



# **Relocate and Replace Washington Suburban Sanitary Commission Sewer Line at Still Creek in Greenbelt Park**

## **Environmental Assessment**

**May 2020**



[PAGE INTENTIONALLY LEFT BLANK]



## TABLE OF CONTENTS

---

|  |                           |
|--|---------------------------|
| PURPOSE AND NEED.....  | 1                         |
| BACKGROUND AND PROJECT AREA.....                                     | 2                         |
| ISSUES AND IMPACT TOPICS RETAINED FOR ANALYSIS.....                  | 2                         |
| ISSUES DISMISSED FROM FURTHER ANALYSIS .....                         | 4                         |
| ALTERNATIVES.....  | 5                         |
| AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES .....            | 7                         |
| VISITOR USE AND EXPERIENCE.....                                      | 7                         |
| Impacts of Alternative 1 – No Action.....                            | 7                         |
| Impacts of Alternative 2 (NPS Preferred).....                        | 7                         |
| HISTORIC RESOURCES (HISTORIC DISTRICT AND CULTURAL LANDSCAPES) ..... | 7                         |
| Impacts of Alternative 1 – No Action.....                            | 7                         |
| Impacts of Alternative 2 (NPS Preferred).....                        | 8                         |
| VEGETATION, WILDLIFE, AND SPECIAL STATUS SPECIES .....               | 8                         |
| Impacts of Alternative 1 – No Action.....                            | 8                         |
| Impacts of Alternative 2 (NPS Preferred).....                        | 8                         |
| WETLANDS.....  | 9                         |
| Impacts of Alternative 1 – No Action.....                            | 9                         |
| Impacts of Alternative 2 (NPS Preferred).....                        | 9                         |
| FLOODPLAINS.....   | 9                         |
| Impacts of Alternative 1 – No Action.....                            | 9                         |
| Impacts of Alternative 2 (NPS Preferred).....                        | 9                         |
| CUMULATIVE IMPACTS .....   | 10                        |
| Alternative 1 – No Action.....                                       | 11                        |
| Alternative 2 (NPS Preferred).....                                   | 11                        |
| CONCLUSIONS .....  | 12                        |
| CONSULTATION AND COORDINATION.....                                   | 12                        |
| <a href="#"><u>APPENDICES .....</u></a>                              | <a href="#"><u>18</u></a> |



## **Note to reviewers and respondents**

To comment on this EA, you may mail comments or submit them online by May 18, 2020 at <http://parkplanning.nps.gov/greese sewer relocate> and follow the appropriate links. Please be aware that your comments and personal identifying information may be made publicly available at any time. While you may request that National Park Service withhold your personal information, we cannot guarantee that we will be able to do so.

Please mail comments to:

Superintendent  
Greenbelt Park and the Baltimore-Washington Parkway  
RE: Relocate and Replace WSSC Sewer line at Still Creek EA  
6565 Greenbelt Road  
Greenbelt, MD 20770





## PURPOSE AND NEED

The National Park Service (NPS), in cooperation with the Washington Suburban Sanitary Commission (WSSC), is proposing to relocate a sanitary sewer pipe within the Greenbelt Park (the Park), a NPS unit under administration of National Capital Parks-East located in Prince George's County, Maryland.

The purpose of this project is to relocate a 400-foot section of a 21-inch sanitary sewer pipe located along Still Creek within the Greenbelt Park. Specifically, the NPS will issue WSSC a special use permit (SUP) for construction and access to relocate the sewer line and a right-of-way (ROW) permit for the ongoing maintenance of the utility infrastructure. The relocation is needed due to the poor condition of the pipe and to accommodate a new bridge over Still Creek currently under construction (Figure 1).

Previously, the NPS, in cooperation with the Federal Highway Administration (FHWA), prepared an Environmental Assessment (EA) that analyzed the impacts of proposed improvements to rehabilitation of the Park's roadways, parking lots, guardrails and drainage structures. The EA also looked at the replacement of an existing double culvert with a bridge over Still Creek. A finding of no significant impact (FONSI) was prepared for this project and executed in 2018.

