

**DELAWARE WATER GAP NATIONAL
RECREATION AREA**

**WETLAND/WATERS DELINEATION
REPORT**

PMIS 310424 Pavement Rehabilitation US Route 209
(MP 13-20) Slope Repair and McDade Trail Realignment
Environmental Compliance Services

Order #140P2024F0191
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Park Review 06/28/2024

WETLAND/WATERS DELINEATION REPORT

DEWA 310424

PAVEMENT REHABILITATION US ROUTE 209 (MP13-20) SLOPE REPAIR AND MCDADE TRAIL REALIGNMENT

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Glossary and Acronym/Abbreviation Definitions

DEWA - Delaware Water Gap National Recreation Area

EPA – United States Environmental Protection Agency

ESA – Environmental Systems Analysis, Inc.

FAC – Facultative plant status; plants with a similar likelihood (33-67% of time) of occurring in wetlands or non-wetlands.

FACU – Facultative upland plant status; plants that occur sometimes (1-33% of the time) in wetlands.

FACW – Facultative wetland plant status; plants that usually occur (67-99% of time) in wetlands.

GIS – Geographic Information System

JD – Jurisdictional Determination

MHW – Mean High Water

NPS – National Park Service

OBL – Obligate wetland plant; plant almost always occurs (more than 99% of time) in wetlands

OHWM - Ordinary High-Water Mark

PEM - Palustrine Emergent nontidal wetland

PFO – Palustrine forested nontidal wetlands

PSS - Palustrine scrub-shrub nontidal wetland

UPL – Obligate upland; plants that occur rarely (less than 1% of the time) in wetlands.

USACE – United States Army Corps of Engineers

USDA NRCS – United States Department of Agriculture Natural Resources Conservation Service

WDS - Wetland Data Station

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1.0 INTRODUCTION

A wetland/waters delineation was conducted in June 2024, at Delaware Water Gap National Recreation Area (DEWA) in Pike County, Pennsylvania. Work was performed under Contract Number 47QRAA24D0004, Order Number 140P2024F0191 in preparation for pavement and slope repair on US Route 209 between Mile Markers 13.7 - 20.2 and McDade Trail realignment. Heavy rain associated with Tropical Storm Ida caused multiple culvert failures and landslides damaging the road and trail. The National Park Service (NPS) and Delaware Water Gap (DEWA) are planning a project to address these slope failures and pavement deterioration, and realign a section of the McDade Trail to improve sustainability and accessibility. Figure 1 shows a vicinity map of the project area.

The project area drains to the Delaware River and its tributaries Adams Creek, Dry Brook, Conashaugh Creek, and Raymondskill Creek. The project is within 12-digit HUCs 020401040704 Shimers Brook-Delaware River and 020401040702 Raymondskill Creek. Broadly, the site was in the Northeastern Forests Land Resource Region (LRR R) around latitude 41.2810° and longitude -74.8380°.

Within the general project area, the National Park Service provided 39 specific survey areas where the wetland delineation was conducted. The survey areas were primarily mowed vegetation and included paved driveway and road aprons. A few survey areas included mid-seral forest. The 39 survey areas, labeled Rare Plant Survey on the geodatabase provided by NPS, are described below in Table 1.

