

**National Park Service
US Department of the Interior**



Delaware Water Gap National Recreation Area

**Wetland Delineation Report
Dingmans and Van Campens Bridge Work**

November 2021



EXECUTIVE SUMMARY

The National Park Service (NPS) is currently assessing the potential to replace the Dingmans Falls access road bridge and repair the Old Mine Road Bridge over Van Campens Creek in early 2022. The bridge projects, as well as a realignment of the Doodle Hollow Trail near Dingmans Bridge would enable the park to continue providing visitor services and general park operations and maintenance at these locations. The proposed project includes the three individual project components noted above in addition to four construction staging areas located within the Delaware Water Gap National Recreation Area (DEWA), approximately 25 miles northeast of East Stroudsburg, Pennsylvania. A total of seven areas of review (AORs) were established.

From August 18 through August 20, 2020, all natural and artificial wetlands in the seven AORs were delineated according to the guidance in NPS Director's Order #77-1 as well as the 1987 Corps of Engineers Wetland Delineation Manual (USACE 1987) and the applicable regional supplement. In New Jersey, the wetland delineation was conducted in accordance with New Jersey Department of Environmental Protection (NJDEP) procedures, which uses the 1989 Interagency Federal Manual for Identifying and Delineating Jurisdictional Wetlands (USFWS et al. 1989). Delineated wetlands were classified according to the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States (Report FWS/OBS-79/31) (Cowardin et al. 1979). Delineated wetlands were classified according to the U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States (Report FWS/OBS-79/31) (Cowardin et al. 1979). A total of one wetland and one stream channel was located within the New Jersey AORs and two stream channels were identified within the Pennsylvania AORs. All four delineated features were delineated in accordance with NPS procedures and also meet the definition of wetlands or waterways based on U.S. Army Corps of Engineers (USACE) and New Jersey Department of Environmental Protections (NJDEP) methodology. Additional data points for wetlands delineated in August 2020 were added during a field visit in May 2021 to address changes in the limit of disturbance that had occurred since August 2020.

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Acronyms and Abbreviations

Ac.	Acre(s)
AOR	Area of Review
DEWA	Delaware Water Gap National Recreation Area
DO	Director's Order
EO	Executive Order
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
lf	linear feet
NJ	New Jersey
NJDEP	New Jersey Department of Environmental Protection
NRCS	Natural Resources Conservation Service
NPS	National Park Service
NWI	National Wetland Inventory
OBL	Obligate Wetland
OHWM	Ordinary High Water Mark
PA	Pennsylvania
PWS	Professional Wetland Scientist
TNW	Traditionally navigable waterway
WUS	Waters of the U.S.
UPL	Upland
U.S.	United States
USACE	U.S. Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1. INTRODUCTION

The National Park Service (NPS) is currently assessing the potential to replace the Dingmans Falls access road bridge and repair the Old Mine Road Bridge over Van Campens Creek in early 2022. The bridge projects, as well as a reroute of the Doodle Hollow Trail near Dingmans Bridge would enable the park to continue providing visitor services and general park operations and maintenance at these locations. The proposed project includes the three individual project components noted above in addition to four construction staging areas located within the Delaware Water Gap National Recreation Area (DEWA), approximately 25 miles northeast of East Stroudsburg, Pennsylvania (Appendix A, Figure 1). A total of seven areas of review (AORs) were established (Appendix A, Figures 2a through 2d). Table 1 provides an overview of the seven AORs.

To comply with Executive Order (EO) 11990 within the context of the agency's mission, the NPS has developed a set of policies and procedures found in Director's Order #77-1: *Wetland Protection* (DO #77-1; NPS 2012) and Procedural Manual #77-1: *Wetland Protection*. In New Jersey, the wetland delineation was conducted in accordance with NJDEP procedures, which uses the 1989 *Interagency Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (USFWS et al. 1989). These policies and procedures emphasize: 1) exploring all practical alternatives to building on, or otherwise adversely affecting, wetlands; 2) reducing impacts to wetlands whenever possible; and 3) providing direct compensation for any unavoidable wetland impacts by restoring degraded or destroyed wetlands on other NPS properties. If a Preferred Alternative will have adverse impacts on wetlands, a Statement of Findings must be prepared that documents the above steps and presents the rationale for choosing an alternative that will have adverse impacts on wetlands. Therefore, in accordance with EO 11990 and DO #77-1, the NPS is required to perform and provide a delineation and review of the project area's wetlands and/or "waters of the United States."

The wetland delineation was performed by Thomas King (over 15 years of experience conducting wetland delineations) and Kathryn Cerny-Chipman (over 7 years of experience conducting wetland delineations), who both have their Professional Wetland Scientists (PWS) certification. Due to changes in the project limit of disturbance (LOD) that occurred after the wetland delineation, additional areas outside the original AOR for AOR4 and AOR7 were revisited on May 25-26, 2021 to collect additional data and ensure no wetlands were present in the area not surveyed in August 2020.

Table 1. Areas of Review

AOR #	Description	Acreage	State	Lat/Long
AOR1	Doodle Hollow Trail	2.93	PA	74° 53' 41.04" W / 41° 13' 47.92" N
AOR2	Dingmans Staging at Route 209	0.71	PA	74° 52' 17.63" W / 41° 13' 13.09" N
AOR3	Dingmans Bridge Staging Area	0.13	PA	74° 52' 51.95" W / 41° 13' 30.10" N
AOR4	Dingmans Bridge	0.38	PA	74° 52' 48.73" W / 41° 13' 29.54" N
AOR5	Van Campens Bridge	0.38	NJ	75° 00' 03.64" W / 41° 03' 28.81" N
AOR6	Van Campens Staging Area 1	0.04	NJ	75° 00' 05.64" W / 41° 03' 27.76" N
AOR7	Van Campens Staging Area 2	0.09	NJ	75° 00' 02.15" W / 41° 03' 29.65" N
Total Acreage		4.66	--	--

2. RESEARCH OF AVAILABLE DOCUMENTS

Maps of the project area were created using data layers provided by the NPS, including the aerial photograph and proposed limit of disturbance boundaries, to create base maps for field use. Prior to visiting the site, available mapping, data and documents including historical aerial photographs; National Wetland Inventory

maps; U.S. Geological Survey (USGS) topographic quadrangles; and Natural Resources Conservation Service (NRCS) soil surveys were reviewed to identify potential wetland areas and stream channels (riverine systems) that may be located within the AORs.

2.1 U.S. Geological Survey Topographic Maps

The USGS Topographic Maps for the AORs (Appendix A, Figures 3a through 3d), were used as a reference to identify possible wetland and waterways. Topographic maps identify elevations, forested areas, streams, ponds, roads, and structures. The *Lake Maskenozha* and *Bushkill* quadrangles were used for the AORs. Dingmans Creek is depicted running through the western portion of AOR1 and conveying flow in a northeasterly direction where it passes across the western most end of AOR (Appendix A, Figure 3a). No wetlands or waterways were depicted in the boundary of AOR2. However, Dingmans Creek is located to the north, just outside of AOR2 (Appendix A Figure 3b). Dingmans Creek is also depicted outside the boundary of AOR3, to the south, and through AOR4 (Appendix A, Figure 3c). Van Campens Brook is depicted within the boundaries of AOR5, while no wetlands or waterways were depicted within AOR6 and AOR7.

2.2 Soil Survey Information

The online NRCS Web Soil Surveys for Pike County, Pennsylvania and Warren County, New Jersey were reviewed for seven AORs (Appendix A, Figures 4a through 4d). The Soil Surveys identify eight soil series within the AORs (Table 2). According to the NRCS, one soil type is listed as hydric (USDA NRCS 2016) and occurs within AOR1, AOR3 and AOR4.

Table 2. Mapped Soil Types

Symbol	Soil Series	AORs Located	Hydric
Pike County, Pennsylvania			
9b	Craigsville-Wyoming complex, 0-8% slopes, extremely stony	AOR1, AOR3, AOR4	Yes
121d	Manlius-Arnot-Rock outcrop complex, 15 to 30% slopes	AOR1	No
121f	Manlius-Arnot-Rock outcrop complex, 30 to 80% slopes	AOR1	No
27	Barbour fine sandy loam	AOR2	No
89c	Chenango gravelly fine sandy loam, 8- 15% slopes	AOR2	No
Warren County, New Jersey			
HdxbBb	Hazen-Paulins Kill complex, 3 to 8 percent slopes, very stony	AOR7	No
PduoEb	Paulins Kill-Otisville complex, 25-60% slopes, very stony	AOR5, AOR6, AOR7	No
ScoA	Scio silt loam, 0-3% slopes	AOR5	No

Source: USDA NRCS 2016

2.3 National Wetland Inventory Maps

Wetland data from the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) website (USFWS 2016) were reviewed. The NWI maps (Appendix A, Figures 5a through 5d) identify three NWI wetlands within the AORs. These NWI mapped wetlands correspond with Dingmans Creek (AOR1 and AOR3) and Van Campens Brook (AOR5). The NWI wetland identified within AOR3 appears to be offset slightly from the actual location of Dingmans Creek and therefore is depicted in AOR3 instead of AOR4. Dingmans Creek is characterized as a Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded wetland (R3UBH) and Van Campens Brook is characterized as a Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded wetland (R5UBH).

3. METHODS

All natural and artificial waterways and wetlands were delineated within the AORs according to the guidance in NPS DO #77-1. Wetlands within the Dingmans Falls area of Pennsylvania were identified in accordance with the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northeast and North Central Region – Version 2.0* (2010). Wetlands within the Van Campens area of New Jersey were identified in accordance with the NJDEP method, which uses the 1989 *Interagency Federal Manual for Identifying and Delineating Jurisdictional Wetlands* (USFWS et al. 1989). Delineated wetlands were also classified using the USFWS's *Classification of Wetlands and Deepwater Habitats of the United States* (Report FWS/OBS-79/31); (Cowardin et al. 1979).

For the NPS, any area that is classified as a *wetland* according to the USFWS' *Classification of Wetlands and Deepwater Habitats of the United States* (Report FWS/OBS-79/31) (Cowardin et al. 1979) is subject to NPS DO #77-1: *Wetland Protection* (deepwater habitats are not subject to DO #77-1). Under the Cowardin definition, a wetland must have one or more of the following three attributes:

1. At least periodically, the land supports predominantly hydrophytes (wetland vegetation);
2. The substrate is predominantly undrained hydric soil; or
3. The substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

The Cowardin wetland definition encompasses more aquatic habitat types than the definition and delineation manual used by the U.S. Army Corps of Engineers (USACE) for identifying wetlands subject to Section 404 of the Clean Water Act. The 1987 *Corps of Engineers Wetland Delineation Manual* requires that all three of the parameters listed above (hydrophytic vegetation, hydric soil, wetland hydrology) be present for an area to be considered a wetland. The Cowardin wetland definition includes such wetlands, but also includes some areas that, though lacking vegetation and/or soils due to natural physical or chemical factors such as wave action or high salinity, are still saturated or shallow inundated environments that support aquatic life (e.g., unvegetated stream shallows, mudflats, rocky shores).

3.1 Hydrophytic Vegetation

Hydrophytic vegetation is defined in the USACE manual and the USFWS federal manual as a community of macrophytes that occurs in areas where inundation or soil saturation is either permanent or of sufficient frequency and duration to influence plant occurrence. A plant-community approach to evaluate vegetation is used and, therefore, hydrophytic vegetation decisions are based on the community of plant species growing in the area rather than the presence or absence of particular indicator species. Common wetland plant species have been categorized regionally by USACE in the 2016 *National Wetland Plant List v 3.3*. Each plant is classified into one of five categories as follows:

- Obligate (OBL) = Greater than 99 percent estimated probability of occurring in wetlands.
- Facultative Wetland (FACW) = 67 to 99 percent estimated probability of occurring in wetlands.
- Facultative (FAC) = 34 to 66 percent estimated probability of occurring in wetlands.
- Facultative Upland (FACU) = 1 to 33 percent estimated probability of occurring in wetlands.

- Upland (UPL) = less than 1 percent estimated probability of occurring in wetlands.

Plants that have an indicator status of OBL, FACW, or FAC are considered to be typically adapted for life in anaerobic soil conditions. When the dominant species in a plant community are typically adapted for life in anaerobic soil conditions, hydrophytic vegetation is present. Several indicators may be used to determine whether hydrophytic vegetation is present on a site; however, the presence of a single individual of a hydrophytic species does not mean that hydrophytic vegetation is present.

Evaluation of the vegetation begins with a rapid field test for hydrophytic vegetation to determine if there is a need to collect more detailed vegetation data. If the area is not dominated solely by OBL and FACW species, the standard dominance test is performed to determine if more than 50 percent of the dominant species are OBL, FACW, or FAC. Some wetland plant communities may not be considered hydrophytic based only on dominant species. Therefore, in those cases where indicators of hydric soil and wetland hydrology are present, the vegetation would be reevaluated with the prevalence index taking into account non-dominant plant species as well. A plant community is considered hydrophytic if any one of these three tests is passed.