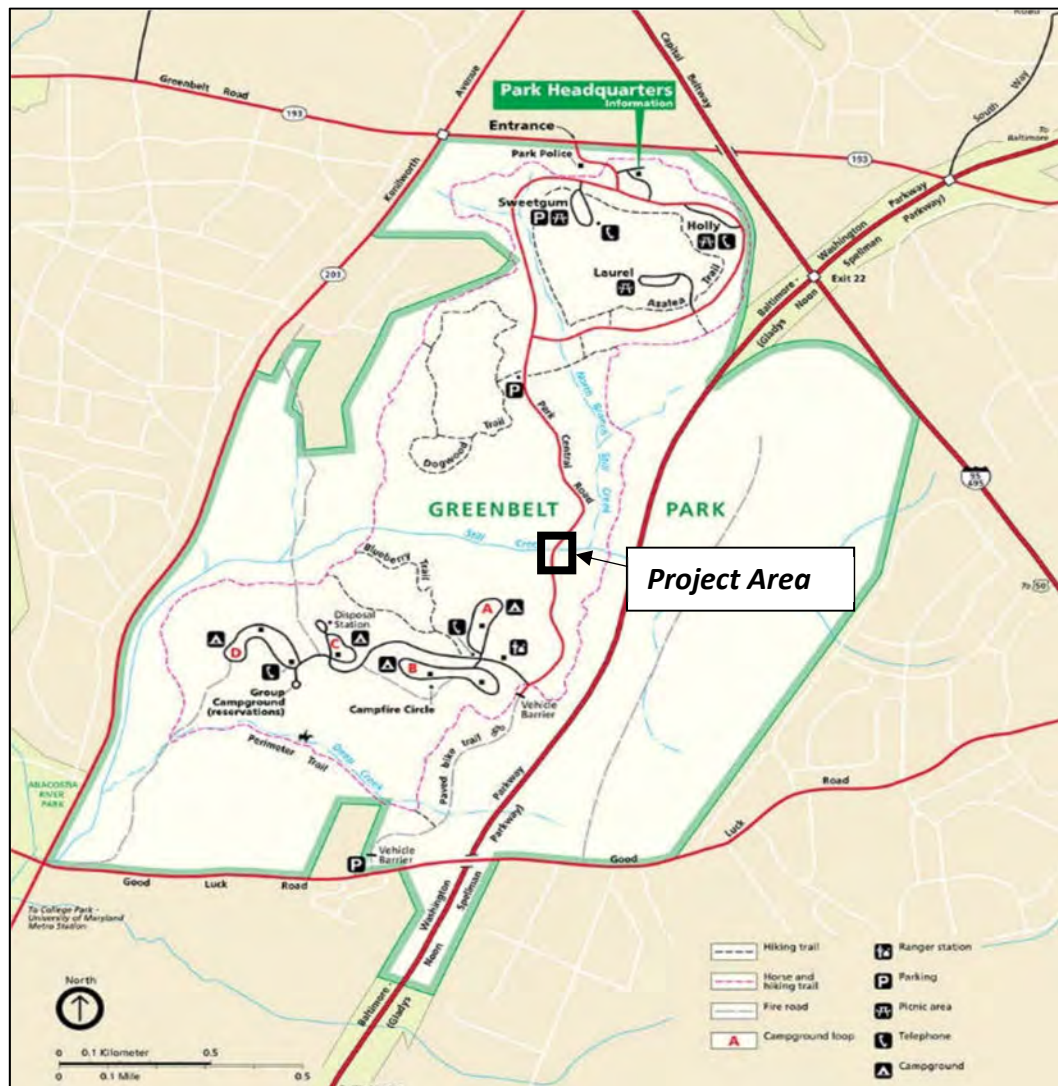


Figure 1: Project Area



This EA has been prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended, and implementing regulations, 40 Code of Federal Regulations (CFR) Parts 1500-1508, NPS Director's Order 12: Conservation Planning, Environmental Impact Analysis, and Decision-making, and the accompanying NEPA Handbook. Compliance with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, is being conducted concurrently with the NEPA process.

## **BACKGROUND AND PROJECT AREA**

On January 31, 2019, the Federal Highway Administration (FHWA) entered into a contract with Eclipse Co. LLC (Contractor) to rehabilitate existing Greenbelt Park roadways and make improvements to drainage features, including building a new bridge over Still Creek. Specifically, the project involved the replacement of damaged perched culverts with a new 70-foot long bridge over the creek as well as roadway and parking area pavement rehabilitation throughout the entire park. During construction of the Still Creek bridge it was determined that a WSSC owned 21-inch reinforced concrete sewer line along the south abutment of the bridge required relocation. The existing pipe is in threatened condition and the lateral distance between sewer line and south abutment is less than 12-inches. WSSC standards state that the sewer line must be approximately five feet from another utility or infrastructure. The previous EA and 2018 FONSI did not consider this constraint at the time.

The urgency of this action is prompted by the unforeseen delays and costs associated with stopping work on the roadway infrastructure and bridge in this location. In addition, this section of sanitary sewer pipe has reached the end of its useful life and is at an increased threat of failure. A potential failure of the sewer line could cost millions of dollars in repair costs, dump sewage into the stream, and could affect services to the surrounding area. As such, this section, as well as other sections of sanitary sewer within the Park, have been identified for rehabilitation as part of WSSC's 2005 Sanitary Sewer Overflow (SSO) Consent Decree. The SSO Consent Decree, entered into with the United States Environmental Protection Agency (EPA), the Maryland Department of the Environment (MDE) and citizen groups, mandates that the WSSC reduce the total number of SSO events as well as the total quantity of untreated wastewater discharged into Maryland's wetlands, streams, parklands, and other environmentally sensitive areas, and to protect the health of the public and wildlife. Relocation of this section of sanitary sewer would reduce the potential sewer failure and associated impacts at this location while also meeting the mandate of the SSO Consent Decree and helping WSSC towards its goal of reaching full compliance.

## **ISSUES AND IMPACT TOPICS RETAINED FOR ANALYSIS**

This section describes project issues or concerns identified during internal scoping that were determined by the project team to warrant a more detailed analysis. Relevant laws and policies would be briefly discussed for each issue.

**Visitor Use and Experience** – Enjoyment of park resources and values by the people of the United States is part of the fundamental purpose of all parks (NPS 2006a). The NPS strives to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in parks. The construction work and detoured access to visitor facilities would impact Visitor Use and Experience. However, currently the park road and proposed area is closed for other construction projects, specifically the construction of the bridge, so visitors are currently not allowed in the area.

**Historic Resources (Historic District and Cultural Landscapes)** – At the time of the completion of the previous EA (2012), Greenbelt Park was not listed on the National Register of Historic Places, nor was it considered eligible for inclusion. In 2019, the Maryland Historical Trust concurred with the NPS's determination that Greenbelt Park was indeed eligible for inclusion under Criteria A, C, and D for the district's association with the NPS Mission 66 program. The Park is the only example within the National Capital Area where the park's landscape, roads, campsites, comfort stations, and buildings were designed, planned, and constructed in its entirety during the NPS Mission 66 program. Elements that contribute to the significance of the Park of pertinence to this project include the location and design of the roads and



trails and the use of vegetation to blend ditches and shoulders into the adjacent landscape. At the time of the completion of this EA, a formal evaluation of the park's resource has not occurred.

With the proposed actions, the cultural landscape would be temporarily impacted by project staging in the area surrounding the Limit of Disturbance (LOD) including the construction of necessary access roads. However, the sewer line relocation itself will occur underground, thereby not impacting the character of the cultural landscape. The project will not impact the alignment or design integrity of the historic park road. A review of previously completed archeological surveys indicates that no known recorded sites will be impacted by the project and that there is a limited potential to effect subsurface resources.

**Vegetation, Wildlife, and Special Status Species** – The NPS policy is to protect the natural abundance and diversity of all naturally occurring communities. The 2006 NPS Management Policies (NPS, 2006), NPS DO #77: Natural Resources Management, and other NPS and park policies, provides general direction for the protection of vegetation and wildlife. The construction and the relocation of the new sanitary pipe will require the clearing of vegetation. The construction area is comprised of three vegetation communities: the mowed-grass vegetation community, the wetland vegetation community and the forested area. The new alignment for the sewer line is located just south of the existing pipeline and is perpendicular to a road and nearby bridge, which is currently under construction. According to the U.S. Fish and Wildlife Service, the Northern Long-eared Bat (*Myotis septentrionalis*) is a federally listed threatened species within the project area. However, this species only needs to be considered if the project consisted of tree removal of equal or greater than fifteen acres. This project does not meet that threshold (see Appendix A). Also, based on studies and inventories that have been conducted in recent years, there has been no known Northern Long-eared Bat hibernacula in Greenbelt Park. There is also no state listed threatened or endangered species within the project area. The project area will include aquatic habitat alteration and disturbance within a small area of wetlands that are located within the limits of the project. Habitat alteration and displacement of wildlife species that are commonly encountered within the Park would result from the proposed action. There will also be a temporary access road for construction that would also have minor impacts to vegetation.

**Wetlands** – Executive Order 11990, "Protection of Wetlands," and NPS DO #77-1: Wetland Protection defines the NPS goal to maintain and preserve wetland areas. The wetland delineation performed by WSSC in December 2017 (see Appendix B) indicated the presence of wetlands and streams located within the limits of disturbance of the proposed action, which involves the relocation of the sewer line and temporary access roads on top of these wetlands and across the streams. Temporary impacts are anticipated during the implementation of proposed action. Therefore, the wetlands and streams are addressed as an impact topic in this environmental assessment. Since impacts to the wetlands will be temporary and measures will be undertaken to avoid and minimize impacts to wetlands, a separate Statement of Wetlands is not required for the proposed actions in this EA. It is estimated that approximately .21 acres of wetlands would be impacted. It was concluded that a Wetlands Statement of Findings (WSOF) was not necessary for the action. DO 77-1 states that this is an excepted action under 4.2.1.9: Actions designed to restore degraded streams. This excepted action allows for 0.25 acre of permanent wetland loss. Since there will be no permanent wetland loss, let alone 0.25 acre, there is no need for a WSOF.