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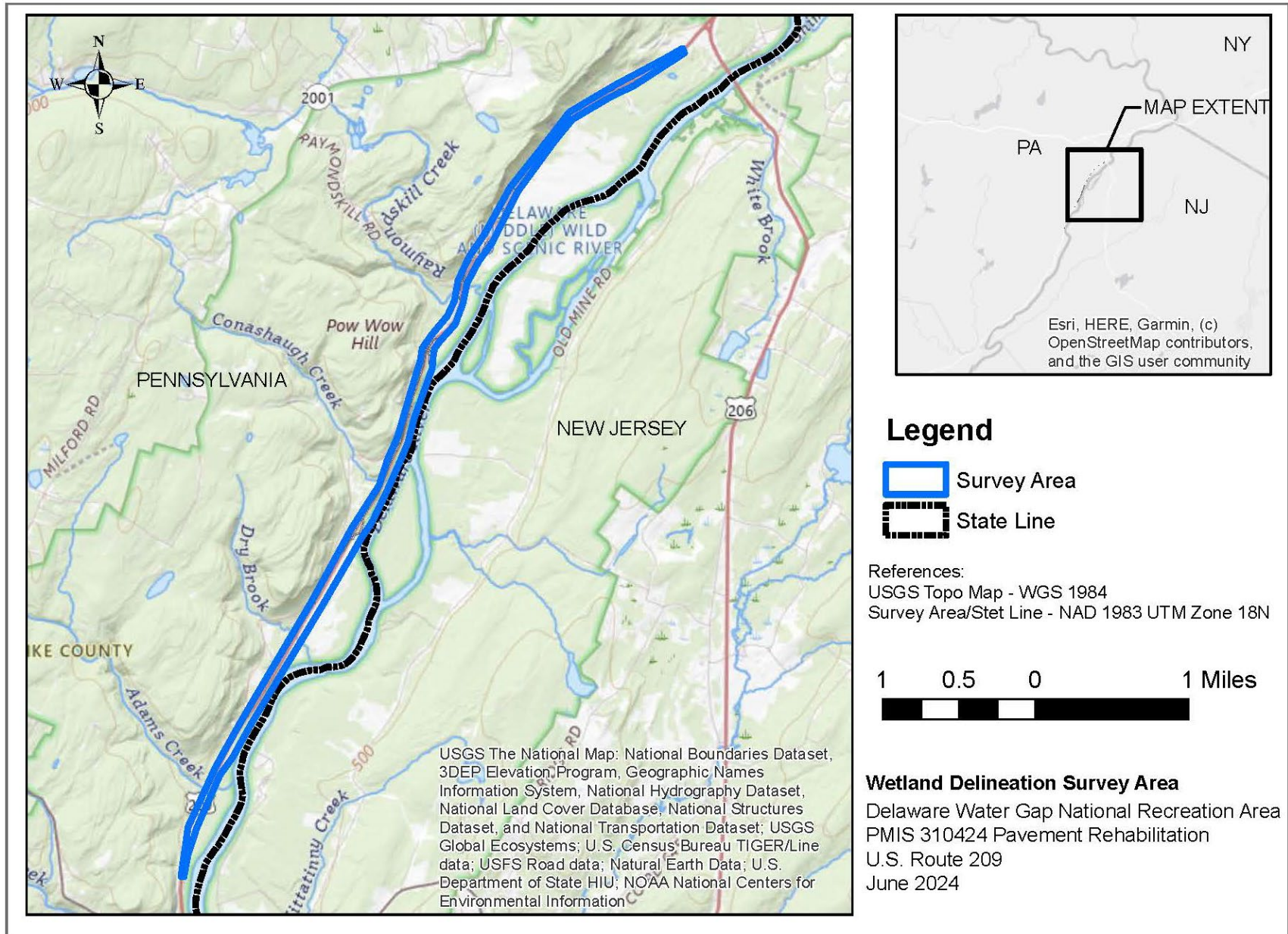


Figure 1: Project Area

WETLAND/WATERS DELINEATION REPORT**DEWA 310424****PAVEMENT REHABILITATION US ROUTE 209 (MP13-20) SLOPE REPAIR AND MCDADE TRAIL REALIGNMENT**