3.2 Hydric Soils

Hydric soils are soils that are saturated, ponded, or flooded long enough during the growing season to develop anaerobic conditions in the upper portion of the soil column (typically within the upper 18 inches). The prolonged presence of water results in the chemical reduction of elements, particularly iron and manganese. Reduced soils often exhibit a gray (or “gleyed”) color that reflects either the leaching of elements or the presence of reduced elements (again, generally iron and manganese).

Hydric soils are often characterized by bright mottles, sometimes called redoxymorphic features. Mottles are an indication of incomplete saturation. They typically represent isolated pockets where elements (mainly iron) have remained oxidized. Another feature of hydric soils is a low matrix chroma in the diagnostic zone, which is typically identified as the upper 18 inches of the soil layer but may vary. For mineral hydric soils, the diagnostic zone typically must have a matrix chroma of two or less for soils with mottles, or a matrix chroma of one or less for soils without mottles. To make this determination, soil cores are collected in the field in suspected wetland areas and the soil colors are compared to a Munsell Soil Color Chart. Other examples of field indicators for hydric soils include, but are not limited to, high organic content, histic epipedons, concretions, and/or a sulfidic odor.

3.3 Wetland Hydrology

Wetland hydrology supplies the moisture required to support wetland vegetation and also creates the conditions necessary for the formation of hydric soils. Primary indicators of wetland hydrology include, but are not limited to, observed inundation or saturation, watermarks, drift deposits, sediment deposits, aquatic fauna, oxidized rhizospheres on living roots, and water stained leaves. Secondary indicators of wetland hydrology include, but are not limited to, drainage patterns, soil cracks, moss-trim lines on trees, crayfish burrows, and the FAC-Neutral test. The FAC-Neutral test involves comparing the number of OBL and FACW plant species to the number of FACU and UPL plant species, with FAC species being neutral. If 50 percent or more of the plant species are OBL or FACW, the FAC-Neutral test is met. Meeting the FAC-Neutral test is considered a secondary indicator of wetland hydrology. An area must contain at least one primary indicator or two secondary indicators of wetland hydrology for the parameter of wetland hydrology to be met.

or chemical factors such as wave action or high salinity, are still saturated or shallow inundated environments that support aquatic life (e.g., unvegetated stream shallows, mudflats, rocky shores).

3.4 Stream Channels (Riverine Wetland Systems)

In addition to identifying wetlands, water courses such as stream channels were flagged that would likely be considered jurisdictional Waters of the U.S. (WUS). These stream channels are also defined as “riverine wetlands” under the NPS/Cowardin classification system. Stream channels were identified by the presence of a defined bed and bank, as well as a defined ordinary high-water mark (OHWM). Flagging was placed along the OHWM to define the boundaries of these stream channels. Furthermore, these watercourses are classified into one of three categories: perennial stream channels that typically flow year-round, intermittent stream channels that only flow seasonally, and ephemeral stream channels that typically flow less than seasonally. Ephemeral features receive hydrology from surficial sources, such as runoff from surrounding uplands during and immediately following precipitation events and/or snow melt (i.e., do not have a direct connection to groundwater and are not hydraulically connected to wetlands). Desktop information such as USGS maps, soil surveys, NWI maps, and other materials are used to assist in classifying these watercourses in addition to observations made during the site visit, such as natural channel substrate and presence of aquatic taxa.

3.5 Field Data Collection

Locations for collection of data were established onsite to evaluate the presence or absence of wetlands and to demonstrate the typical characteristics of uplands and wetlands along the line of delineation. In areas where hydrologic indicators were observed with hydrophytic vegetation, test pits were dug using an auger into the ground to a depth of approximately 18 inches or more to observe soil conditions and to classify the soil as either hydric or non-hydric. Surrounding vegetative species and hydrologic indicators were also observed at the sample locations. The field delineation of wetlands consisted of identifying the limits of the wetlands with pink flagging, which was numbered sequentially and flag locations were used to create polygons of wetland areas and these wetland boundaries are depicted in the Wetland Delineation Maps (Appendix A, Figures 6a through 6d). Wetland flagging in Pennsylvania was located using a sub-meter accurate handheld Trimble geographic positioning system (GPS) unit and wetland flagging within New Jersey was located by a licensed surveyor as well as GPS located. The figures in Appendix A depict the GPS located wetland flagging. A formal surveyed plan for wetlands in New Jersey was also prepared and is included in Appendix D. Wetland Determination Data Forms were completed for the areas of data collection within the wetland areas, as well as associated upland areas, to support the delineation in the field. USACE determination data forms for the northcentral and northeast region were completed for the AORs in Pennsylvania, while data forms from the 1989 *Interagency Federal Manual* were completed for the AORs within New Jersey. These wetland data forms are included in Appendix B of this report. In addition to the Wetland Determination Data Forms, a rapid Function and Values Assessment was completed for each wetland identified onsite and is provided in Appendix B. Photographs were taken of the wetlands identified and are included in Appendix C of this report. Appendix C also includes photographs of general observations of the upland and surrounding areas outside of the area of review.

4. RESULTS OF SURVEY

From August 18 through August 20, 2020, a wetland delineation of the seven AORs was completed to determine the presence of wetlands and stream channels (riverine systems) as defined by the NPS and USACE, and NJDEP. A total of one wetland (Wetland A) and three stream channels (WUS1, WUS2, and WUS3) were identified during the wetland delineation effort and are described in the following sections of this report. Additional points for WUS2 and WUS3 were collected in May 2021 to address changes in

the LOD that had occurred since the August 2020 delineation. Maps for each delineated wetland and stream channel are provided in Appendix A (Figures 6a through 6d).

4.1 Systems Identified – Pennsylvania

4.1.1 Area of Review 1

AOR1 is associated with the proposed Doodle Hollow Trail re-alignment and includes 2.93 acres (ac) within the Dingmans Falls Area, Pennsylvania. AOR1 included one identified stream channel, which was identified as WUS1. WUS1 is a perennial stream channel located along the southwest portion of AOR1 and conveys flow through the AOR for approximately 325 linear feet (lf) before continuing in a northeasterly direction outside of the AOR where it passes along the eastern portion of the AOR just outside the review boundary. WUS1 was identified as Dingmans Creek which was classified as a perennial stream channel with a significant nexus to a traditionally navigable waterway (TNW). WUS1 has a consistent, defined ordinary high-water mark (OHWM) and defined bed and bank throughout the AOR. The area of WUS1 within AOR1 was 0.17 ac.

4.1.2 Area of Review 2

AOR2 is associated with the proposed Dingmans Bridge staging area at Route 209 and consists of the 0.71 ac within the Dingmans Falls Area. This AOR consists mainly of mowed maintained grass areas and gravel parking spaces with a paved road bisecting the middle of the AOR. No wetlands or waterways were identified within the boundary of the AOR2.

4.1.3 Area of Review 3

AOR3 is associated with the proposed Dingmans Bridge west staging area adjacent to the existing bridge and consists of the 0.13 ac within the Dingmans Falls Area. This AOR consists mainly of a small gravel pull-off area along Dingmans Road. No wetlands or waterways were identified within the boundary of the AOR3.

4.1.4 Area of Review 4

AOR4 is associated with Dingmans Bridge and includes 0.38 ac within the Dingmans Falls Area. AOR4 included one identified stream channel, which was identified as WUS2. WUS2 is a perennial stream channel located through the center of AOR4 and conveys flow through the AOR for approximately 181 lf before continuing in an easterly direction outside of the AOR. Within AOR4, WUS2 had an area of 0.17 ac. WUS2 was identified as Dingmans Creek which was classified as a year-round RPW with a significant nexus to a TNW. WUS2 has a consistent defined OHWM and defined bed and bank throughout the AOR. Following the delineation in 2020, an additional area downstream of the AOR that required survey was identified due to changes to the LOD, and an additional 101 lf and 0.07 ac of WUS2 were delineated. In total, 282 lf of WUS2 were delineated. An area to the east of the roadway was also assessed in the field in May 2021, and is located outside WUS2. Photos of the LOD east of the roadway/AOR are found in Appendix C. Overall, approximately 0.07 ac of WUS2 are within the LOD.

4.2 Systems Identified – New Jersey

4.2.1 Area of Review 5

AOR5 is associated with Van Campens Bridge and consists of the 0.38 ac within the Van Campens Area. AOR5 included one identified stream channel, which was identified as WUS3. WUS3 is a perennial

stream channel located through the center of AOR5 and conveys flow through the AOR for approximately 174 lf (an area of 0.12) before continuing in a northwesterly direction outside of the AOR, where an additional 49 lf (an area of 0.04 ac) were delineated in May 2021 to address changes in the LOD identified after the October 2020 delineation. In total, 223 lf of WUS3 were delineated. WUS3 was identified as Van Campens Brook which was classified as a year-round RPW with a significant nexus to a TNW. WUS3 has a consistent defined OHWM and defined bed and bank throughout the AOR. Approximately 0.01 ac of WUS3 are within the LOD.

4.2.2 Area of Review 6

AOR6 is associated with the proposed Van Campens Bridge staging area located just southwest of the existing bridge and consists of the 0.04 ac within the Van Campens Area. This AOR consists mainly of a small gravel pull-off area along Old Mine Road. No wetlands or waterways were identified within the boundary of the AOR6.

4.2.3 Area of Review 7

AOR7 is associated with the proposed Van Campens Bridge staging area located just northeast of the existing bridge and consists of the 0.09 ac within the Van Campens Area. This AOR consists mainly of a paved entrance road which leads to a gravel road along Old Mine Road. One wetland was identified within AOR7 (Wetland A). Wetland A is located on the northeastern portion of AOR7 and classified as an emergent wetland. Wetland A is located directly along the paved road and entrance area and received hydrology from a groundwater seep in the side of the hill, as well as runoff from the existing road. A drop inlet was identified in the center of the wetland which connects to a culvert beneath Old Mine Road and outfalls to Van Campens Brook. Wetland A was identified as a wetland adjacent to Van Campens Brook and not an isolated system as a defined hydrological connection was identified by way of the drop inlet and existing culvert.

Wetland A is dominated by hydrophytic vegetation consisting of Japanese stiltgrass (*Microstegium vimineum*), jewelweed (*Impatiens capensis*), and false nettle (*Bohemeria cylindrica*). The hillside seep portion of the wetland also contained a few species in the shrub layer, including spicebush (*Lindera benzoin*) and American elm (*Ulmus americana*). Wetland hydrology observed throughout Wetland A included inundation, high water table, soil saturation, drainage patterns, and hydrogen sulfide odor. Hydric soils were also identified throughout Wetland A as a silt loam soil with a matrix chroma of 1 and a depleted matrix within the upper 12 inches of the soil profile.

Table 3. Delineated Features

System Name	System Type	Size within AOR*	Size within LOD	Significant Nexxus Determination
Wetland A	Emergent	0.01 ac	0 ac	Adjacent
WUS1	Perennial Stream Channel	325 lf / 0.17 ac	0 ac	RPW
WUS2	Perennial Stream Channel	181 lf / 0.17 ac	0.07 ac	RPW
WUS3	Perennial Stream Channel	174 lf / 0.12 ac	0.01 ac	RPW

*Additional areas were delineated outside the AOR in May 2021 due to changes in the LOD. This includes an additional 101 lf and 0.07 ac for WUS2 and an additional 49 lf and 0.04 ac for WUS3.

4.3 Wetland Functions and Values

Wetland functions are physical, chemical, and biological processes or attributes of wetlands that are vital to the integrity of a wetland system, while wetland values are attributes not necessarily important to the integrity of a wetland system but perceived as valuable to society. In addition to the standard wetland

delineation methods, a Functions and Values Assessment was completed for the wetlands delineated within the study area. The method used was the New England District of the USACE for Wetland Functions and Values: A Descriptive Approach. A brief description of the common functions and values assessed with this method is provided below:

- Groundwater recharge/discharge — The potential for the wetland to contribute water to an aquifer or potential for the wetland to serve as an area where groundwater can be discharged to the surface.
- Floodflow alteration (Storage and Desynchronization) — Effectiveness of the wetland in reducing flood damage by attenuation of floodwaters for prolonged periods following precipitation events.
- Fish and shellfish habitat — Effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.
- Sediment/toxicant/pathogen retention — Prevents degradation of water quality relating to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.
- Nutrient removal/retention/transformation — Ability for the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.
- Production export (Nutrients) — Wetland's ability to produce food or usable products for humans or other living organisms.
- Sediment/shoreline stabilization — Effectiveness of a wetland to stabilize stream banks and shorelines against erosion.
- Wildlife habitat — The wetland's ability 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.
- Recreation (Consumptive and Non-Consumptive) — Ability for the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive activities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland, whereas non-consumptive activities do not.
- Educational/scientific value — Value of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.
- Uniqueness/heritage — Ability for the wetland or its associated water bodies to produce certain special values. Special values may include archaeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.
- Visual quality/aesthetics — The presence of visual and aesthetic qualities of the wetland for society.

