. This wetland outlet is constricted.
- 16. Channel flow velocity is affected by this wetland.
- 17. Land uses downstream are protected by this wetland.
- 18. This wetland contains a high density of vegetation.
- 19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

## <u>AND</u>

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#### CONSIDERATIONS/QUALIFIERS

- 1. Forest land dominant in the watershed above this wetland.
- 2. Abundance of cover objects present.

STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE

- 3. Size of this wetland is able to support large fish/shellfish populations.
- 4. Wetland is part of a larger, contiguous watercourse.
- 5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
- 6. Stream width (bank to bank) is more than 50 feet.
- 7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
- 8. Streamside vegetation provides shade for the watercourse.
- 9. Spawning areas are present (submerged vegetation or gravel beds).
- I0. Food is available to fish/shellfish populations within this wetland.
- 11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
- 12. Evidence of fish is present.
- 13. Wetland is stocked with fish.
- 14. The watercourse is persistent.
- 15. Man-made streams are absent.
- 16. Water velocities are not too excessive for fish usage.
- 17. Defined stream channel is present.
- 18. Other

Although the above example refers to freshwater wetlands, it can also be adapted for marine ecosystems. The following is an example provided by the National Marine Fisheries Service (NMFS) of an adaptation for the fish and shellfish function.



FISH AND SHELLFISH HABITAT (MARINE) — This function considers the effectiveness of wetlands, embayments, tidal flats, vegetated shallows, and other environments in supporting marine resources such as fish, shellfish, marine mammals, and sea turtles.

#### CONSIDERATIONS/QUALIFIERS

- 1. Special aquatic sites (tidal marsh, mud flats, eelgrass beds) are present.
- 2. Suitable spawning habitat is present at the site or in the area.
- 3. Commercially or recreationally important species are present or suitable habitat exists.
- 4. The wetland/waterway supports prey for higher trophic level marine organisms.
- 5. The waterway provides migratory habitat for anadromous fish.
- 6. Essential fish habitat, as defined by the 1996 amendments to the Magnuson-Stevens Fishery & Conservation Act, is present (consultation with NMFS may be necessary).
- 7. Other

SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

#### CONSIDERATIONS/QUALIFIERS

- 1. Potential sources of excess sediment are in the watershed above the wetland.
- 2. Potential or known sources of toxicants are in the watershed above the wetland.
- 3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
- 4. Fine grained mineral or organic soils are present.
- 5. Long duration water retention time is present in this wetland.
- 6. Public or private water sources occur downstream.
- 7. The wetland edge is broad and intermittently aerobic.
- 8. The wetland is known to have existed for more than 50 years.
- 9. Drainage ditches have not been constructed in the wetland.

STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.

- 10. Wetland is associated with an intermittent or perennial stream or a lake.
- 11. Channelized flows have visible velocity decreases in the wetland.
- 12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
- 13. No indicators of erosive forces are present. No high water velocities are present.
- 14. Diffuse water flows are present in the wetland.
- 15. Wetland has a high degree of water and vegetation interspersion.
- 16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
- 17. Other



NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

#### CONSIDERATIONS/QUALIFIERS

- 1. Wetland is large relative to the size of its watershed.
- 2. Deep water or open water habitat exists.
- 3. Overall potential for sediment trapping exists in the wetland.



- 4. Potential sources of excess nutrients are present in the watershed above the wetland.
- 5. Wetland saturated for most of the season. Ponded water is present in the wetland.
- 6. Deep organic/sediment deposits are present.
- 7. Slowly drained fine grained mineral or organic soils are present.
- 8. Dense vegetation is present.
- 9. Emergent vegetation and/or dense woody stems are dominant.
- 10. Opportunity for nutrient attenuation exists.
- 11. Vegetation diversity/abundance sufficient to utilize nutrients.
- STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.
- 12. Waterflow through this wetland is diffuse.
- 13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
- 14. Water moves slowly through this wetland.
- 15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

#### CONSIDERATIONS/QUALIFIERS

- 1. Wildlife food sources grow within this wetland.
- 2. Detritus development is present within this wetland
- 3. Economically or commercially used products found in this wetland.
- 4. Evidence of wildlife use found within this wetland.
- 5. Higher trophic level consumers are utilizing this wetland.
- 6. Fish or shellfish develop or occur in this wetland.
- 7. High vegetation density is present.
- 8. Wetland exhibits high degree of plant community structure/species diversity.
- 9. High aquatic vegetative diversity/abundance is present.
- 10. Nutrients exported in wetland watercourses (permanent outlet present).
- 11. "Flushing" of relatively large amounts of organic plant material occurs from this wetland.
- 12. Wetland contains flowering plants that are used by nectar-gathering insects.
- 13. Indications of export are present.
- 14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
- 15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

#### CONSIDERATIONS/QUALIFIERS

- 1. Indications of erosion or siltation are present.
- 2. Topographical gradient is present in wetland.
- 3. Potential sediment sources are present up-slope.
- 4. Potential sediment sources are present upstream.
- 5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
- 6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
- 7. Wide wetland (>10') borders watercourse, lake, or pond.
- 8. High flow velocities in the wetland.
- 9. The watershed is of sufficient size to produce channelized flow.
- 10. Open water fetch is present.
- 11. Boating activity is present.
- 12. Dense vegetation is bordering watercourse, lake, or pond.
- 13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
- 14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
- 15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
- 16. Other





WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.<sup>1</sup>

#### CONSIDERATIONS/QUALIFIERS

- 1. Wetland is not degraded by human activity.
- 2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
- 3. Wetland is not fragmented by development.
- 4. Upland surrounding this wetland is undeveloped.
- 5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
- 6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
- 7. Wildlife overland access to other wetlands is present.
- 8. Wildlife food sources are within this wetland or are nearby.
- 9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
- 10. Two or more islands or inclusions of upland within the wetland are present.
- 11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
- 12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
- 13. Density of the wetland vegetation is high.
- 14. Wetland exhibits a high degree of plant species diversity.
- 15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/ shrub/vine/grasses/mosses)
- 16. Plant/animal indicator species are present. (List species for project)
- 17. Animal signs observed (tracks, scats, nesting areas, etc.)
- 18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
- 19. Wetland contains or has potential to contain a high population of insects.
- 20. Wetland contains or has potential to contain large amphibian populations.
- 21. Wetland has a high avian utilization or its potential.
- 22. Indications of less disturbance-tolerant species are present.
- 23. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
- 24. Other

<sup>1</sup>In March 1995, a rapid wildlife hahitat assessment method was completed by a University of Massachusetts research team with funding and oversight provided by the New England Transportation Consortium. The method is called WEThings (wetland habitat indicators for non-game species). It produces a list of potential wetland-dependent mammal, reptile, and amphibian species that may be present in the wetland. The output is based on observable habitat characteristics documented on the field data form. This method may be used to generate the wildlife species list recommended as hackup information to the wetland evaluation form and to augment the considerations. Use of this method should first he coordinated with the Corps project manager. A computer program is also available to expedite this process. RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non-consumptive opportunities do not consume or diminish these resources of the wetland.



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#### CONSIDERATIONS/QUALIFIERS

- 1. Wetland is part of a recreation area, park, forest, or refuge.
- 2. Fishing is available within or from the wetland.
- 3. Hunting is permitted in the wetland.
- 4. Hiking occurs or has potential to occur within the wetland.
- 5. Wetland is a valuable wildlife habitat.
- 6. The watercourse, pond, or lake associated with the wetland is unpolluted.
- 7. High visual/aesthetic quality of this potential recreation site.
- 8. Access to water is available at this potential recreation site for boating, canoeing, or fishing.
- 9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing and/or non-powered boating.
- 10. Off-road public parking available at the potential recreation site.
- 11. Accessibility and travel ease is present at this site.
- 12. The wetland is within a short drive or safe walk from highly populated public and private areas.
- 13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.



#### CONSIDERATIONS/QUALIFIERS

- 1. Wetland contains or is known to contain threatened, rare, or endangered species.
- 2. Little or no disturbance is occurring in this wetland.
- 3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
- 4. Potential educational site is undisturbed and natural.
- 5. Wetland is considered to be a valuable wildlife habitat.
- 6. Wetland is located within a nature preserve or wildlife management area.
- 7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
- 8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
- 9. Potential educational site is within safe walking distance or a short drive to schools.
- 10. Potential educational site is within safe walking distance to other plant communities.
- 11. Direct access to perennial stream at potential educational site is available.
- 12. Direct access to pond or lake at potential educational site is available.
- 13. No known safety hazards exist within the potential educational site.
- 14. Public access to the potential educational site is controlled.
- 15. Handicap accessibility is available.
- 16. Site is currently used for educational or scientific purposes.
- 17. Other





UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

#### CONSIDERATIONS/QUALIFIERS

- 1. Upland surrounding wetland is primarily urban.
- 2. Upland surrounding wetland is developing rapidly.
- 3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
- 4. Three or more wetland classes are present.
- 5. Deep and/or shallow marsh or wooded swamp dominate.
- 6. High degree of interspersion of vegetation and/or open water occur in this wetland.
- 7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
- 8. Potential educational site is within a short drive or a safe walk from schools.
- 9. Off-road parking at potential educational site is suitable for school buses.
- 10. No known safety hazards exist within this potential educational site.
- 11. Direct access to perennial stream or lake exists at potential educational site.
- 12. Two or more wetland classes are visible from primary viewing locations.
- 13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing locations.
- 14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
- 15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
- 16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
- 17. Overall view of the wetland is available from the surrounding upland.
- 18. Quality of the water associated with the wetland is high.
- 19. Opportunities for wildlife observations are available.
- 20. Historical buildings are found within the wetland.
- 21. Presence of pond or pond site and remains of a dam occur within the wetland.
- 22. Wetland is within 50 yards of the nearest perennial watercourse.
- 23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
- 24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
- 25. Wetland is known to be a study site for scientific research.
- 26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
- 27. Wetland has local significance because it serves several functional values.
- 28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
- 29. Wetland is known to contain an important archaeological site.
- 30. Wetland is hydrologically connected to a state or federally designated scenic river.
- 31. Wetland is located in an area experiencing a high wetland loss rate.
- 32. Other

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VISUAL QUALITY/AESTHETICS — This value considers the visual and aesthetic quality or usefulness of the wetland.



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#### CONSIDERATIONS/QUALIFIERS

- 1. Multiple wetland classes are visible from primary viewing locations.
- 2. Emergent marsh and/or open water are visible from primary viewing locations.
- 3. A diversity of vegetative species is visible from primary viewing locations.
- 4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
- 5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
- 6. Visible surrounding land use form contrasts with wetland.
- 7. Wetland views absent of trash, debris, and signs of disturbance.
- 8. Wetland is considered to be a valuable wildlife habitat.
- 9. Wetland is easily accessed.
- 10. Low noise level at primary viewing locations.
- 11. Unpleasant odors absent at primary viewing locations.
- 12. Relatively unobstructed sight line exists through wetland.
- 13. Other

ENDANGERED SPECIES HABITAT — This value considers the suitability of the wetland to support threatened or endangered species.

#### CONSIDERATIONS/QUALIFIERS

- 1. Wetland contains or is known to contain threatened or endangered species.
- 2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.