Table 1. Survey Area Numbers, Description, Mile Marker, And Size

OBJECTID	Description	MM	Acres
1	Slope Failure	13.95	0.01
2	Slope Failure	13.95	0.00
3	Culvert replacement	14.8	0.02
4	Apron	14.8	0.07
5	Apron	14.5	0.02
6	Apron	14.4	0.02
7	Apron	15.65	0.05
8	Apron	15.65	0.03
9	Apron	15.85	0.16
10	Apron	16.1	0.15
11	Apron	16.2	0.19
12	Apron	13.7	0.04
13	McDade Trail option 1	16.2	1.00
14	McDade Trail along road	16.3	3.62
15	McDade Trail along old road trace	17.6	0.89
17	Temporary road	17.5	0.24
18	Jack and bore	17.5	0.13
19	Apron	17.45	0.01
20	Dissipater basin	17.22	0.01
21	Slope failure	17.1	0.01
22	Slope failure	17.1	0.03
23	Culvert pipe	17	0.38
24	Apron	16.9	0.06
25	Apron	16.9	0.06
26	Slope failure	16.8	0.01
27	Slope failure	17.1	0.05
28	Slope failure	17.1	0.02
29	Apron	18.1	0.08
30	Apron	18.1	0.37
31	Apron	18.1	0.08
32	Apron	18.3	0.25
33	Apron	18.6	0.06
34	Apron	18.7	0.09
35	Apron	19.1	0.04
36	Apron	19.3	0.07
37	Apron	19.7	0.06
38	Apron	19.7	0.04
39	Apron	19.8	0.05
40	Apron	20.1	0.51

2.0 WETLAND DEFINITIONS AND REGULATIONS

Wetlands are defined by the US Army Corps of Engineers (USACE) and the US Environmental Protection Agency (EPA) as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas (Environmental Laboratory, 1987).” National Park Service uses the Federal Geographic Data Committee (FGDC) Wetland Classification Standard to define wetlands, which comes from the 2013 revision of US Fish and Wildlife Service publication "Classification of Wetlands and Deepwater Habitats of the United States" (Cowardin et al. 1979). This definition is “Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year (FGDC 2013).”

Nontidal wetlands and streams are protected under the Federal Clean Water Act of 1977 (CWA), as amended 1987; Federal Rivers and Harbors Act of 1899 (RHA); Pennsylvania Dam Safety and Encroachments Act of 1978; and Pennsylvania Clean Streams Law of 1937, as amended 2014. Pennsylvania Department of Environmental Protection and the USACE have jurisdiction over wetlands and waters.

3.0 DELINEATION METHODS

The identification of wetlands was based upon the routine method as described in the 1987 *Corps of Engineers Wetlands Delineation Manual* (referred to hereafter as the Manual), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region* (Version 2.0), and the 2016 *National Park Service Procedural Manual #77-1: Wetland Protection*.

A wetland must meet all three wetland parameters for hydric soils, hydrophytic vegetation, and hydrology. If one of the parameters has been disturbed or is missing, the delineation be based on the other two parameters. Per Procedural Manual #77-1,

- If plants and soil are present (e.g., swamps, marshes or wet meadows), then all three attributes (wetland hydrology, hydrophytic vegetation and hydric soil) are required for positive wetland identification.
- If plants are present but soil is absent (e.g., vegetated rock substrates), then a predominance of hydrophytic vegetation and presence of wetland hydrology are required for positive wetland identification.

- If plants are absent but soil is present (e.g., playas or mudflats), then a predominance of undrained hydric soil and wetland hydrology are required for positive wetland identification.
- If neither plants nor soil are present (e.g., rocky shorelines or unvegetated shallow stream bottoms), then wetland identification must be made solely on the basis of hydrology.

The three wetland parameters of hydrology, vegetation, and soils are described in further detail within Sections 3.1 to 3.3 below. The field delineation included identifying vegetation, soils, and hydrology of possible wetlands. Wetland boundaries were labeled with pink and black striped flagging. ESA placed flagging approximately 15 to 50 feet apart and established wetland determination data plots throughout the study area to document specific conditions within wetlands and uplands, as well as to provide justification for the delineation.

3.1 HYDROLOGY

Wetland hydrology indicates that an area is periodically inundated or has saturated soils to the surface at some time during the growing season. Hydrology is often the least exact of the parameters (Environmental Laboratory, 1987).