Wetland A identified within AOR7 is located in a low concave area along the existing road and parking area. It appears that Wetland A has the primary function of groundwater discharge as there was presence of a groundwater seep, provides floodflow alteration along the road, provides suitable habitat for wildlife

including multiple species of frogs observed, and also provides the functions of sediment/toxicant retention and nutrient removal.

5. CONCLUSION

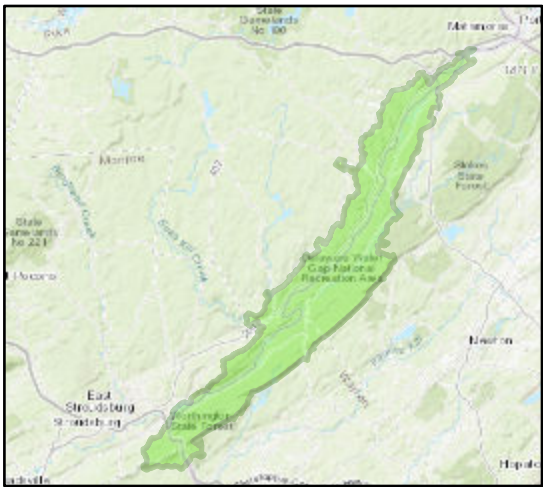
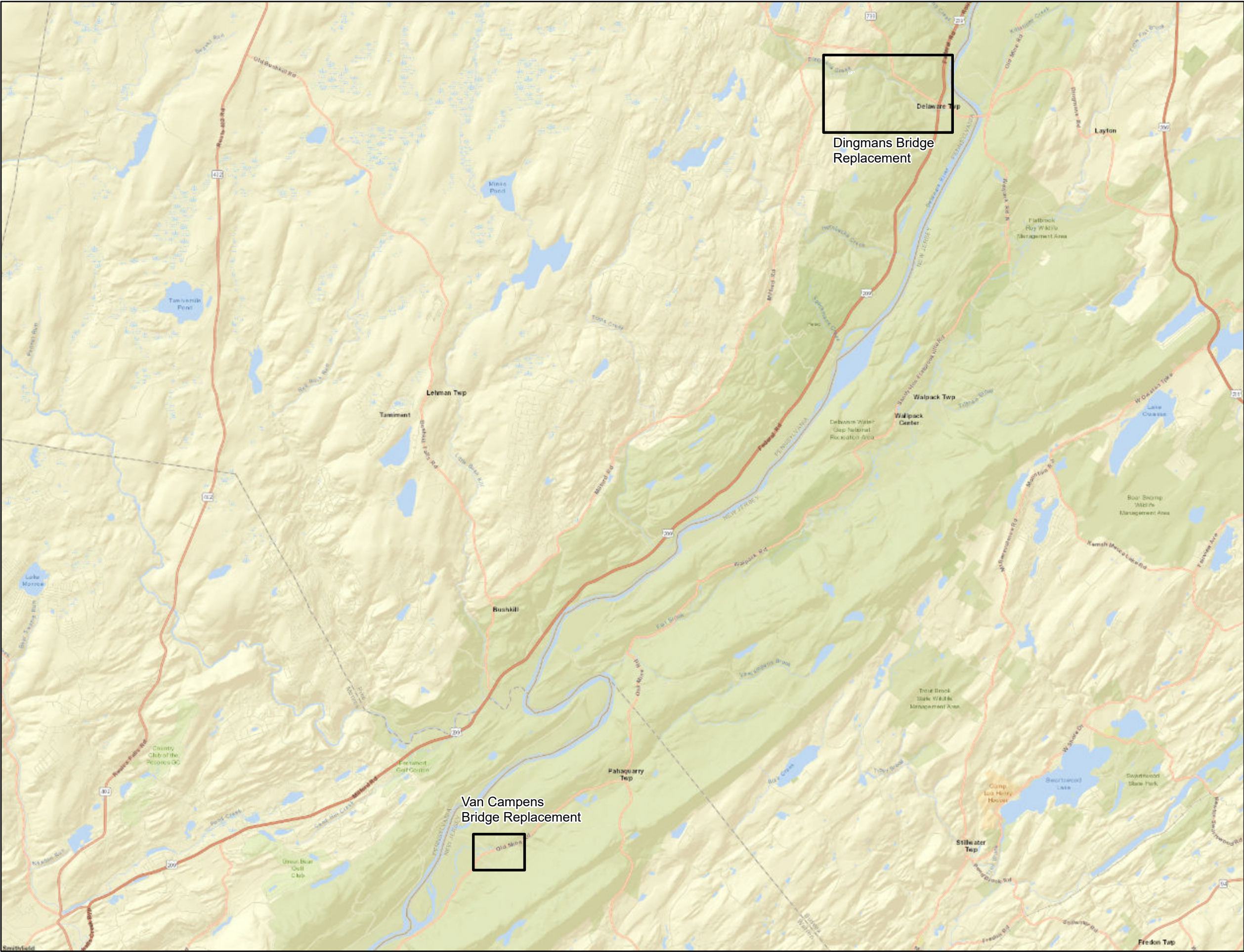
A total of one wetland and one stream channel was located within the New Jersey AORs and two stream channels were identified within the Pennsylvania AORs. All four systems were delineated in accordance with NPS procedures. Additionally, all four of these delineated features identified in this report meet the definition of wetlands or waterways based on USACE and NJDEP methodology. Wetland A was identified as being an adjacent wetland with a direct nexus to regulated waterways and therefore should not be considered an isolated system. All three stream channels were identified as perennial stream channels with direct nexuses to traditionally navigable waterways. Since all four delineated systems were identified to have a significant nexus to traditionally navigable waterways, these systems would likely be considered jurisdictional by either the USACE for the systems and Pennsylvania and NJDEP for the systems in New Jersey and would require applicable permits under the Clean Water Act.

6. REFERENCES

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Appendix A

Figures



Map Date: 9/4/2020
Source: ESRI
Projection: NAD 1983 UTM Zone 18N

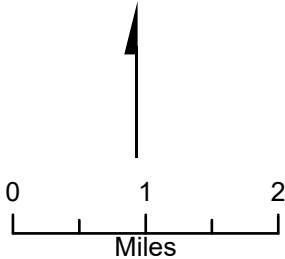
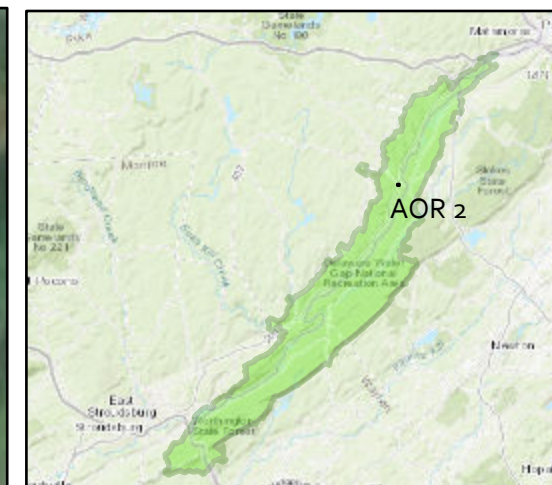


Figure 1
Vicinity Map
Bushkill, PA



Legend

 Area of Review

Map Date: 9/4/2020
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

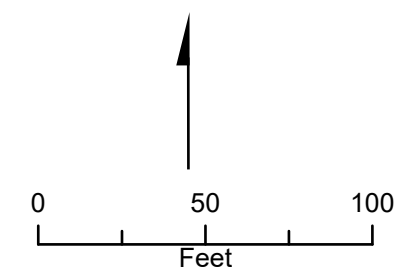
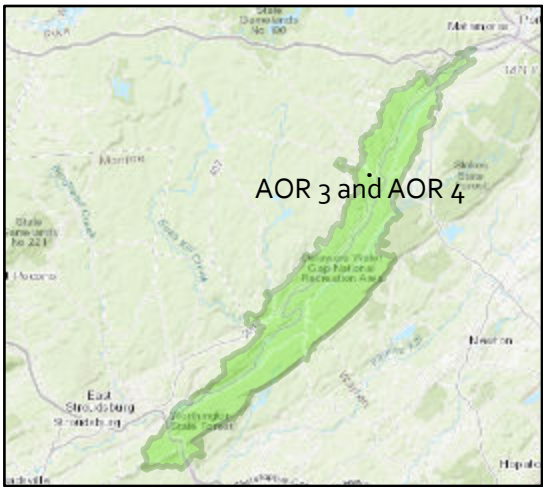


Figure 2b
Area of Review Map
AOR 2 (Dingmans Staging at 209)



Legend
 Area of Review

Map Date: 9/4/2020
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

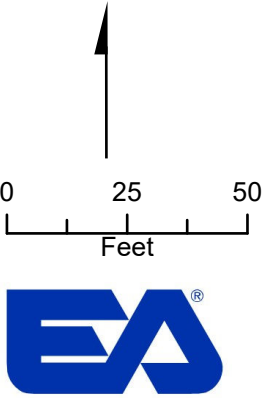
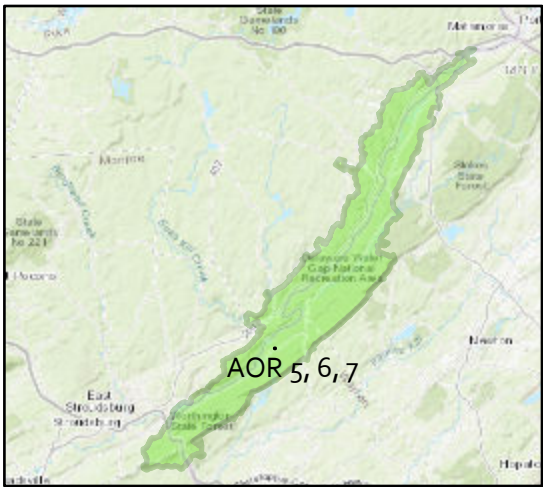


Figure 2c
Area of Review Map
AOR 3 (Dingmans Bridge Staging Area)
and AOR 4 (Dingmans Bridge)



Legend

 Area of Review

Map Date: 9/4/2020
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

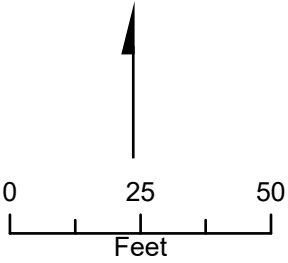


Figure 2d
Area of Review Map
AOR 5 (Van Campens Bridge),
AOR 6 (Van Campens Staging Area 1), and
AOR 7 (Van Campens Staging Area 2)



Legend

 Area of Review

Map Date: 9/4/2020
Source: USGS
Projection: NAD 1983 UTM Zone 18N

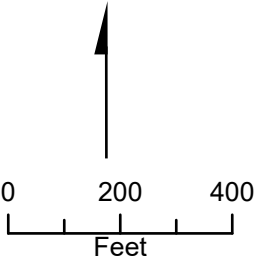
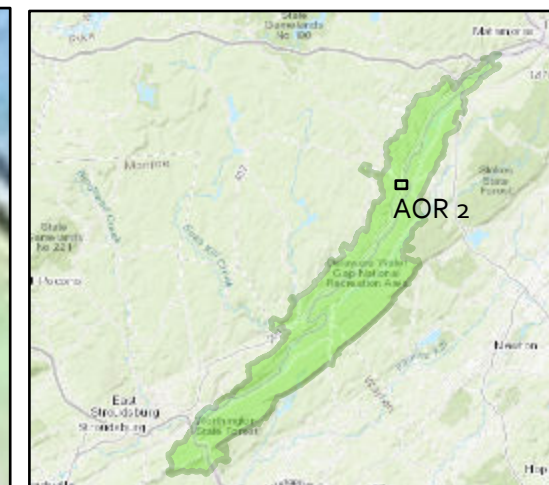


Figure 3a
USGS Topography Map
AOR 1 (Doodle Hollow Trail)