**Floodplains** – Executive Order 11988, "Floodplain Management," and NPS DO #77-2: Floodplain Management define the NPS goal to maintain and preserve the beneficial values of floodplains. The limit of disturbance of the proposed action includes a significant area within the class I regulatory (100-year) floodplain. Temporary impacts are anticipated during the implementation of the proposed action, therefore impacts to the floodplain are addressed as an impact topic in this environmental assessment. DO #77-2 requires NPS to take action to "reduce the risk of flood loss" (to capital resources), "minimize the impact of floods on human safety, health and welfare," and maintain "natural and beneficial values served by floodplains." Since impacts to the floodplain are not expected to have significant negative impacts on



human health and safety, federal capital resources, or natural beneficial floodplain values, it was determined that a Floodplain Statement of Findings (FSOF) was not necessary for the action.

## ISSUES DISMISSED FROM FURTHER ANALYSIS

This section provides brief descriptions of issues and concerns identified during scoping that were determined to not warrant further consideration, as well as a brief justification for the dismissal of each issue.

**Historic Structures, Museum Collections, and Ethnography, and Archeology** – There are no historic structures or housed museum collections found within the project area. In addition, based on known information about Native American Groups, we have determined that there are no federally recognized tribes listed that might attach cultural or religious significance to the project area. Additionally, it is not believed that this action would affect ethnographic resources or museum collections. While the new sewer line alignment will occur underneath the existing roadbed, the placement will not impact the integrity of the feature or change the historic alignment. The placement of the pipe will occur at a depth that will not disturb the profile of the roadbed. Therefore, historic structures will not be impacted by the project.

Regarding archeological resources, the following conclusion were determined by reviewing the proposed design drawing, the previous EA, USGS topographic maps, and the 2012 Archeological Report: *Archeological Resources Identification Survey, Construction of New Bridge Over Still Creek and Rehabilitation of Roads and Parking Areas* by New South and Associates. These previous reports reviewed a considerable portion of the new LOD improved areas immediately south of the bridge, to the east and west of the road along the creek bank, will be used to access those portions of the existing sewer line to tie in the new sewer line realignment. This area was previously disturbed causing little concern of an unanticipated discovery. Differing from an earlier proposal, the southeastern access road with a northeastern loop will not be used. Since this is not being used, there will be no potential to impact archeological resources in that area.

The area of the stabilized construction entrance on the west side of the bridge and any potential new stabilized entrance to the east are in the footprint of previous construction activities related to the roadway, bridge, and existing sewer line. There will be no adverse effect to archeological resources. Further, the terminal ends where the new line and existing lines are planned to be tied in are disturbed from the construction of the existing line.

Finally, the length of the LOD along the south bank of the creek, east and west of the bridge, are characterized by Zekiah and issue soils, frequently flooded. These soils represent the flood plain of the creek and as such would never have been very attractive for prehistoric or historic settlement and were likely continuously wet in the past and therefore devoid of significant cultural bearing deposits or features. This is supported by direct observation and documented in the archeological report (p.54):

*"Inspection of the bank profile revealed an incipient A horizon at a depth of approximately 3 feet (1.1 m) below the present surface. Below this stratum there were gray soils indicative of a wetland. Based on this profile, the A horizon represented the original surface of the floodplain, which would have been poorly drained and therefore not attractive for prehistoric or historic settlement. The overlying poorly drained alluvial deposits most likely reflected historic flooding. Because of these conditions, no shovel tests were placed on the floodplain."*



## ALTERNATIVES

This EA documents the analysis of environmental consequences of two alternatives. The no-action alternative and the proposed action/preferred alternative. The elements of these alternatives are described in detail herein. Impacts associated with the actions proposed under each alternative are outlined in the “Affected Environment and Environmental Consequences” section of the EA.

### Alternative 1 – No Action

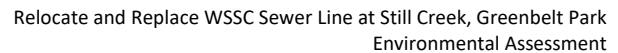
Under the no action alternative, the compromised WSSC sewer line would remain within its current alignment. Concerns regarding the integrity of the line will continue and no identified problems will be addressed.

### Alternative 2 – Action (NPS Preferred)

Under this alternative, the Park will issue WSSC a SUP to allow for construction and access to relocate the sewer line and a right-of-way (ROW) permit for the ongoing maintenance of the utility infrastructure. Specifically, WSSC proposes to relocate the existing 21-inch sewer line 30-feet south of the existing alignment for a course of approximately 400-feet. The WSSC would use a cut and cover (conventional excavation) to install the proposed new line, which would be installed at a depth at approximately 10-feet. The realignment would temporarily impact approximately .21 acres of wetland. Construction of this segment is anticipated to require 4-6 months to complete. The realignment will require the installation of three new manholes; the abandonment of an existing manhole; the construction of two temporary access roads, both approximately 180-feet in length, and the temporary installation of a bypass system as the relocation work is completed. This alternative would also require the loss of 29 trees. (Figures 3 and 4).

In an effort to protect turf and forest and wetland vegetation, the WSSC will be using a heavy-duty mulch mat when constructing the access roads to complete the relocation of the sewer line. Since the installation of super-silt fence will require driving poles within the project areas, WSSC will not be installing super silt fence. WSSC has installed such access roads in other project areas. To avoid and minimize impacts to the topsoil from directly spreading mulch on topsoil, WSSC will first lay down two layers of geotextile filter fabric (25-30-foot-wide) and then spread 12-24 inches mulch across the width of the access road. Once the mulch is spread, the overhanging portion of the geotextile will be used to wrap the mulch around to avoid spreading on topsoil. Using two layers versus one layer of filter fabric will provide additional protection from getting the fabric punctured during the installation of access roads. The 12-24 inches of mulch will provide sufficient protection against ground compaction. Lastly, three-ply thick wooden planks will be laid over the mulch mat and perpendicular to the alignment along the entire length of the path. Once the relocation work has been completed, the contractor will remove the access paths by using the same procedure in reverse. At no time will heavy equipment permitted to traverse raw topsoil.

To perform the necessary relocation, bypass pumping will be required. The principal reason for bypass pumping is to provide the rehabilitation contractor with clear and unobstructed access to the targeted pipeline or manhole. A typical bypass operation is setup in order to intercept the wastewater (sewage) flow from a manhole upstream of the targeted sewer pipe or manhole. A hose or suction pipes will be used to suck the wastewater flow from the upstream manhole by using a pump to provide the adequate suction force. The sewage is then pumped and conveyed through a bypass piping (tube) system on the surface to a manhole located downstream of the targeted sewer or manhole. At the downstream manhole, the sewage is discharged through a hose or discharge pipes into the downstream manhole where the flow is then returned to the sewer system and conveyed to a wastewater treatment plant for treatment. Bypass pumping systems are designed with redundant systems to ensure that in the event of mechanical failure of

[illegible]

6



## AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter will describe current environmental conditions in and surrounding the project area. These conditions serve as a baseline for understanding the resources that could be impacted by implementing the project. In addition, this chapter will include an analysis of the environmental consequences of each alternative.