Primary indicators of wetland hydrology include, but are not limited to, presence of surface water, high water table, saturation, water marks (typically on tree trunks), sediment deposits, drift deposits, algal mats, iron deposits, inundation visible on aerial imagery taken during the growing season, sparsely vegetated concave surface, water-stained leaves, aquatic fauna (such as fish), hydrogen-sulfide odor, oxidized rhizospheres on living roots in soil, and presence of reduced iron in soil. One primary indicator is needed to determine that wetland hydrology is present. Wetland hydrology is present if two or more secondary indicators are met, including surface soil cracks, drainage patterns, moss trim lines (typically on tree trunks), dry-season water table, crayfish burrows, saturation visible on aerial imagery taken during the growing season, stunted or stressed plants, geomorphic position, shallow aquitard, microtopographic relief, and passing the FAC-Neutral Test.

3.2 VEGETATION

The prevalent vegetation found in wetlands consists of those plants adapted to saturated soil conditions. The *National Wetland Plant List* (US Army Corps of Engineers 2022) provides an indicator status for many of the plant species found in and around wetlands in the United States. These categories define the likelihood of a particular species occurring in a wetland. The ratings are explained as follows:

- **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 a similar likelihood (33-67% of the time) of occurring in wetlands or non-wetlands.
- **FACU** (Facultative Upland): Plants that occur sometimes (1-33% of the time) in wetlands.
- **UPL** (Obligate Upland): Plants that occur rarely (less than 1% of the time) in wetlands.

The two major hydrophytic vegetation indicators are the dominance test and the prevalence index. For the dominance test, if more than 50% of the dominant vegetation is rated OBL, FACW, or FAC, the sample area contains hydrophytic vegetation. Species are identified by vegetation strata (Tree, Sapling/Shrub, Herb, and Woody Vine). When there is less than 5% cover in any given strata, those species are listed in another strata. The prevalence index is a weighted average based on abundance and wetland indicator status of all plant species in the sampling plot. If the index is less than or equal to 3.0, the sample area contains sufficient hydrophytic vegetation. However, for the prevalence index indicator to apply, indicators of hydric soil and wetland hydrology must also be present unless disturbed.

3.3 SOILS

Hydric soils are defined as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (USDA, 1994). The definition makes it clear that the development of anaerobic conditions, and not the presence of water, is the critical factor in hydric soil development. Hydric soil field indicators are used to determine whether a soil meets this definition. Most hydric soil indicators are the result of chemical reduction of manganese, iron, or sulfur, or the accumulation of organic carbon, under anaerobic conditions (Vepraskas and Sprecher, 1997). The field indicators are grouped into categories for All Soils, Sandy Soils, and Loamy and Clayey Soils, and are described in *Field Indicators of Hydric Soils in the United States* (USDA, 2017). Munsell® *Soil Color Charts* were used to determine soil color.

3.4 COWARDIN CLASSIFICATION

The wetland and waters were classified based on the *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al., 1979). This classification defines the type of wetland or water potentially found within the project area. The terminology of Cowardin classification is as follows:

- **Riverine lower perennial (R2)** – Non-tidal stream with a year-round base flow. Modifiers are used to describe the stream, such as low gradient (2), Unconsolidated Bottom (UB), and Permanently Flooded (H).
- **Riverine intermittent (R4)** – Stream contains flowing water for only part of the year. When the water is not flowing, it may be absent or in isolated pools. Modifiers are used to describe the stream, such as Streambed (SB), and Seasonally Flooded (C).
- **PEM** – Palustrine emergent nontidal wetlands are herbaceous wetlands dominated by grass, sedge, rush, and/or forbs and lacking woody plants. Modifiers are used to describe

the wetlands, such as persistent (1), non-tidal temporarily flooded (A), or non-tidal saturated (B), or non-tidal semi-permanently flooded (C).