Legend

 Area of Review

Map Date: 9/4/2020
Source: USGS
Projection: NAD 1983 UTM Zone 18N

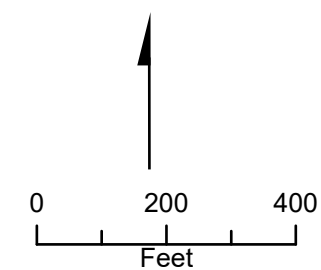
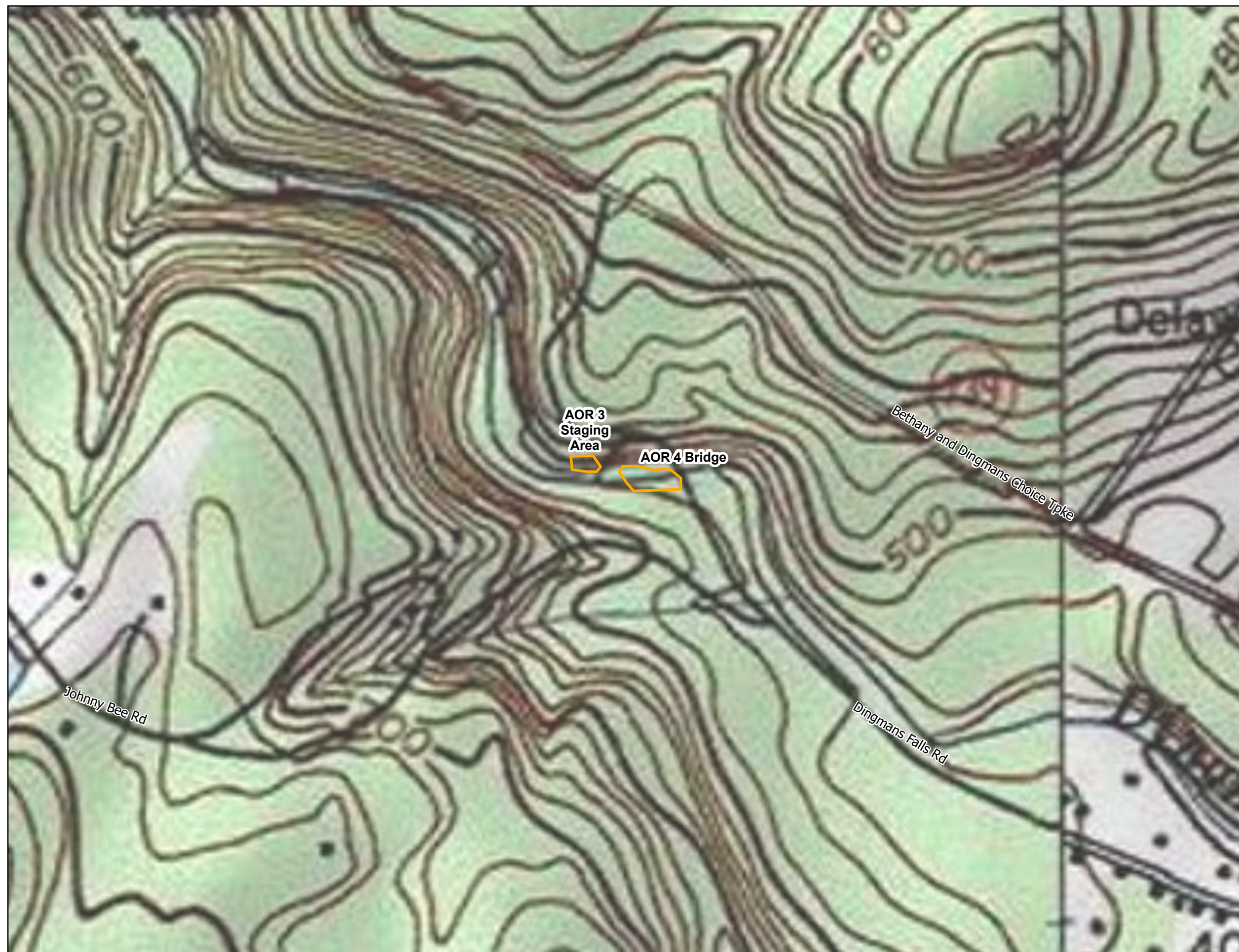


Figure 3b
USGS Topography Map
AOR 2 (Dingmans Staging at 209)



Legend

 Area of Review

Map Date: 9/4/2020
Source: USGS
Projection: NAD 1983 UTM Zone 18N

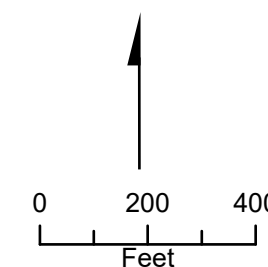
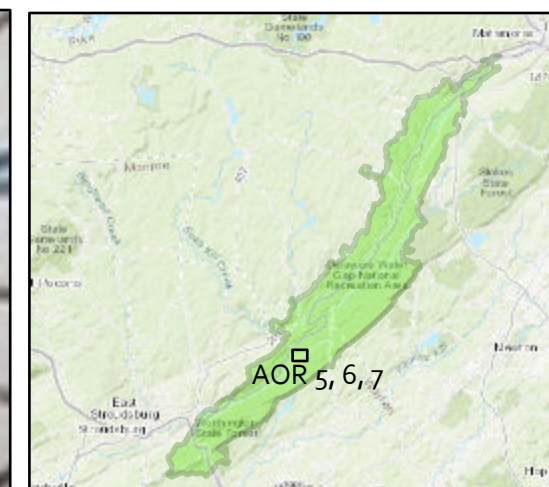


Figure 3C
USGS Topography Map
AOR 3 (Dingmans Bridge Staging Area)
and AOR 4 (Dingmans Bridge)



Legend

 Area of Review

Map Date: 9/4/2020
Source: USGS
Projection: NAD 1983 UTM Zone 18N

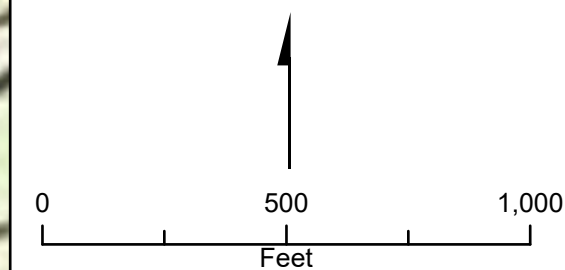
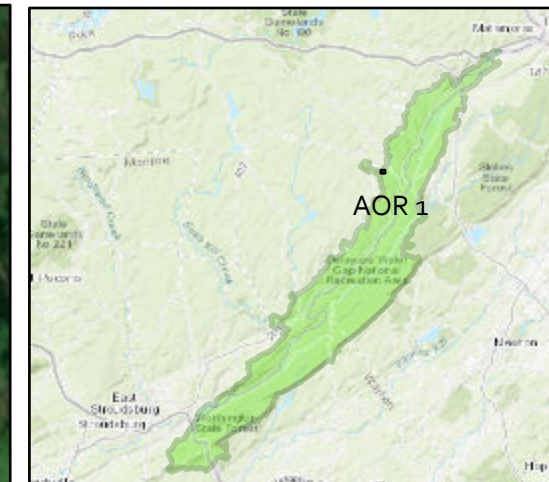
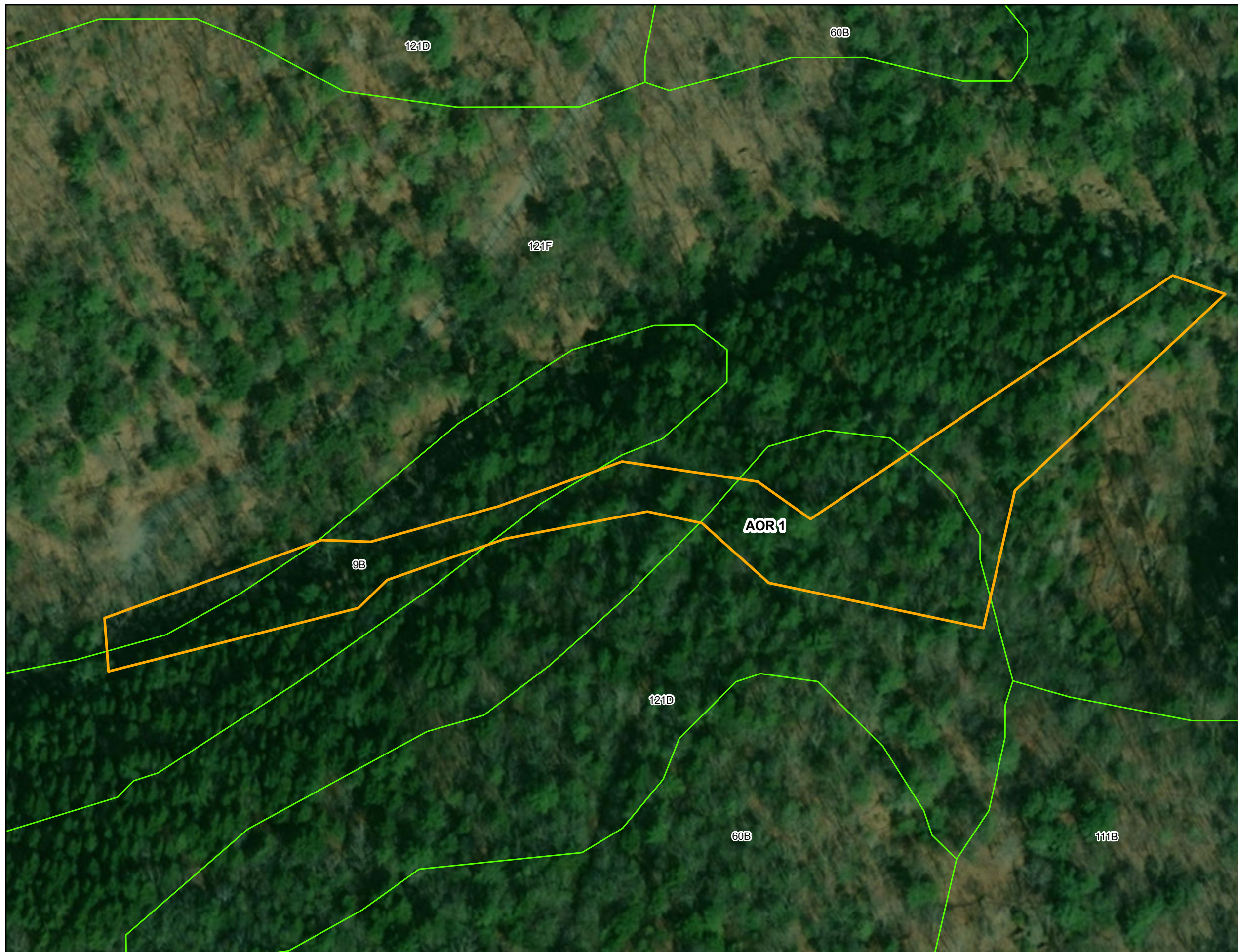


Figure 3d
USGS Topography Map
AOR 5 (Van Campens Bridge),
AOR 6 (Van Campens Staging Area 1), and
AOR 7 (Van Campens Staging Area 2)



Legend

-  Soil Unit
-  Area of Review

Map Date: 9/4/2020
Source: ESRI 2020, National Resources Conservation
Service Soils
Projection: NAD 1983 UTM Zone 18N

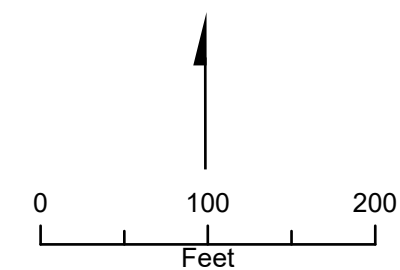
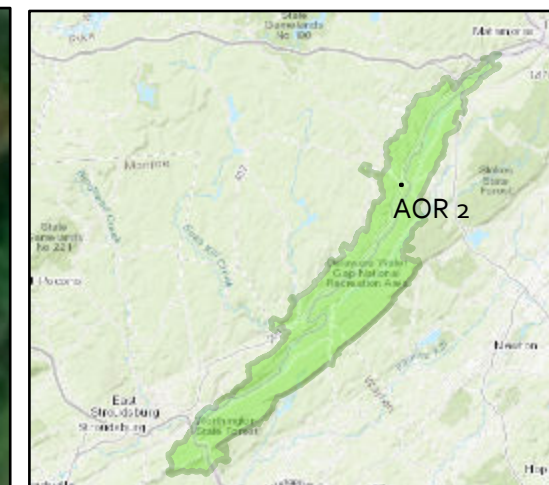


Figure 4a
NRCS Soil Map Units
AOR 1 (Doodle Hollow Trail)



Legend

- Soil Unit
- Area of Review

Map Date: 9/4/2020
 Source: ESRI 2020, National Resources Conservation
 Service Soils
 Projection: NAD 1983 UTM Zone 18N