### VISITOR USE AND EXPERIENCE

This section will describe the affected environment and environmental impacts of the project alternatives as they relate to Visitor Use and Experience.

**Affected Environment** – The Park is often called an urban oasis based on its proximity to Washington D.C. and surrounding suburban cities. The Park is also adjacent to the historic city of Greenbelt, Maryland. The proximity to the Nation’s Capital brings both international and national visitors to the Park. Annually, approximately 151,000 people visit the Park. For visitors, the Park offers recreational opportunities such as camping, picnicking, hiking trails and biking. The forested surroundings, meandering two-lane access roads, and rustic amenities provide a rural experience within an otherwise developed urban landscape.

### Impacts of Alternative 1 – No Action

The impacts of Alternative 1 would be the same as the current management of the area. The road is currently closed to visitor traffic while the Still Creek culvert is replaced with a bridge. There would be continued concerns as the current condition of the existing sewer line remains threatened and in close proximity to the abutment of the proposed bridge. While the threat is not eminent, the aged sewer line is at the end of its useful life, which increases the threat of failure. A potential break in the sewer line would affect visitors and a large swath of businesses, hotels, office buildings, and a large subdivision.

### Impacts of Alternative 2 (NPS Preferred)

The current closure of the project area would continue as under Alternative 1 until the concerns regarding the pipe are addressed. Proposed work would be started in June 2020 and conclude by September 2020, at which point in time the project area would reopen for visitors pending final safety assessment.

### HISTORIC RESOURCES (HISTORIC DISTRICT AND CULTURAL LANDSCAPES)

This section would describe the affected environment and environmental impacts of the project alternatives as it relates to historic structures, cultural landscapes, and historic districts found within the project area.

**Affected Environment** - While the Park has not been formally listed on the National Register of Historic Places, it was determined in 2019 by the National Park Service and concurred by the Maryland Historical Trust that the park was eligible for inclusion under Criteria A,C, and D for the sites association with the NPS Mission 66 program and its initial development. The park road (circa 1961) is a contributing element of the Historic District within or adjacent to the project area), as well as the forested setting. The bridge crossing Still Creek is a non-contributing element to the Historic District.

### Impacts of Alternative 1 – No Action

Under the No Action Alternative, the sewer line will not be relocated, eventually leading to the failure of the pipe. However, by not initiating the project, there will be no immediate impacts to the historic roadbed. The viewshed of the cultural landscape would remain unaffected. As part of the work currently underway to construct the bridge and rehabilitate the roadways, the State Historic Preservation Officer (SHPO) concurred on April 3, 2012 that there would be a “no adverse effect” on historic properties.



## Impacts of Alternative 2 (NPS Preferred)

Under Alternative 2, the cultural landscape would be temporarily impacted by project staging in the area surrounding the LOD including the construction of the bypass system and necessary access roads. However, the sewer line relocation itself will occur underground, thereby not impacting the character of the cultural landscape. The project will not impact the alignment or design integrity of the historic park road. Based on the 2012 Phase IA Archeological Report that was completed for the bridge and roadway rehabilitation EA and through consultation with the NPS, National Capital Area Regional Archeologist, no known recorded sites will be impacted by the project and that there is a limited potential to effect subsurface resources. If during the relocation of the sewer line, archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources can be identified and documented and an appropriate mitigation strategy developed.

## VEGETATION, WILDLIFE, AND SPECIAL STATUS SPECIES

This section would describe the affected environment and environmental impacts of the project alternatives as it relates to vegetation, wildlife, and special status species found within the project area.

### Affected Environment

The project area is comprised of three vegetation communities, the mowed grass shoulder community, the wetland community and forested area. Immediately adjacent to the paved roadway are mowed grass roadway shoulders. Dominant vegetation of the region is classified as oak-hickory-pine forest and southern floodplain forest. Wetland vegetation consists of eastern skunk cabbage (*Symplocarpus foetidus*), fowl mannagrass (*Glyceria striata*), perennial shallow sedges (*Cyperaceae*), swamp maple (*Acer rubrum*), cinnamon fern (*Osmundastrum cinnamomeum*), common greenbrier (*Smilax rotundifolia*), fescue grass (*Festuca*), and Japanese stiltgrass (*Microstegium vimineum*). The dominant vegetation consists of evergreens and areas of deciduous broad-leaved forests. The main forest cover is loblolly pine (*Pinus taeda*) and hardwood species include sweetgum (*Liquidambar styraciflua*), water oak (*Quercus nigra*), white ash (*Fraxinus americana*), yellow poplar (*Liriodendron tulipifera*) and swamp hickory (*Carya myristiciformis*). Species on bottomlands include green ash (*Fraxinus pennsylvanica*), sugarberry (*Celtis laevigata*), American sycamore (*Platanus occidentalis*) and American elm (*Ulmus Americana*) (McNab and Avers 1994). Exotic invasive plant species such as kudzu (*Pueraria lobata*), bush honeysuckle (*Lonicera x spp.*) and English ivy (*Hedera helix*) are a threat to biodiversity and ecosystem function in the Park as well. Wildlife in these vegetation communities are utilized by species such as whitetail deer (*Odocoileus virginianus*), chipmunk (*Tamias striatus*), red fox (*Vulpes vulpes*), raccoon (*Procyon lotor*), cottontail rabbit (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), flying squirrel (*Glaucomys volans*), whitefooted mouse (*Peromyscus leucopus*), skunk (*Mephitis mephitis*), eastern mole (*Scalopus aquaticus*), beaver (*Castor Canadensis*), woodchuck (*Marmota monax*), and little brown bat (*Myotis lucifugus*).

### Impacts of Alternative 1 – No Action

Under the no action alternative, the project area would continue to provide habitat for the three vegetation communities and support the wildlife; however, if the sewer line would fail, this would cause negative impacts to the amphibian habitat and other wildlife.

### Impacts of Alternative 2 (NPS Preferred)

Under Alternative 2, approximately 29 trees (greater than 5" DBH) would be removed and approximately .45 acres of vegetation (including less than 0.21 acres of wetland vegetation) would be temporarily impacted during the sewer line realignment. However, the trees would be replaced on a 1:1 DBH replacement and the .45 areas would be revegetated using an NPS approved wetland plants and native seed mix. The grasses impacted would be replaced with NPS-approved native species based on MDE Standards and Specifications for Soil Erosion and Sediment Control. Specific mitigation measures would





include, but not be limited to, avoidance of stockpiling excess fill or construction material in non-tidal wetlands, buffers, or waters; heavy equipment would be placed on protective matting to prevent damage to resources; and stormwater runoff will be controlled to prevent washing of silt and debris into wetlands and waterways.