- **PSS** – Palustrine scrub-shrub nontidal wetlands are wetlands dominated by woody vegetation less than 20 feet tall. Modifiers are used to describe the wetlands, such as broad-leaved deciduous (1), non-tidal temporarily flooded (A), or non-tidal saturated (B), or non-tidal semi-permanently flooded (C).
- **PFO** – Palustrine forested nontidal wetlands are persistent wetlands dominated by trees and shrubs. Modifiers are used to describe the wetlands, such as broad-leaved deciduous (1), non-tidal temporarily flooded (A), non-tidal saturated (B), or non-tidal semi-permanently flooded (C).

3.5 UNVEGETATED “WATERS OF THE UNITED STATES”

The identification of stream channels was based on methodologies in the *USACE Jurisdictional Determination Form Instructional Guidebook* (USACE, 2007) and *National Ordinary High Water Mark Field Delineation Manual for Rivers and Stream* (USACE, 2022). Upland drainage swales and ephemeral stream channels are generally not waters of the United States because they are not tributaries and flow only in response to precipitation. In addition, ditches (including roadside ditches) excavated wholly in and draining only uplands that do not carry a relatively permanent flow of water, are generally not waters of the US because they are not tributaries. However, when these swales or ditches are not jurisdictional waters of the United States, they may need to be noted on wetland delineation maps as a surface hydrologic connection between two regulated wetlands or as ephemeral channels.

The jurisdictional limit over nontidal water bodies extends to the ordinary high-water mark (OHWM). The federal regulatory definition of the OHWM, 33 CFR 328.3(c)(7), states the OHWM is “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.”

4.0 SURVEY AND MAPPING METHODS

4.1 MAPS

Maps were constructed in ArcGIS using the Rare Plant Survey layer from NPS, aerial background photo from ESRI, National Wetland Inventory Pennsylvania wetlands layer from US Fish and Wildlife Service, and soils from the United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey. Hydric soils and wetlands identified on the National Wetland Inventory were used to locate areas of potential wetlands. Additionally, the Milford, PA US Geological Survey topography map was reviewed for topography, streams, and wetlands prior to conducting the wetland delineation.

4.2 SURVEY METHODS

The field-location survey of the wetland boundary flagging was performed by ESA personnel using a Trimble R1 GNSS Receiver with ViewPoint RTX, which provides sub-meter accuracy, and collected in Trimble TerraFlex software. Ten GPS positions were collected and averaged for each flag and data station. Field located surveyed flag points were used to draw wetland boundaries. These boundaries were quality-control checked and laid onto a base map to create the wetland delineation maps. A map that shows the mile markers along Route 209, McDade Trail, and survey areas where data stations were located is in Appendix A.

4.0 RESULTS

A Professional Wetland Scientist and environmental technician visited all 39 survey areas to determine whether wetlands may be present. Where wetland vegetation and/or signs of hydrology were apparent, data were collected, and a Wetland Determination Data Form was completed. Seven data forms at seven data stations were collected. A perennial stream (R2) and three nontidal forested wetlands (PFO) were delineated. Wetland determination data forms and photographs of the data stations are provided in Appendix B. Wetland delineation maps showing the specific location of all wetland boundaries, waters, and data stations can be found in Appendix C.

Wetland delineation field work was conducted from June 11-12, 2024. According to nearby weather station KFWN at Sussex Station, NJ, the total accumulation of rainfall in 2024 was 18.68 inches (Weather Underground 2024) compared to the average rainfall through June 10 of 20.39 inches (US Climate Data 2024). Based on this data and field observations, the site was considered to be under normal climatic conditions.

4.1 SOIL MAP UNITS

USDA soil types were reviewed for each survey area and are shown on the survey maps in Appendix C. Soil types are summarized in Table 2 below. There were no mapped hydric soils in the survey areas. The Hydrologic Group, designated A, B, C, or D indicates in general, the amount of runoff to be expected from the soil when saturated. Soils in Group A yield very little runoff because they are rapidly or very rapidly permeable and take in water at equal or faster rates than most rains fall in the area. Soils in Hydrologic Group D take water very slowly and yield large amounts of runoff. Soils in Group B and C yield less than Group D and more than Group A. Poorly drained soils generally are in Group D because the high water table prevents movement of water in the soil.