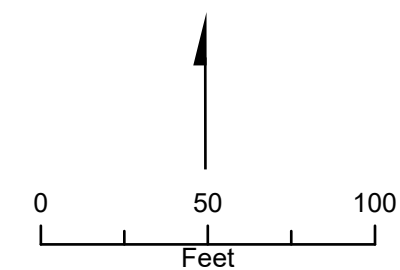
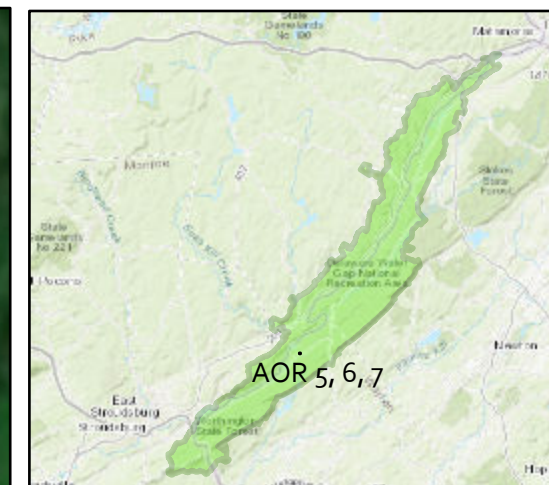
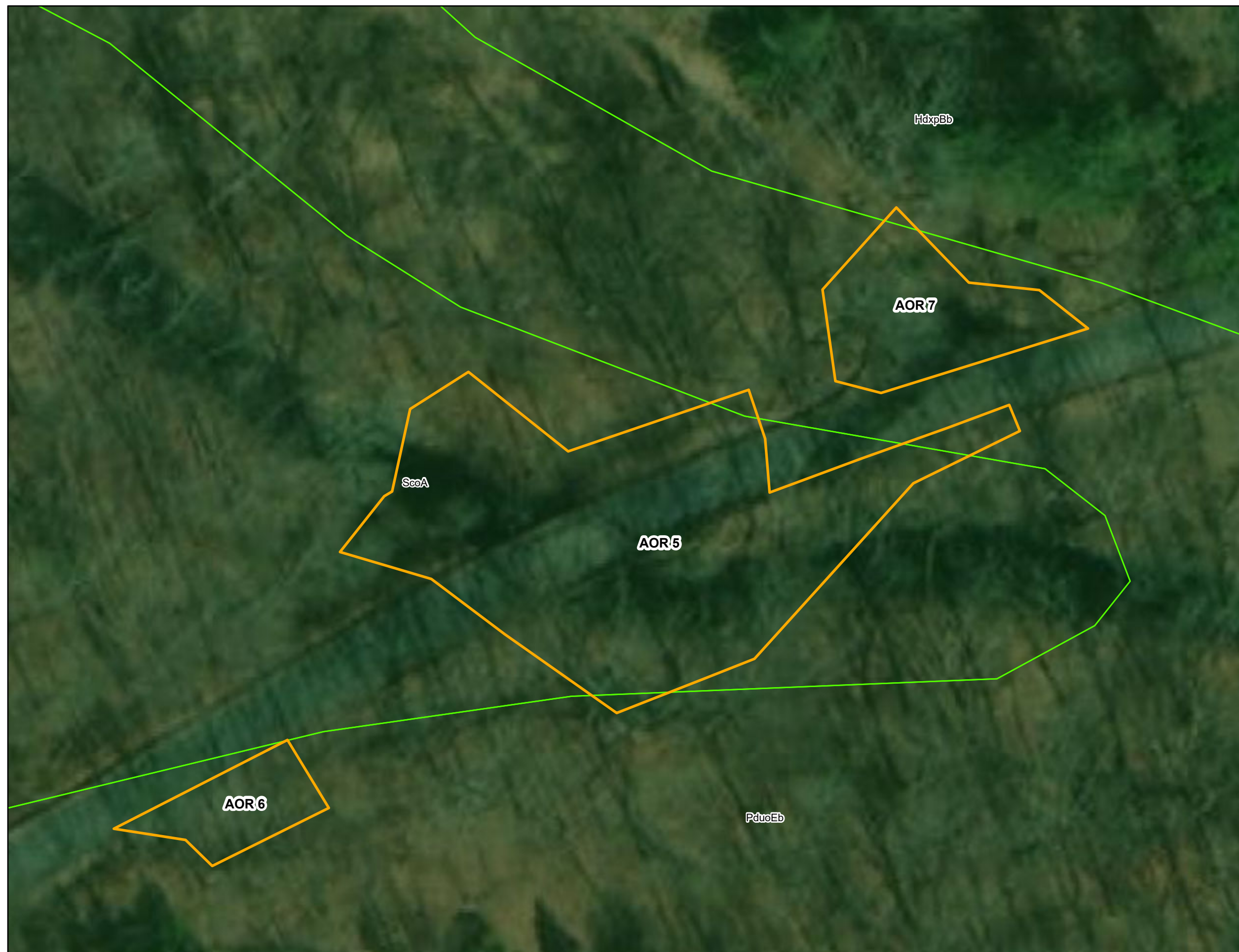


Figure 4b
NRCS Soil Map Units
 AOR 2 (Dingmans Staging at 209)



Legend

- Soil Unit
- Area of Review

Map Date: 9/4/2020
Source: ESRI 2020, National Resources Conservation Service Soils
Projection: NAD 1983 UTM Zone 18N

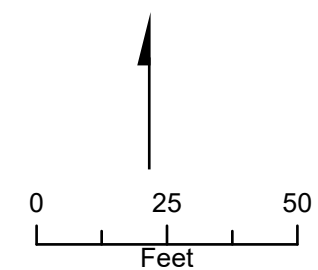
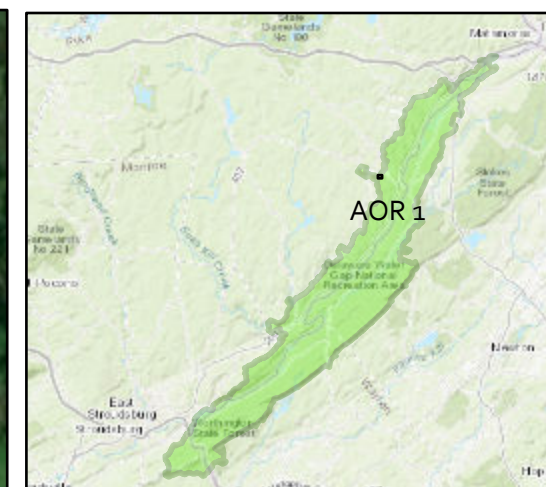


Figure 4d
NRCS Soil Map Units
AOR 5 (Van Campens Bridge),
AOR 6 (Van Campens Staging Area 1), and
AOR 7 (Van Campens Staging Area 2)



Legend

Area of Review

Wetlands

Riverine

Map Date: 9/4/2020
Source: ESRI 2020, National Wetland Inventory
Projection: NAD 1983 UTM Zone 18N

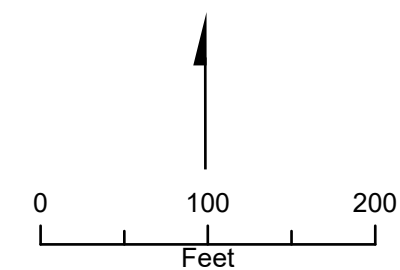
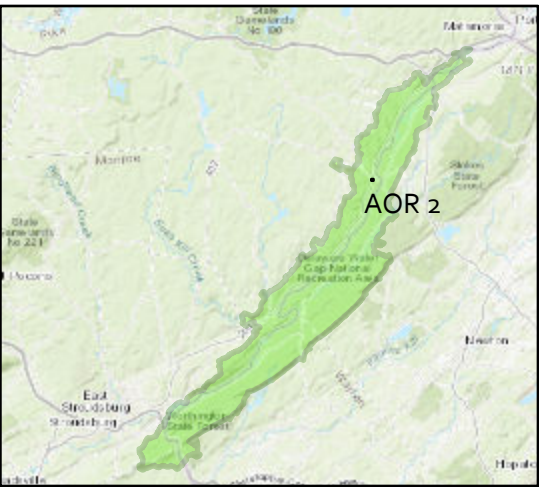


Figure 5a
Site 1 NWI Wetlands
AOR 1 (Doodle Hollow Trail)



- Legend**
- Area of Review
 - Wetlands**
 - Freshwater Forested/Shrub Wetland
 - Riverine

Map Date: 9/4/2020
Source: ESRI 2020, National Wetland Inventory
Projection: NAD 1983 UTM Zone 18N

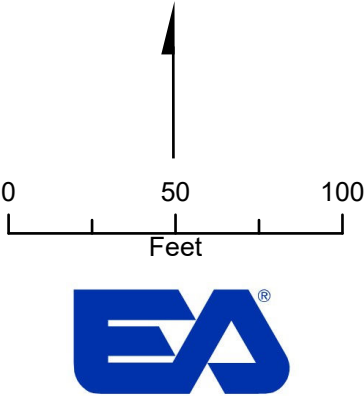
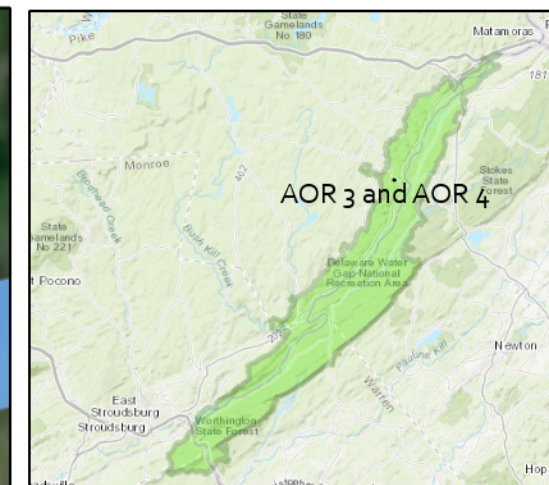


Figure 5b
NWI Wetlands
AOR 2 (Dingmans Staging at 209)



Legend

 Area of Review

Wetlands

 Riverine

Map Date: 9/4/2020
Source: ESRI 2020, National Wetland Inventory
Projection: NAD 1983 UTM Zone 18N

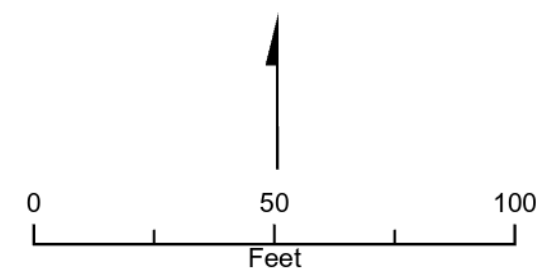
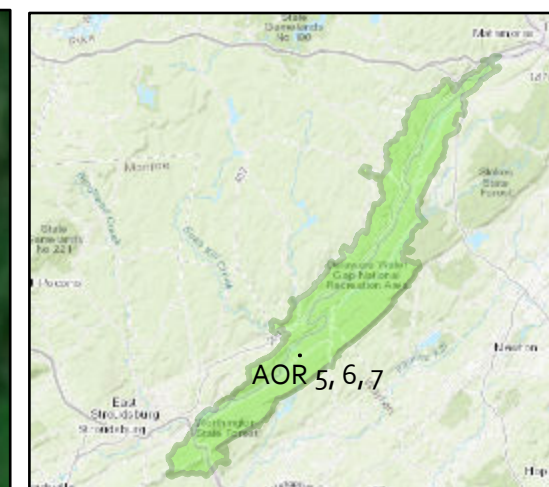


Figure 5C
NWI Wetlands
AOR 3 (Dingmans Bridge Staging Area)
and AOR 4 (Dingmans Bridge)



Legend

 Area of Review

Wetlands

 Riverine

Map Date: 9/4/2020
Source: ESRI 2020, National Wetland Inventory
Projection: NAD 1983 UTM Zone 18N

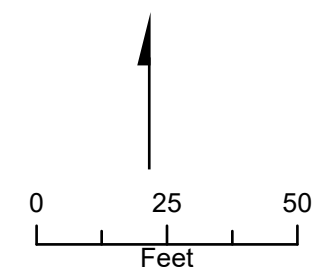
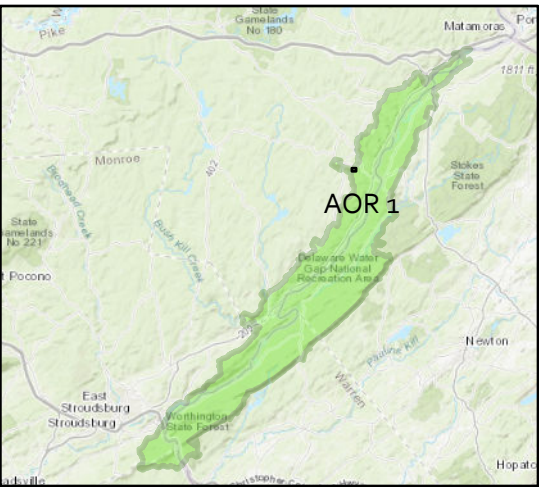


Figure 5d
NWI Map
AOR 5 (Van Campens Bridge),
AOR 6 (Van Campens Staging Area 1), and
AOR 7 (Van Campens Staging Area 2)



Legend

- GPS location
- Photo Location
- ➡ Photo Direction
- ➡ Flow Direction
- WUS
- Area of Review

Map Date: 11/30/2021
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

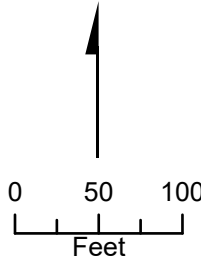
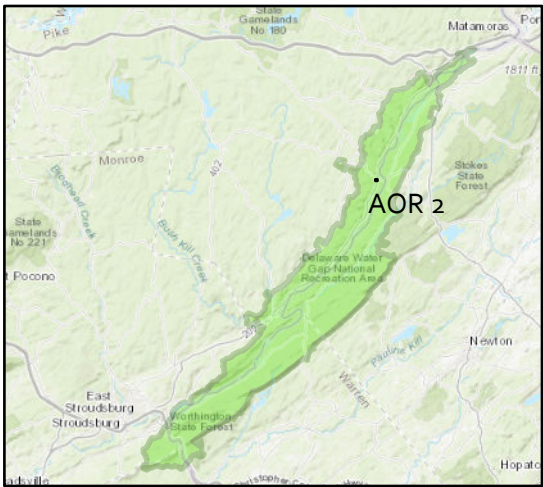