Construction would occur during the day, limiting disruptions to wildlife from artificial light at night. Wildlife would be temporarily impacted by construction noise and vibration. Wetland and aquatic wildlife and wildlife habitat may be temporarily impacted by the sewer line relocation and temporary access during construction activities. Overall, the relocation of the sewer line to accommodate the construction of a bridge would provide better stream connectivity for aquatic organisms after construction, and the proposed revegetation of disturbed areas using native plants would improve the long-term quality of wildlife habitat. Ultimately the bridge crossing would be beneficial to aquatic wildlife by allowing for fish and aquatic organism passage that does not currently exist. Connectivity of the floodplain would also benefit wildlife passage. Stream daylighting would produce a measurable improvement to aquatic habitat.

## WETLANDS

This section would describe the affected environment and environmental impacts of the project alternatives as it relates to wetlands found within the project area.

**Affected Environment** - Wetlands in the project area function as fish and wildlife habitat, aquatic plant communities, flood attenuation, and provide an aesthetically pleasing view for visitors. As part of the 2012 EA for the Replacement of Culverts on Still Creek with Bridge and Mill Overlay Park Central Road, a wetland delineation survey was conducted in the study area. The wetlands in the project area are classified as a palustrine, forested, broad-leaved deciduous, temporarily flooded or saturated (PFO1A & PF01B) wetlands. The wetland areas are primarily dominated by trees and plants such as blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*) and sweetbay magnolia (*Magnolia virginiana*) in the tree stratum; highbush blueberry (*Vaccinium corymbosum*), common winterberry (*Ilex verticillata*), sweetgum (*Liquidambar styraciflua*) and swamp azalea (*Rhododendron viscosum*) in the shrub stratum; and cinnamon fern (*Osmunda cinnamomea*), netted chainfern (*Woodwardia areolata*) and lowbush blueberry (*Vaccinium angustifolium*) in the herbaceous stratum. (Straughan Environmental 2011).

Still Creek and several unnamed tributaries flow in and out of the project area several times. Still Creek is classified by the USACE as a Waters of the United States and as a riverine wetland by NPS Cowardin definition. These waterways and wetlands are heavily influenced by urban storm water runoff from upstream areas outside of the Park.

### Impacts of Alternative 1 – No Action

Under the No Action Alternative, the sewer line will not be relocated and the temporary impacts to the adjacent wetlands would be avoided. As part of the Replacement of the Culverts on Still Creek with a Bridge and Mill Overlay Park Central Road EA, the construction of the bridge would still be completed with temporary impact to the wetlands from the stream dewatering and diversion and small changes to local population numbers might occur. Ultimately the bridge crossing would be beneficial to the wetlands as it would improve the function reconnecting the stream channel that is currently undercut and disconnected on either side of the culvert. Stream daylighting would also produce a measurable improvement to the wetland as it will improve riparian buffer vegetation growth and habitat.

### Impacts of Alternative 2 (NPS Preferred)

Under Alternative 2, wetlands found within the project area would be temporarily impacted during the relocation of the sewer line and in the temporary construction of access roads. It is estimated that approximately .21 acres of wetlands would be impacted. However, any disturbed wetland areas would be re-vegetated on site with similar native wetland plant species approved by the NPS. As part of the nearby bridge construction as described in Alternative 1—which necessitated the relocation of the sewer line,



restoration to the stream (riverine wetland) would also be conducted to improve the function of the stream channel that is currently highly eroded and scoured.

It was concluded that a WSOF was not necessary for the action. DO 77-1 states that this is an excepted action under 4.2.1.9: Actions designed to restore degraded streams. This excepted action allows for 0.25 acre of permanent wetland loss.

## **FLOODPLAINS**

This section would describe the affected environment and environmental impacts of the project alternatives as it relates to floodplains within the project area.

**Affected Environment** – Floodplains in the project area provide both hydraulic and ecological function through stream-floodplain connectivity, flood attenuation, and riparian habitat. During large storm events, Still Creek may access its floodplain, spreading flow over a large area with rough terrain, effectively dissipating the erosive potential of otherwise high-velocity flows. This connectivity helps to prevent streambank erosion within the channel and enhances hydrology for local floodplain communities. The limit of disturbance for the proposed action is within the class I regulatory (100-year) floodplain for Still Creek. Still Creek is heavily influenced by urban storm water runoff from upstream areas outside of Greenbelt Park and is therefore frequently exposed to concentrated, high-velocity flows, emphasizing the importance of floodplain connectivity.

### **Impacts of Alternative 1 – No Action**

Under the No Action Alternative, the sewerline will not be relocated and the temporary impacts to the floodplain would be avoided.

### **Impacts of Alternative 2 (NPS Preferred)**

Under Alternative 2, floodplains within the project area would be temporarily impacted during the relocation of the sewerline and in the temporary construction of access roads. Any disturbed floodplain areas would be re-vegetated on site with similar native plant species approved by the NPS. As part of the nearby bridge construction—which necessitated the relocation of the sewerline, restoration to the stream would also be conducted to improve the function of the stream channel that is currently highly eroded and scoured. These stream restoration activities may enhance stream-floodplain connectivity, potentially increasing the natural beneficial value of the Still Creek floodplain.

It was concluded that a Floodplain Statement of Findings (FSOF) was not necessary for this action. DO #77-2 requires NPS to take action to “reduce the risk of flood loss” (to capital resources), “minimize the impact of floods on human safety, health and welfare,” and maintain “natural and beneficial values served by floodplains.” Since impacts to the floodplain are not expected to have significant negative impacts on human health and safety or on federal capital resources, and the actions may enhance natural beneficial floodplain values, a FSOF is not needed.

## **CUMULATIVE IMPACTS**

Impacts of the NPS proposed alternatives on historic structures, visitor use and experience, and vegetation, wildlife and special status species were identified. Cumulative impacts were determined by combining the impacts of these NPS proposed alternatives with other present and reasonably foreseeable future actions. These cumulative actions include other current/future work being undertaken by WSSC:

**Rehabilitate Multiple WSSC Sewers and Manholes at Greenbelt Park (95180):** As part of WSSC's 2005 SSO Consent Decree, WSSC performed inspections of its collection system and identified high priority sewers and manholes that were exhibiting structural defects and posed high risk of failure. Some of those manholes and sewers exist within Greenbelt Park. The NPS proposes to issue a SUP to WSSC to rehabilitate multiple sewers and manholes located within seven different project areas within the park.



This work will require temporary access paths to reach these sewers to perform the proposed repair and/or rehabilitation methods. Once access to these sewers are made, they'll be taken out of service to allow for proper cleaning and preparation prior to performing the rehabilitation activities. This will involve the installation of temporary bypass systems, installation of bypass pumping systems and large laydown areas. Jet trucks will travel through the access roads to areas near the sewers and manholes. After appropriate preparation, depending on the method of improvements to the sewers and manholes, different types of prefabricated rehabilitation materials will be brought in trucks to perform the appropriate repair and/or rehabilitation activities. Once the rehabilitation activities are completed, the bypass systems and access roads will be removed, and areas impacted will be restored per plans and specifications approved by MDE, United States Army Corps of Engineers and requirements of construction permit issued by NPS. The NPS will also issue an amended ROW permit concurrent with the issuance of the construction SUP.