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Table 2. Mapped USDA Soils Types in Each Survey Area

Survey Area	Soil Unit Label	Soil Unit Name	Hydric Soil (yes,no)	Hydrologic Soil Group (A,B,C,D)
1	61C	Mardin stony loam, 8-15% slopes, extremely stoney	no	D
2	26	Philo loam	no	C
3	89B	Chenango gravelly fine sandy loam, 0-8% slopes	no	A
4	89B	Chenango gravelly fine sandy loam, 0-8% slopes	no	A
5	24B	Delaware fine sandy loam, 3-8% slopes	no	A
6	89B	Chenango gravelly fine sandy loam, 0-8% slopes	no	A
7	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
8	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
9	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
10	24A	Delaware fine sandy loam, 0-3% slopes	no	A
10	26	Philo loam	no	C
11	24A	Delaware fine sandy loam, 0-3% slopes	no	A
12	442C	Wyoming very cobbly sandy loam, 8-15% slopes	no	A
13	24A	Delaware fine sandy loam, 0-3% slopes	no	A
13	89D	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
14	89D	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
14	24A	Delaware fine sandy loam, 0-3% slopes	no	A
14	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
14	27	Barbour fine sandy loam	no	B
14	24B	Delaware fine sandy loam, 3-8% slopes	no	A
15	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
15	27	Barbour fine sandy loam	no	B
15	24B	Delaware fine sandy loam, 3-8% slopes	no	A
17	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
18	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
19	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
20	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
21	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
22	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
23	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
24	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
25	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
26	89D	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
27	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
28	121F	Manlius Arnot-Rock outcrop complex, 30-80% slopes	no	C
29	442D	Wyoming very cobbly sandy loam, 15-30% slopes	no	A
30	89B	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
30	9B	Craigsville-Wyoming complex, 0 to 8 percent slopes, extremely stony	no	A

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31	89B	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
32	26	Philo loam	no	C
32	89B	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
33	BP	Pits, shale and gravel.	no	N/A
34	BP	Pits, shale and gravel.	no	N/A
35	89B	Chenango gravelly fine sandy loam, 15-25% slopes	no	A
35	24C	Delaware fine sandy loam, 8-20% slopes	no	A
36	442C	Wyoming very cobbly sandy loam, 8-15% slopes	no	A
37	442C	Wyoming very cobbly sandy loam, 8-15% slopes	no	A
38	24A	Delaware fine sandy loam, 0-3% slopes	no	A
39	442C	Wyoming very cobbly sandy loam, 8-15% slopes	no	A
40	442B	Wyoming very cobbly sandy loam, 3-8% slopes	no	A

4.2 WATERS OF THE UNITED STATES

There are two perennial streams in the survey areas for this project. Raymondskill Creek runs under Survey Area 30 where there is an overpass on Route 209. The Ordinary High Water Marks on both riverbanks were flagged and surveyed. This is a perennial stream (R2) that drains into the Delaware River. Within Survey Area 30, is 7 linear feet and 84 SF of Raymondskill Creek.

Conashaugh Creek passes through a culvert under Site 14. This creek was contained entirely within the culvert under Route 209 and Site 14 and therefore was not delineated. This R2 stream also drains to the Delaware River. Dry Brook and Adams Creek are located between and not within survey areas along Route 209.

4.3 WETLAND AREAS

Three palustrine forested wetlands (PFO1B) with seasonally saturated water regimes were documented within the study area. One PFO1B wetland (63 SF) was identified in Survey Area 17 and is documented on Wetland Determination Data Form 17W. This wetland's hydrology comes from a groundwater seep, which leads to ponded open water. Surface water, high water table, and soil saturation were the primary hydrology indicators noted. Wetland vegetation was identified around the edge of the ponded water and seep, including jewelweed (*Impatiens capensis*), skunk cabbage (*Symplocarpus foetidus*), and several ferns. Adjacent to this wetland, ESA noted a non-native orchid, broad-leafed helleborine (*Epipactis helleborine*). Silt loam soils met hydric soil indicator A3 Black Histic with one chromas.