Figure 6a
Wetland Delineation Map
AOR 1 (Doodle Hollow Trail)



Legend

- Data Point
- Photo Location
- ➔ Photo Direction
- Area of Review

Map Date: 11/30/2021
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

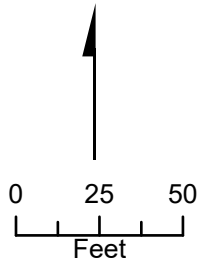
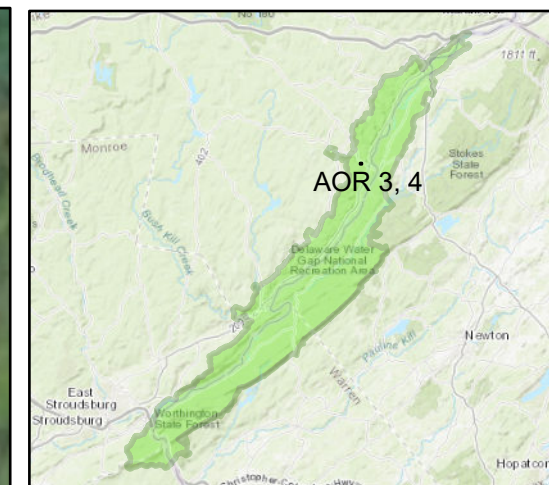


Figure 6b
Wetland Delineation Map
AOR 2 (Dingmans Staging at 209)



Legend

- GPS location
- Data Point
- Photo Location
- ➔ Photograph Direction
- ➔ Flow Direction
- WUS
- Area of Review
- Impact Area

Map Date: 11/30/2021
Source: ESRI 2020
Projection: NAD 1983 UTM Zone 18N

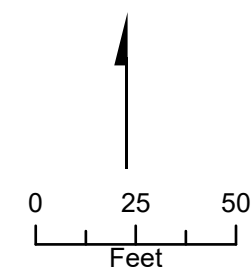


Figure 6c
Wetland Delineation Map
AOR 3 (Dingmans Bridge West Staging Area)
and AOR 4 (Dingmans Bridge)



Appendix B

Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

Project/Site: Dingmans Bridge replacement - Staging @ 209 City/County: Pike County Sampling Date: 8/19/20
 Applicant/Owner: NPS State: PA Sampling Point: DP-1
 Investigator(s): TMK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave
 Slope %: <5% Latitude: 41° 13' 12" N Longitude: 74° 52' 17" W Datum: NAD 83
 Subregion (LRR or MLRA) _____ Soil Map Unit Name: 89c - Chenago gravelly fine sandy loam 8-15% NWI Classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐, or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐, or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒	If yes, optional Wetland Site ID:	_____
Remarks: (Explain alternative procedures here or in a separate report.)			
Depression within mowed lawn area, adjacent to parking area at the proposed staging area @ Rt 209 and Dingmans Road			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2)	
Primary Indicators (minimum of one is required; check all that apply)			
☐ Surface Water (A1)	☐ Water Stained Leaves (B9)	☐ Surface Soil Cracks (B6)	
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)	
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)	
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)	
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)	
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)	
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)	
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)	
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)	
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)	
		☐ FAC-Neutral Test (D5)	
Field Observations:			
Surface Water Present? Yes ☐ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes ☐ No ☒	
Water Table Present? Yes ☐ No ☒	Depth (inches): _____		
Saturation Present? Yes ☐ No ☒	Depth (inches): _____		
(includes capillary fringe)			
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 10ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>40.0</u> (A/B)
1				
2				
3				
4				
5				
6				
7				
		= Total cover		
		= 50%	= 20%	
Sapling/Shrub Stratum (Plot size: 10 ft)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 _____ FACW species _____ x 2 _____ FAC species _____ x 3 _____ FACU species _____ x 4 _____ UPL Species _____ x 5 _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1				
2				
3				
4				
5				
6				
7				
		= Total Cover		
		= 50%	= 20%	

Vegetation (continued)

Sampling Point: DP-1

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

		Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
Herb Stratum (Plot size: 10 ft)					☐ Rapid Test for Hydrophytic Vegetation ☐ Dominance test is >50% ☐ Prevalence Index is ≤3.01 ☐ Morphological Adaptations ¹ (Provide Supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)
1	<i>Oenothera biennis</i>	5	No	FACU	
2	<i>Persicaria pensylvanica</i>	15	Yes	FACW	
3	<i>Ambrosia artemisiifolia</i>	15	Yes	FACU	
4	<i>Microstegium vimineum</i>	15	Yes	FAC	
5	<i>Trifolium pratense</i>	20	Yes	FACU	
6	<i>Cyperus esculentus</i>	5	No	FACW	
7	<i>Festuca rubra</i>	15	Yes	FACU	
8	<i>Erigeron annuus</i>	10	No	FACU	1Indicators of hydric soil and wetland hydrology must be present, unless distrubed or problematic.
		100 = Total Cover			
Woody-vine Stratum (Plot size: 10ft)		50 = 50%	20 = 20%		Definitions of Vegetation Strata: Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub: Woody plants less than 3 in. DBH and greater then 3.28 ft (1m) tall. Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vines: All woody vines greater than 3.28 ft in height.
1					Hydrophytic Vegetation Present? Yes ☐ No ☒
2					
3					
4					
5					
6					
7					
		= Total Cover			
		= 50%	= 20%		
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 3/3	100	--	--	--	--	silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydron Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7) (**LRR R, MLRA 149B**)

- ☐ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ☐ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ☐ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ☐ Coast Prarie Redox (A16) (**LRR K, L, R**)
- ☐ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ☐ Dark Surface (S7) (**LRR K, L**)
- ☐ Polyvalue Below Surface (S8) (**LRR K, L**)
- ☐ Thin Dark Surface (S9) (**LRR K, L**)
- ☐ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ☐ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ☐ Mesic Spodic (TX6) (**MLRA 144A, 145, 149B**)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

³Indicators of hydrophitic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: <u>Rock refusal</u> Depth (inches): <u>6 inches</u>	Hydric Soil Present? Yes ☐ No ☒
---	---

Rock refusal at 6 inches. Multiple attempts to obtain deeper soil samples in depression were unsuccessful

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

Project/Site: Dingmans Bridge replacement - Staging @ 209 City/County: Pike County Sampling Date: 8/19/20
 Applicant/Owner: NPS State: PA Sampling Point: DP-2
 Investigator(s): TMK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave
 Slope %: <5% Latitude: 41° 13' 12" N Longitude: 74° 52' 18" W Datum: NAD83
 Subregion (LRR or MLRA) _____ Soil Map Unit Name: 89c - Chenago gravelly fine sandy loam 8-15% NWI Classification: Upland

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐, or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐, or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☐	If yes, optional Wetland Site ID:	_____
Remarks: (Explain alternative procedures here or in a separate report.) within forested portion of proposed site along the clearing edge			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 10ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A) Total Number of Dominant Species Across All Strata: _____ (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)
1 <i>Acer negundo</i>	10	Yes	FAC	
2 <i>Juglans nigra</i>	15	Yes	FACU	
3 <i>Acer saccharum</i>	15	Yes	FACU	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
	40 = Total cover			
	20 = 50%	16 = 20%		
Sapling/Shrub Stratum (Plot size: 10 ft)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 _____ FACW species _____ x 2 _____ FAC species _____ x 3 _____ FACU species _____ x 4 _____ UPL Species _____ x 5 _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1 <i>Rosa multiflora</i>	15	Yes	FACU	
2 <i>Berberis thunbergii</i>	20	Yes	FACU	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
	35 = Total Cover			
	17.5 = 50%	7 = 20%		

Vegetation (continued)

Sampling Point: DP-2

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

Herb Stratum (Plot size: 10 ft)		Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1	<i>Impatiens capensis</i>	15	Yes	FACW	☐ Rapid Test for Hydrophytic Vegetation
2	<i>Persicaria pensylvanica</i>	5	No	FACW	☐ Dominance test is >50%
3	<i>Boehmeria cylindrica</i>	10	No	FACW	☐ Prevalence Index is ≤3.01
4	<i>Microstegium vimineum</i>	15	Yes	FAC	☐ Morphological Adaptations ¹ (Provide Supporting data in Remarks or on a separate sheet)
5	<i>Laportea canadensis</i>	10	No	FAC	☐ Problematic Hydrophytic Vegetation ¹ (Explain)
6					¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
7					
8					
		55 = Total Cover			
		27.5 = 50%	11 = 20%		
Woody-vine Stratum (Plot size: 10ft)					Definitions of Vegetation Strata:
1	<i>Celastrus orbiculatus</i>	20	Yes	FACU	Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height.
2					Sapling/shrub: Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall.
3					Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
4					Woody Vines: All woody vines greater than 3.28 ft in height.
5					
6					
7					
		20 = Total Cover			
		10 = 50%	4 = 20%		
					Hydrophytic Vegetation Present? Yes ☐ No ☒
Remarks: (Include photo numbers here or on a separate sheet.)					

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²	Texture	Remarks
0-6	10YR 2/2	100	--	--	--	--	silt loam	
6-12	10YR 4/4	100	--	--	--	--	silt loam	
12-14	10YR 4/6	100	--	--	--	--	silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:			Indicators for Problematic Hydric Soils ³ :		
☐ Histosol (A1)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B)	☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B)			
☐ Histic Epipedon (A2)	☐ MLRA 149B)	☐ Coast Prarie Redox (A16) (LRR K, L, R)			
☐ Black Histic (A3)	☐ Thin Dark Surface (S9) (LRR R, MLRA 149B)	☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)			
☐ Hydron Sulfide (A4)	☐ Loamy Mucky Mineral (F1) (LRR K, L)	☐ Dark Surface (S7) (LRR K, L)			
☐ Stratified Layers (A5)	☐ Loamy Gleyed Matrix (F2)	☐ Polyvalue Below Surface (S8) (LRR K, L)			
☐ Depleted Below Dark Surface (A11)	☐ Depleted Matrix (F3)	☐ Thin Dark Surface (S9) (LRR K, L)			
☐ Thick Dark Surface (A12)	☐ Redox Dark Surface (F6)	☐ Iron-Manganese Masses (F12) (LRR K, L, R)			
☐ Sandy Mucky Mineral (S1)	☐ Depleted Dark Surface (F7)	☐ Piedmont Floodplain Soils (F19) (MLRA 149B)			
☐ Sandy Gleyed Matrix (S4)	☐ Redox Depressions (F8)	☐ Mesic Spodic (TX6) (MLRA 144A, 145, 149B)			
☐ Sandy Redox (S5)		☐ Red Parent Material (TF2)			
☐ Stripped Matrix (S6)		☐ Very Shallow Dark Surface (TF12)			
☐ Dark Surface (S7) (LRR R, MLRA 149B)		☐ Other (Explain in Remarks)			

³Indicators of hydrophitic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?	Yes	No
Type: <u>Rock refusal</u>		☐	☒
Depth (inches): <u>14 inches</u>			

Rock refusal at 14 inches.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

Project/Site: Dingmans Bridge replacement - Staging by bridge City/County: Pike County Sampling Date: 8/19/20
 Applicant/Owner: NPS State: PA Sampling Point: DP-3
 Investigator(s): TMK Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): depression Local Relief (concave, convex, none): concave
 Slope %: <5% Latitude: 41° 13' 18" N Longitude: 74° 52' 36" W Datum: NAD83
 Subregion (LRR or MLRA) _____ Soil Map Unit Name: 9b - Craigs ville - Wyoming complex 0-8% slopes NWI Classification: Upland
 Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐, or hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐, or hydrology ☐ naturally problematic? (If needed, explain any answers in remarks.)

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

Hydrophytic Vegetation Present?	Yes ☐ No ☒	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒	If yes, optional Wetland Site ID:	_____
Remarks: (Explain alternative procedures here or in a separate report.) within forested portion of proposed site along the stream			

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of 2)
Primary Indicators (minimum of one is required; check all that apply)		
☐ Surface Water (A1)	☐ Water Stained Leaves (B9)	☐ Surface Soil Cracks (B6)
☐ High Water Table (A2)	☐ Aquatic Fauna (B13)	☐ Drainage Patterns (B10)
☐ Saturation (A3)	☐ Marl Deposits (B15)	☐ Moss Trim Lines (B16)
☐ Water Marks (B1)	☐ Hydrogen Sulfide Odor (C1)	☐ Dry-Season Water Table (C2)
☐ Sediment Deposits (B2)	☐ Oxidized Rhizospheres on Living Roots (C3)	☐ Crayfish Burrows (C8)
☐ Drift Deposits (B3)	☐ Presence of Reduced Iron (C4)	☐ Saturation Visible on Aerial (C9)
☐ Algal Mat or Crust (B4)	☐ Recent Iron Reduction in Tilled Soils (C6)	☐ Stunted or Stressed Plants (D1)
☐ Iron Deposits (B5)	☐ Thin Muck Surface (C7)	☐ Geomorphic Position (D2)
☐ Inundation Visible on Aerial Imagery (B7)	☐ Other (Explain in Remarks)	☐ Shallow Aquitard (D3)
☐ Sparsely Vegetated Concave Surface (B8)		☐ Microtopographic Relief (D4)
		☐ FAC-Neutral Test (D5)
Field Observations:		
Surface Water Present? Yes ☐ No ☒	Depth (inches): _____	Wetland Hydrology Present? Yes ☐ No ☒
Water Table Present? Yes ☐ No ☒	Depth (inches): _____	
Saturation Present? Yes ☐ No ☒	Depth (inches): _____	
(includes capillary fringe)		
Describe Recorded Data (stream guage, monitoring well, aerial photos, previous inspections), if available:		
Remarks:		

VEGETATION - Use Scientific Names of Plants.