**Replace Culverts on Still Creek with Bridge and Mill Overlay Park Central Road (28240):** FHWA has begun the “Road and Parking Area Pavement Rehabilitation and New Bridge Construction at Still Creek” project at the Park. An EA was completed in 2012 for this project. The project involves the replacement of damaged perched culverts with a new 70-foot long bridge over Still Creek, roadway and parking area pavement rehabilitation, drainage improvements, and other work. Work items include pavement removal and roadway excavation, aggregate base, asphalt concrete pavement, structural concrete, precast, prestressed concrete box beams, steel-backed timber bridge railing, Geosynthetic Reinforced Soil-Integrated Bridge System (GRS-IBS) stone masonry faced-abutments, box culverts construction and pipe culvert installation, concrete headwalls, steel-backed timber guardrail installation, striping, utility relocation, and other miscellaneous work. Project will be accessed by Greenbelt Road (State Route 193) from the north and by Good Luck Road from the south.

#### **Alternative 1 – No Action**

Under the No Action alternative, the sewer line would remain in poor condition and in close proximity to the southern abutment of the newly constructed bridge over Still Creek. Overall, the potential failure of the sewer line would adversely impact visitor use and experience, historic resources, vegetation and wildlife, and wetlands within the project area.

#### **Alternative 2 (NPS Preferred)**

Under Alternative 2, the cumulative impacts include the current park roads rehabilitation and bridge construction over Still Creek projects and the future sewer and manhole repair work throughout the park. The impacts of these other present and reasonably foreseeable future actions on resources, in conjunction with the NPS preferred alternative, would have temporary adverse impacts, but would result in beneficial cumulative impacts. The relocation of the sewer line to accommodate the new bridge structure, as well as future sewer and manhole improvements throughout the park would limit visitor access to certain areas on the park during construction, which will temporarily impact visitor experience. There would be temporary impacts to historic resources, specifically the cultural landscape and the views would also be impacted by the staging and access roads, as well as the bypass systems. There will be temporary adverse impacts to floodplains and vegetation, particularly wetland vegetation, due to construction equipment access and a larger construction footprint; however, in the long-term the improvements to the sewer and manhole infrastructure at the park and the construction of a new bridge will produce a measurable improvement to vegetation. Beneficial impacts to vegetation would occur due to the more natural restoration of Still Creek and the careful rehabilitation of disturbed areas using native vegetation and careful monitoring by NPS to ensure the eradication of exotic/invasive species. Also, relocation of the sewer line to accommodate the newly constructed bridge will temporarily impact aquatic wildlife and habitat. However, ultimately the new bridge would be beneficial to aquatic wildlife by allowing for fish and aquatic organism passage that does not currently exist. Connectivity of the floodplain would also benefit wildlife passage.



## CONCLUSIONS

Under Alternative 1 - No action alternative, without the relocation of a 400-foot section of 21-inch sanitary sewer to accommodate a new bridge across Still Creek, the threat to human health and safety, as well as environment is eminent. The existing pipe is in threatened condition and the lateral distance between sewer line and south abutment is less than 12-inches. WSSC regulations state that the sewer line must be approximately five feet from another utility or infrastructure.

Under Alternative 2 - NPS Preferred Alternative, there would be temporary short-term impacts to visitor access and temporary adverse impact to wildlife, wetlands, and floodplains, but collectively the relocation of the sewer line to accommodate a new bridge would be a beneficial impact to the wildlife and wetlands due to the associated stream restoration activity that would reconnect the stream channel that is currently undercut and disconnected on either side of Still Creek. The stream restoration activities including the relocation of the sewer line and construction of the bridge and the flanking relief culverts would benefit the hydrology of the wetlands within and adjacent to the creek by providing greater connectivity of the stream, floodplain and promote regrowth of fringe wetlands in this area.

## CONSULTATION AND COORDINATION

During the preparation of the planning associated with the current effort, the following agencies were consulted:

**Maryland Historic Trust** - As part of Section 106 of the National Historic Preservation Act (Section 106) compliance, the Park submitted a finding of 'No Adverse Effect' to the SHPO on April 28, 2020 (Appendix C).

**Maryland Department of the Environment and U.S. Fish and Wildlife Service**—Early Coordination Letters were sent to the U.S. Fish and Wildlife Service Chesapeake Bay Field Office and the Maryland Department of Natural Resources Wildlife and Heritage Program Coordinator in order to gather input regarding federally listed, and state-listed rare species that may be present in the study area.

**NPS Water Resources Division** – Park staff consulted with the NPS Wetlands Ecologist regarding potential impacts to wetlands. It was concluded that a WSOF was not necessary for the action. DO 77-1 states that this is an excepted action under 4.2.1.9: Actions designed to restore degraded streams. This excepted action allows for 0.25 acre of permanent wetland loss. Since there will be no permanent wetland loss, let alone 0.25 acre, there is no need for a WSOF. Park staff also consulted with the NPS Floodplain Specialist regarding potential impacts to floodplain resources and potential threats to capital resources and/or human health and safety. It was concluded that a Floodplain Statement of Findings (FSOF) was not necessary for the action. DO 77-2 states that a FSOF is required when a project is expected to have significant negative impacts on human health and safety, federal capital resources, or natural beneficial floodplain values.



## **APPENDICES**



## APPENDIX A: Fish and Wildlife IPAC Documentation

## IPaC Information for Planning and Consultation U.S. Fish &amp; Wildlife Service

## IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

### Location

Prince George's County, Maryland



### Local office

Chesapeake Bay Ecological Services Field Office

☎ (410) 573-4599

📠 (410) 266-9127

177 Admiral Cochrane Drive  
Annapolis, MD 21401-7307

<http://www.fws.gov/chesapeakebay/>

<http://www.fws.gov/chesapeakebay/endsppweb/ProjectReview/Index.html>

NOT FOR CONSULTATION



# Endangered species

**This resource list is for informational purposes only and does not constitute an analysis of project level impacts.**

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population, even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

## Listed species

<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information.
2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

| NAME   | STATUS     |
|--|------------|
| <p>Northern Long-eared Bat <i>Myotis septentrionalis</i></p> <p>This species only needs to be considered if the following condition applies:</p> <ul style="list-style-type: none"> <li>Projects with a federal nexus that have tree clearing = to or &gt; 15 acres: 1. REQUEST A SPECIES LIST 2. NEXT STEP: EVALUATE DETERMINATION KEYS 3. SELECT EVALUATE under the Northern Long-Eared Bat (NLEB) Consultation and 4(d) Rule Consistency key</li> </ul> <p>No critical habitat has been designated for this species.</p> <p><a href="https://ecos.fws.gov/ecp/species/9045">https://ecos.fws.gov/ecp/species/9045</a></p> | Threatened |

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act

<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.
2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ [below](#). This

is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

## NAME

BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)

Bald Eagle *Haliaeetus leucocephalus*

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.