Two additional PFO1B wetlands were identified in Survey Areas 15 (131 SF) and 18 (69 SF) and are documented on Wetland Determination Data Form 15W. These wetlands' hydrology were also driven by groundwater and the primary wetland indicators, including surface water, high water table, and soil saturation. Barberry (*Berberis thunbergii*) was the dominant plant in

these wetlands, though sugar maple (*Acer saccharum*), skunk cabbage, Virginia jumpseed (*Persicaria virginiana*), and jewelweed were also common. The saturated silt loam soils met the description of hydric soil indicator Black Histic with one and two chromas.

4.4 UPLANDS

Data stations 5U, 10U, 15A, 15U, and 17U document upland conditions within the project area. Data Station 5U was in Survey Area 5 and was dominated by mugwort (*Artemis vulgaris*) and Japanese stilt grass (*Microstegium vimineum*). The site was in a small depression, but did not have signs of hydrology, hydric soil, or meet a hydrophytic vegetation indicator.

Data Station 10U was in Survey Area 10, in a ditch between Route 209 and McDade Trail. The area had wetland vegetation, including elderberry (*Sambucus nigra*), sensitive fern (*Onoclea sensibilis*), and poison ivy (*Toxicodendron radicans*). However, there were no indicators of hydric soil and only one secondary indicator of hydrology, geomorphic position.

Data Station 15A was in Survey Area 15, near Data Stations 15W and 15U. This area had saturated soils, meeting a hydrology indicator, and appeared to be more saturated in the non-growing season. Dominant vegetation included barberry, English ivy (*Glechoma hederacea*), and sugar maple, which are upland species. The surface soils had a chroma of 2 but no signs of redox and did not meet any hydric soil indicators.

Data Station 15U was the paired upland data station to 15W, was in Survey Area 15, and on the border of Survey Area 18. Similar to Data Station 15A, this area may be saturated in the non-growing season. Dominant vegetation included barberry, sugar maple, garlic mustard (*Allaria petiolata*), and Christmas fern (*Polystichum acrostichoides*), which are all upland plants. The soils had a chroma of 4 and did not meet any hydric soil indicators.

Data Station 17U was the paired upland data station to 17W and was on the hillslope adjacent to Survey Area 17. This site did not meet any of the wetland parameters. Dominant vegetation included hemlock (*Tsuga canadensis*), sweet birch (*Betula lenta*), northern red oak (*Quercus rubra*), barberry, and poison ivy. Soils were gravelly loam and had a chroma of 4.

5.0 CONCLUSIONS AND RECOMMENDATIONS

There are three forested wetlands and one stream in the survey area. Executive Order 11990 directs the NPS: 1) to provide leadership and to take action to minimize the destruction, loss, or degradation of wetlands; 2) to preserve and enhance the natural and beneficial values of wetlands; and 3) to avoid direct or indirect support of new construction in wetlands unless there are no practicable alternatives to such construction and the proposed action includes all practicable measures to minimize harm to wetlands. Under Director's Order #77-1, impacts to wetlands shall be avoided and minimized to the extent practicable.

Wetlands/waters jurisdiction can be determined only by the USACE. All jurisdictional wetlands and waters are subject to federal protection according to the Clean Water Act and may not be disturbed without authorization. The delineation findings described herein are based on published wetland delineation methods and reflect guidance provided by the agencies. However, until the wetlands/waters boundaries are confirmed by the agencies through a Jurisdictional Determination (JD) and/or the permitting process, the delineation performed by ESA should only be used for preliminary planning purposes. Local permits and regulations may also be applicable.

6.0 REFERENCES

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APPENDIX A:

Location Map

APPENDIX B:

Wetland Determination Data Forms
and
Photographs

APPENDIX C:

Wetland Delineation Maps