Tree Stratum (Plot size: 10ft radius)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>8</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.0</u> (A/B)
1 <u><i>Acer negundo</i></u>	<u>5</u>	<u>No</u>	<u>FAC</u>	
2 <u><i>Juglans nigra</i></u>	<u>5</u>	<u>No</u>	<u>FACU</u>	
3 <u><i>Acer saccharum</i></u>	<u>20</u>	<u>Yes</u>	<u>FACU</u>	
4 <u><i>Ulmus americana</i></u>	<u>20</u>	<u>Yes</u>	<u>FACW</u>	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
<u>50</u> = Total cover <u>25</u> = 50% <u>10</u> = 20%				
Sapling/Shrub Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 _____ FACW species _____ x 2 _____ FAC species _____ x 3 _____ FACU species _____ x 4 _____ UPL Species _____ x 5 _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1 <u><i>Rosa multiflora</i></u>	<u>15</u>	<u>Yes</u>	<u>FACU</u>	
2 <u><i>Berberis thunbergii</i></u>	<u>25</u>	<u>Yes</u>	<u>FACU</u>	
3 _____	_____	_____	_____	
4 _____	_____	_____	_____	
5 _____	_____	_____	_____	
6 _____	_____	_____	_____	
7 _____	_____	_____	_____	
<u>40</u> = Total Cover <u>20</u> = 50% <u>8</u> = 20%				

Vegetation (continued)

Sampling Point: DP-3

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region - Version 2.0

Herb Stratum (Plot size: 10 ft)	Absolute % Cover	Dominant Species?	Indicator Status	Hydrophytic Vegetation Indicators:
1 <i>Impatiens capensis</i>	5	No	FACW	☐ Rapid Test for Hydrophytic Vegetation ☐ Dominance test is >50% ☐ Prevalence Index is ≤3.01 ☐ Morphological Adaptations ¹ (Provide Supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2 <i>Toxicodendron radicans</i>	10	Yes	FAC	
3 <i>Boehmeria cylindrica</i>	10	Yes	FACW	
4 <i>Microstegium vimineum</i>	15	Yes	FAC	
5				
6				
7				
8				
	40 = Total Cover			Definitions of Vegetation Strata: Tree: Woody plants 3 in. (7.6cm) or more in diameter at breast height (DBH), regardless of height. Sapling/shrub: Woody plants less than 3 in. DBH and greater than 3.28 ft (1m) tall. Herb: All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall. Woody Vines: All woody vines greater than 3.28 ft in height.
	20 = 50%	8 = 20%		
Woody-vine Stratum (Plot size: 10ft)				Hydrophytic Vegetation Present? Yes ☐ No ☒
1 <i>Parthenocissus quinquefolia</i>	10	Yes	FACU	
2				
3				
4				
5				
6				
7				
	10 = Total Cover			
	5 = 50%	2 = 20%		

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

SOIL

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
4	10YR 2/2	100	--	--	--	--	silt loam	
4-10	10YR 3/4	100	--	--	--	--	silt loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
☐ Histosol (A1) ☐ Histic Epipedon (A2) ☐ Black Histic (A3) ☐ Hydron Sulfide (A4) ☐ Stratified Layers (A5) ☐ Depleted Below Dark Surface (A11) ☐ Thick Dark Surface (A12) ☐ Sandy Mucky Mineral (S1) ☐ Sandy Gleyed Matrix (S4) ☐ Sandy Redox (S5) ☐ Stripped Matrix (S6) ☐ Dark Surface (S7) (LRR R, MLRA 149B)	☐ Polyvalue Below Surface (S8) (LRR R, MLRA 149B) ☐ Thin Dark Surface (S9) (LRR R, MLRA 149B) ☐ Loamy Mucky Mineral (F1) (LRR K, L) ☐ Loamy Gleyed Matrix (F2) ☐ Depleted Matrix (F3) ☐ Redox Dark Surface (F6) ☐ Depleted Dark Surface (F7) ☐ Redox Depressions (F8)
☐ 2 cm Muck (A10) (LRR K, L, MLRA 149B) ☐ Coast Prairie Redox (A16) (LRR K, L, R) ☐ 5 cm Mucky Peat or Peat (S3) (LRR K, L, R) ☐ Dark Surface (S7) (LRR K, L) ☐ Polyvalue Below Surface (S8) (LRR K, L) ☐ Thin Dark Surface (S9) (LRR K, L) ☐ Iron-Manganese Masses (F12) (LRR K, L, R) ☐ Piedmont Floodplain Soils (F19) (MLRA 149B) ☐ Mesic Spodic (TX6) (MLRA 144A, 145, 149B) ☐ Red Parent Material (TF2) ☐ Very Shallow Dark Surface (TF12) ☐ Other (Explain in Remarks)	

³Indicators of hydroptic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):	Hydric Soil Present?
Type: <u>Rock refusal</u> Depth (inches): <u>10 inches</u>	Yes ☐ No ☒

Rock refusal at 10 inches.

**DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹**

Field Investigator(s): T. King Date: 8-20-2020
 Project/Site: Van Campens Bridge Area State: NJ County: Warren
 Applicant/Owner: NPS Plant Community #/Name: Data Point 4
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No ☐ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☐ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Lindera benzoin</u>	<u>FACW</u>	<u>S</u>	11. _____	_____	_____
2. <u>Ulmus Americana</u>	<u>FACW</u>	<u>S</u>	12. _____	_____	_____
3. <u>Impatiens Capensis</u>	<u>FACW</u>	<u>H</u>	13. _____	_____	_____
4. <u>Microstegium vimineum</u>	<u>FAC</u>	<u>H</u>	14. _____	_____	_____
5. <u>Boehmeria cylindrica</u>	<u>FACW</u>	<u>H</u>	15. _____	_____	_____
6. _____	_____	_____	16. _____	_____	_____
7. _____	_____	_____	17. _____	_____	_____
8. _____	_____	_____	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 100%
 Is the hydrophytic vegetation criterion met? Yes ☒ No ☐

Rationale: all dominant plants FAC or wetter

SOILS

Series/phase: _____ Subgroup: ² _____
 Is the soil on the hydric soils list? Yes ☐ No ☐ Undetermined _____
 Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒
 Is the soil: Mottled? Yes ☒ No ☐ Gleyed? Yes ☐ No ☒
 Matrix Color: 10YR 4/1 Mottle Colors: 5YR 6/1
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☒ No ☐
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes ☒ No ☐ Surface water depth: 1 inch
 Is the soil saturated? Yes ☒ No ☐
 Depth to free-standing water in pit/soil probe hole: @ surface
 List other field evidence of surface inundation or soil saturation: Drainage patterns + Hydrogen Sulfide odor
 Is the wetland hydrology criterion met? Yes ☒ No ☐
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ☒ No ☐
 Rationale for jurisdictional decision: all 3 parameters met

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM
ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): T. King Date: 8-20-2020
 Project/Site: Van Campens Bridge area State: NJ County: Warren
 Applicant/Owner: NPS Plant Community #/Name: Data Point 5
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No ☐ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☐ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Juglans Nigra</u>	<u>FACU</u>	<u>T</u>	11. _____	_____	_____
2. <u>Acer Saccharum</u>	<u>FACU</u>	<u>S</u>	12. _____	_____	_____
3. <u>Juglans Nigra</u>	<u>FACU</u>	<u>S</u>	13. _____	_____	_____
4. <u>Ailanthus Albissima</u>	<u>FACU</u>	<u>S</u>	14. _____	_____	_____
5. <u>Microstegium vimineum</u>	<u>FAC</u>	<u>H</u>	15. _____	_____	_____
6. <u>Impatiens Capensis</u>	<u>FACW</u>	<u>H</u>	16. _____	_____	_____
7. <u>Boehmeria Cylindrica</u>	<u>FACW</u>	<u>H</u>	17. _____	_____	_____
8. <u>Toxicodendron radicans</u>	<u>FAC</u>	<u>H</u>	18. _____	_____	_____
9. <u>Alliaria petiolata</u>	<u>FACU</u>	<u>H</u>	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 33%
 Is the hydrophytic vegetation criterion met? Yes ☐ No ☒
 Rationale: _____

SOILS

Series/phase: PlanEB Subgroup: 2
 Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined _____
 Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒
 Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒
 Matrix Color: 10YR 3/3 Mottle Colors: None
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☐ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: _____
 Is the soil saturated? Yes ☐ No ☒
 Depth to free-standing water in pit/soil probe hole: None
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☐ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ☐ No ☒
 Rationale for jurisdictional decision: No parameters met

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.

² Classification according to "Soil Taxonomy."

DATA FORM ROUTINE ONSITE DETERMINATION METHOD¹

Field Investigator(s): T. King Date: 8-20-2020
 Project/Site: Van Campens Bridge Area State: NJ County: Warren
 Applicant/Owner: NPS Plant Community #/Name: Data Point 6
 Note: If a more detailed site description is necessary, use the back of data form or a field notebook.

Do normal environmental conditions exist at the plant community?
 Yes ☒ No ☐ (If no, explain on back)
 Has the vegetation, soils, and/or hydrology been significantly disturbed?
 Yes ☐ No ☒ (If yes, explain on back)

VEGETATION

Dominant Plant Species	Indicator Status	Stratum	Dominant Plant Species	Indicator Status	Stratum
1. <u>Acer rubrum</u>	<u>FAC</u>	<u>T</u>	11. _____	_____	_____
2. <u>Acer saccharum</u>	<u>FACU</u>	<u>T</u>	12. _____	_____	_____
3. <u>Ulmus americana</u>	<u>FACW</u>	<u>S</u>	13. _____	_____	_____
4. <u>Rosa multiflora</u>	<u>FACU</u>	<u>S</u>	14. _____	_____	_____
5. <u>Berberis thunbergii</u>	<u>FACU</u>	<u>S</u>	15. _____	_____	_____
6. <u>Dryopteris sp.</u>	<u>unk</u>	<u>H</u>	16. _____	_____	_____
7. <u>Polygonum acrostichoides</u>	<u>FACU</u>	<u>H</u>	17. _____	_____	_____
8. <u>Viola sororia</u>	<u>FAC</u>	<u>H</u>	18. _____	_____	_____
9. _____	_____	_____	19. _____	_____	_____
10. _____	_____	_____	20. _____	_____	_____

Percent of dominant species that are OBL, FACW, and/or FAC 43%
 Is the hydrophytic vegetation criterion met? Yes ☐ No ☒
 Rationale: _____

SOILS

Series/phase: Sco A Subgroup: 2
 Is the soil on the hydric soils list? Yes ☐ No ☒ Undetermined _____
 Is the soil a Histosol? Yes ☐ No ☒ Histic epipedon present? Yes ☐ No ☒
 Is the soil: Mottled? Yes ☐ No ☒ Gleyed? Yes ☐ No ☒
 Matrix Color: 10YR 3/3 Mottle Colors: _____
 Other hydric soil indicators: _____
 Is the hydric soil criterion met? Yes ☐ No ☒
 Rationale: _____

HYDROLOGY

Is the ground surface inundated? Yes ☐ No ☒ Surface water depth: None
 Is the soil saturated? Yes ☐ No ☒
 Depth to free-standing water in pit/soil probe hole: None
 List other field evidence of surface inundation or soil saturation: _____
 Is the wetland hydrology criterion met? Yes ☐ No ☒
 Rationale: _____

JURISDICTIONAL DETERMINATION AND RATIONALE

Is the plant community a wetland? Yes ☐ No ☒
 Rationale for jurisdictional decision: _____

¹ This data form can be used for the Hydric Soil Assessment Procedure and the Plant Community Assessment Procedure.
² Classification according to "Soil Taxonomy."