<https://ecos.fws.gov/ecp/species/1626>

Breeds Oct 15 to Aug 31

Black-billed Cuckoo *Coccyzus erythrophthalmus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9399>

Breeds May 15 to Oct 10

Bobolink *Dolichonyx oryzivorus*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Jul 31

Canada Warbler *Cardellina canadensis*

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Breeds May 20 to Aug 10

|  |                         |
|--|-------------------------|
| Dunlin <i>Calidris alpina arctica</i><br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA   | Breeds elsewhere        |
| Kentucky Warbler <i>Oporornis formosus</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.   | Breeds Apr 20 to Aug 20 |
| Least Tern <i>Sterna antillarum</i><br>This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA   | Breeds Apr 20 to Sep 10 |
| Lesser Yellowlegs <i>Tringa flavipes</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br><a href="https://ecos.fws.gov/ecp/species/9679">https://ecos.fws.gov/ecp/species/9679</a>          | Breeds elsewhere        |
| Nelson's Sparrow <i>Ammodramus nelsoni</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.   | Breeds May 15 to Sep 5  |
| Prairie Warbler <i>Dendroica discolor</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  | Breeds May 1 to Jul 31  |
| Prothonotary Warbler <i>Protonotaria citrea</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  | Breeds Apr 1 to Jul 31  |
| Red-headed Woodpecker <i>Melanerpes erythrocephalus</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  | Breeds May 10 to Sep 10 |
| Rusty Blackbird <i>Euphagus carolinus</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.  | Breeds elsewhere        |
| Semipalmated Sandpiper <i>Calidris pusilla</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.   | Breeds elsewhere        |
| Short-billed Dowitcher <i>Limnodromus griseus</i><br>This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.<br><a href="https://ecos.fws.gov/ecp/species/9480">https://ecos.fws.gov/ecp/species/9480</a> | Breeds elsewhere        |

Wood Thrush *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is  $0.25/0.25 = 1$ ; at week 20 it is  $0.05/0.25 = 0.2$ .
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

### Breeding Season (■)

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

### Survey Effort (|)

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

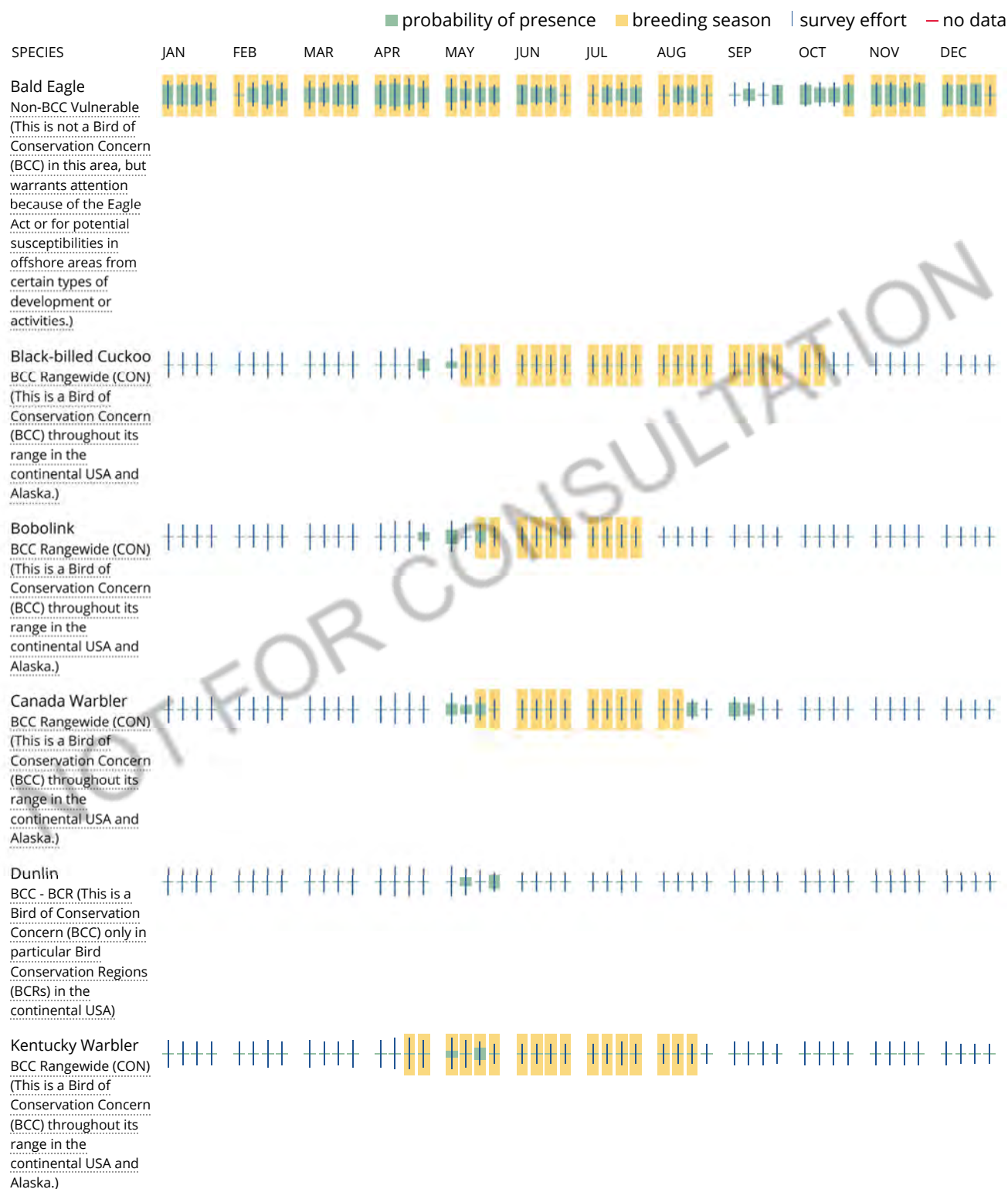
### No Data (—)