Wetland Function-Value Evaluation Form

Wetland I.D.: Wetland A
 Wetland Human made? NO
 Project site Latitude 75° 00' 02.15" N Longitude 41° 02' 29.66" W
 Adjacent land use: roadway + forested land
 Dominant wetland systems present emergent
 Total area of wetlands: 0.01 acres

Corps manual wetland delineation: 89 Federal Manual
 Evaluation based on: Office Field
 Prepared by: TMLh Date 8-20-20
 Distance to nearest roadway or other development: 5 feet
 Contiguous undeveloped buffer zone present: yes to north

Function/Value	Suitability Y N	Comments
Groundwater Recharge/Discharge	* ☒	gravelwater seep on hillside
Floodflow Alteration	* ☒	runoff from road contained + through culvert to stream
Fish and Shellfish Habitat	☒	
Sediment/Toxicant Retention	* ☒	Runoff from road stored + treated in wetland
Nutrient Removal	* ☒	
Production Export	☒	
Sediment/Shoreline Stabilization	☒	
Wildlife Habitat	* ☒	multiple frog species observed
Recreation	☒	
Educational/Scientific Value	☒	
Uniqueness/Heritage	☒	
Visual Quality/Aesthetics	☒	
Endangered Species Habitat	☒	
Other	☒	

* indicates the principle function or value

Wildlife Species Observed

Leopard frogs
 green frogs
 grey tree frogs

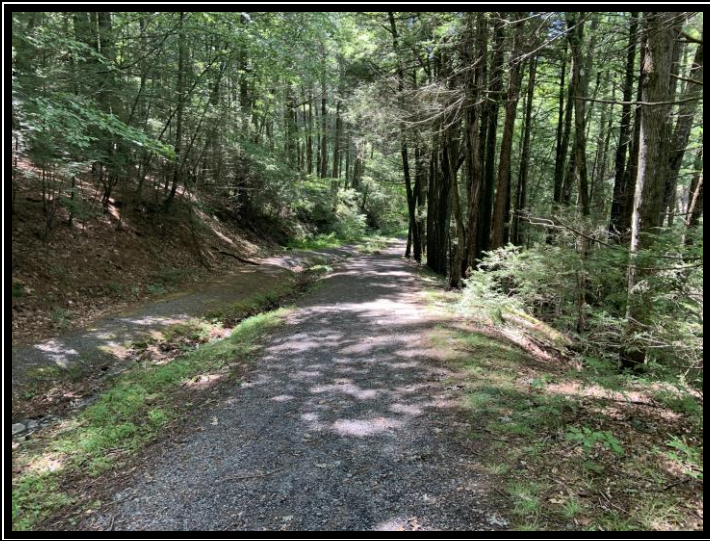
Dominate Plant Species Observed

Jewellweed
 False nettle
 stiltgrass
 sprebush
 American elm

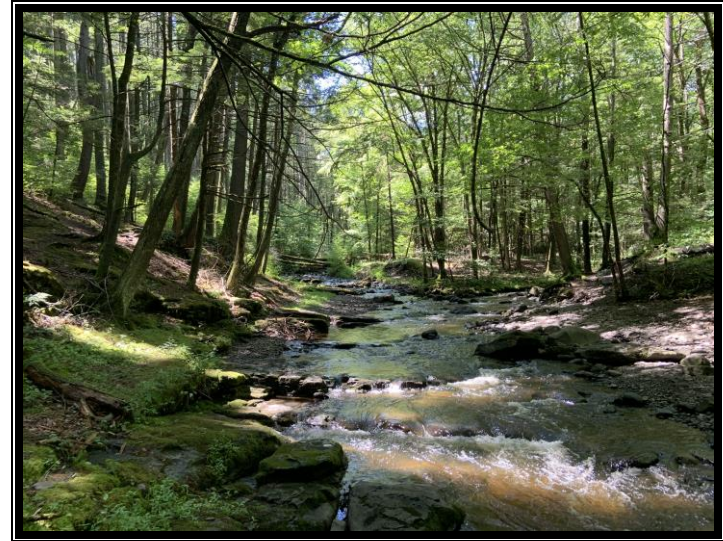
Appendix C

On-Site Photographs

Wetland Delineation On-site Photographs
Dingmans & Van Campens Bridge Work at Delaware Water Gap
Photos Taken August 18 and 19, 2020



Photograph 1: Overview of Doodle Hollow Trail within AOR1.



Photograph 2: Waters of the U.S. #1 within AOR1.



Photograph 3: Dingmans Road at Route 209 associated with AOR2.



Photograph 4: Depression within mowed grass portion of AOR2.

Wetland Delineation On-site Photographs
Dingmans & Van Campens Bridge Work at Delaware Water Gap
Photos Taken August 18 and 19, 2020



Photograph 5: Typical upland soils identified throughout AOR2.



Photograph 6: Upland data collection point location in forested edge of AOR2.



Photograph 7: Upland gravel area that makes up AOR3.



Photograph 8: Waters of the U.S. #2 within AOR4.

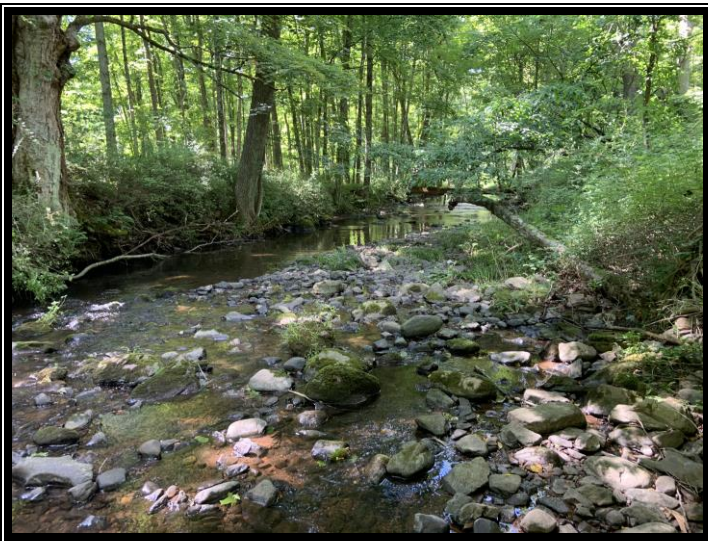
Wetland Delineation On-site Photographs
Dingmans & Van Campens Bridge Work at Delaware Water Gap
Photos Taken August 18 and 19, 2020



Photograph 9: Upland data collection point located along Waters of the U.S. #2 in AOR4.



Photograph 10: Dingmans Road bridge located within AOR4.



Photograph 11: Waters of the U.S. #3 within AOR5.



Photograph 12: Wetland and area of review flagging within AOR5.

Wetland Delineation On-site Photographs
Dingmans & Van Campens Bridge Work at Delaware Water Gap
Photos Taken August 18 and 19, 2020



Photograph 13: Gravel upland area that makes up AOR6.



Photograph 14: Overview of AOR7.



Photograph 15: Wetland A.



Photograph 16: Drop inlet located within Wetland A.

Wetland Delineation On-site Photographs
Dingmans & Van Campens Bridge Work at Delaware Water Gap
Photos Taken August 18 and 19, 2020



Photograph 17: Hydric soils with depleted matrix identified within Wetland A.



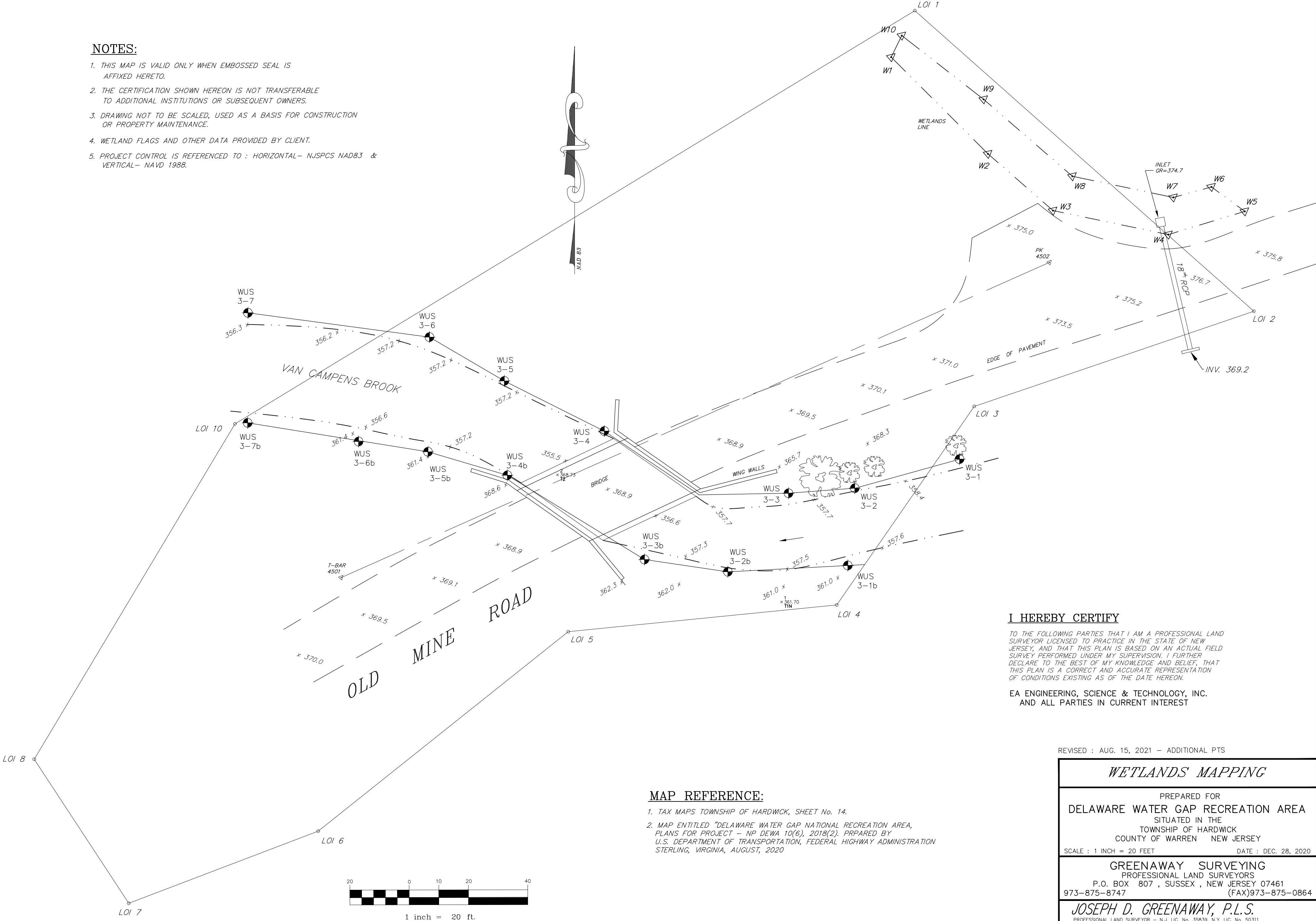
Photograph 18: Wetland data collection point within Wetland A.

Appendix D

Wetland Delineation Map – New Jersey AORs

NOTES:

- 1. THIS MAP IS VALID ONLY WHEN EMBOSSED SEAL IS AFFIXED HERETO.
- 2. THE CERTIFICATION SHOWN HEREON IS NOT TRANSFERABLE TO ADDITIONAL INSTITUTIONS OR SUBSEQUENT OWNERS.
- 3. DRAWING NOT TO BE SCALED, USED AS A BASIS FOR CONSTRUCTION OR PROPERTY MAINTENANCE.
- 4. WETLAND FLAGS AND OTHER DATA PROVIDED BY CLIENT.
- 5. PROJECT CONTROL IS REFERENCED TO : HORIZONTAL- NJSPCS NAD83 & VERTICAL- NAVD 1988.



I HEREBY CERTIFY

TO THE FOLLOWING PARTIES THAT I AM A PROFESSIONAL LAND SURVEYOR LICENSED TO PRACTICE IN THE STATE OF NEW JERSEY, AND THAT THIS PLAN IS BASED ON AN ACTUAL FIELD SURVEY PERFORMED UNDER MY SUPERVISION. I FURTHER DECLARE TO THE BEST OF MY KNOWLEDGE AND BELIEF, THAT THIS PLAN IS A CORRECT AND ACCURATE REPRESENTATION OF CONDITIONS EXISTING AS OF THE DATE HEREON.

EA ENGINEERING, SCIENCE & TECHNOLOGY, INC.
AND ALL PARTIES IN CURRENT INTEREST

REVISED : AUG. 15, 2021 - ADDITIONAL PTS

WETLANDS MAPPING

PREPARED FOR
DELAWARE WATER GAP RECREATION AREA
SITUATED IN THE
TOWNSHIP OF HARDWICK
COUNTY OF WARREN NEW JERSEY

SCALE : 1 INCH = 20 FEET DATE : DEC. 28, 2020
GREENAWAY SURVEYING
PROFESSIONAL LAND SURVEYORS
P.O. BOX 807 , SUSSEX , NEW JERSEY 07461
973-875-8747 (FAX)973-875-0864

JOSEPH D. GREENAWAY, P.L.S.
PROFESSIONAL LAND SURVEYOR - N.J. LIC. No. 35839, N.Y. LIC. No. 50311

MAP REFERENCE:

- 1. TAX MAPS TOWNSHIP OF HARDWICK, SHEET No. 14.
- 2. MAP ENTITLED "DELAWARE WATER GAP NATIONAL RECREATION AREA, PLANS FOR PROJECT - NP DEWA 10(6), 2018(2). PREPARED BY U.S. DEPARTMENT OF TRANSPORTATION, FEDERAL HIGHWAY ADMINISTRATION STERLING, VIRGINIA, AUGUST, 2020