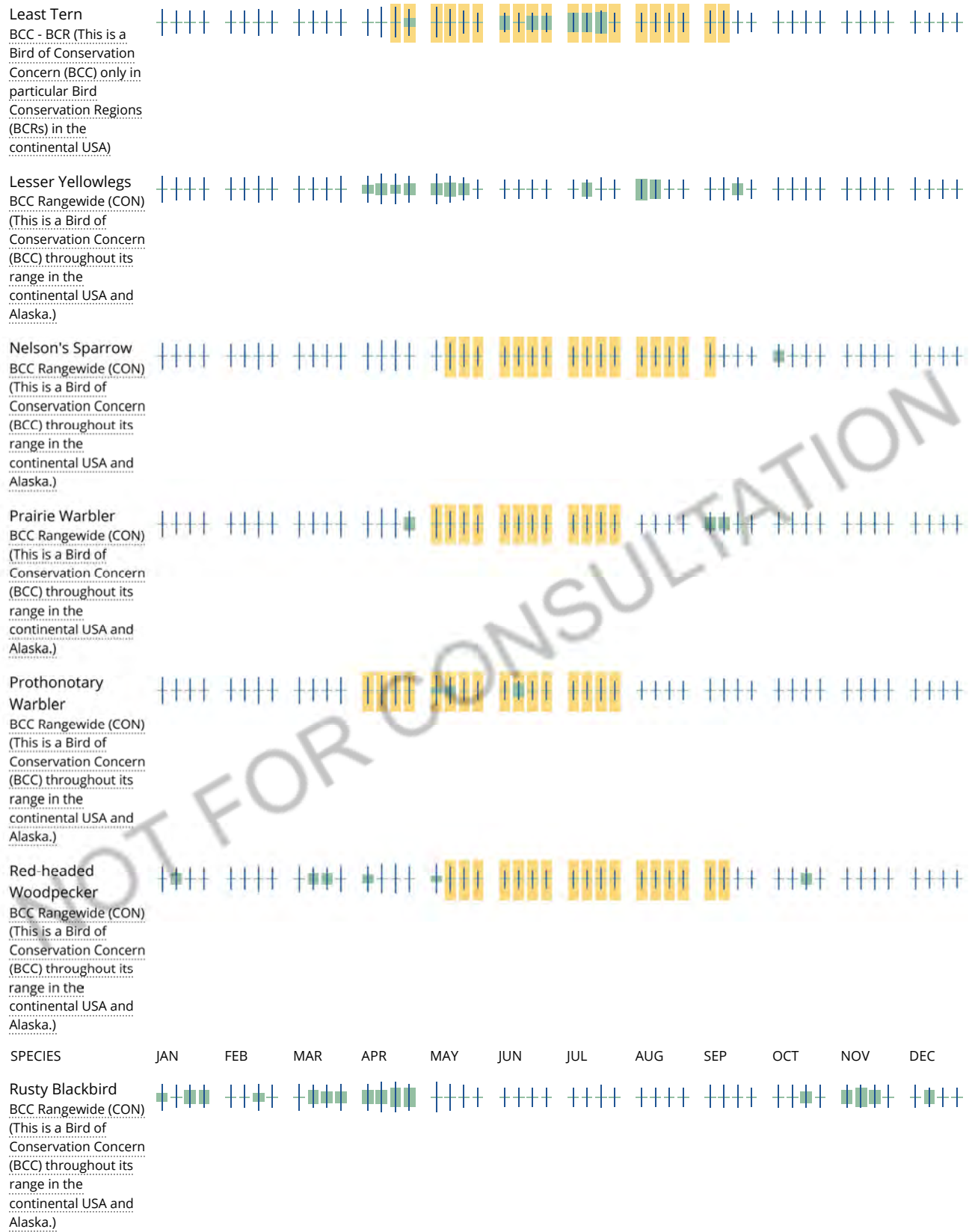
A week is marked as having no data if there were no survey events for that week.



## Survey Timeframe

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.







Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

[Nationwide Conservation Measures](#) describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. [Additional measures](#) and/or [permits](#) may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the migratory birds potentially occurring in my specified location?

The Migratory Bird Resource List is comprised of USFWS [Birds of Conservation Concern \(BCC\)](#) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the [Avian Knowledge Network \(AKN\)](#). The AKN data is based on a growing collection of [survey, banding, and citizen science datasets](#) and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle ([Eagle Act](#) requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the [AKN Phenology Tool](#).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the [Avian Knowledge Network \(AKN\)](#). This data is derived from a growing collection of [survey, banding, and citizen science datasets](#).



Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey

effort (indicated by the black vertical bar) and for the existence of the “no data” indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ “Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds” at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the [National Wildlife Refuge](#) system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the [NWI map](#) to view wetlands at this location.

#### Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

#### Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

#### Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.



## APPENDIX B: Wetland Delineation



## *Applying Practical Science to Improve Communities*

---

**Date:** December 4, 2017

**Subject:** Wetland Delineation Report for Potential Total Maximum Daily Load (TMDL) Tree Planting Sites, Prince George's and Montgomery Counties, Maryland, Contract AT0415282, Maryland State Highway Administration Statewide, SHA 2009-04B Task 53, CEM C2009028.053.0000

### **Introduction**

CEM, sub-consultant to Stantec Consulting Services, under contract to the Maryland Department of Transportation, State Highway Administration (SHA), has completed a wetland and waterway delineation at four sites located in Montgomery County and eight sites located in Prince George's County, Maryland. The purpose of this project was to identify potential tree planting sites in order to meet the requirements established in Maryland's Watershed Implementation Plan for the Chesapeake Bay Total Maximum Daily Load (TMDL).

### **Study Area Description**

Four of the sites are located in the southeast portion of Montgomery County, north of Rockville. These sites are located in the Eastern Mountains and Piedmont region. The remaining eight sites are located in Prince George's County and are in the Eastern Atlantic and Gulf Coastal Plain (See Figure 1, Site Vicinity Map).

### **METHODS**

Prior to conducting the on-site investigation for potential streams and wetlands, CEM reviewed the following data sources to create field maps and provide background information for the delineation:

- US Department of Agriculture - Natural Resources Conservation Service (USDA-NRCS) soil survey for Prince George's County and Montgomery County (Web Soil Survey)
- Federal Emergency Management Agency (FEMA) floodplain data (Flood Insurance Rate Map)
- National Wetlands Inventory (NWI)
- Maryland Department of Natural Resources (MDNR) geospatial data
- Aerial photographs

Wetlands were delineated using the "Routine Method" described in the 1987 US Army Corps of Engineers Wetland Delineation Manual (Y-87-1) and the 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain and the 2012 Regional Supplement for the Eastern Mountains and Piedmont. The *Manual* states that three criteria (wetland vegetation, wetland soils, and wetland hydrology) must be present for an area to qualify as a wetland.



## Applying Practical Science to Improve Communities

---

### RESULTS

#### Site No. 150187UT

##### Location

Site Number 150187UT is a 2.20 acre site located in the Northern Piedmont region which includes the Major Land Resource Area (MLRA) 148 of Land Resource Region (LRR) S. The study area consisted of scrub-shrub vegetation with scattered trees between I-270 and Father Hurley Boulevard.

##### Soils

The USDA-NRCS soil survey map for Montgomery County (Figure 2) identifies 3 soil map units within the study area. All soil map units within the study area are presented in Table 1.

| TABLE 1. SOIL MAP UNITS<br>SITE 150187UT |                 |           |                               |
|--|-----------------|-----------|-------------------------------|
| Map Unit Name                            | Map Unit Symbol | Slope (%) | Hydric                        |
| Baile silt loam                          | 6A              | 3-8       | Yes                           |
| Occoquan loam                            | 17B             | 3-8       | 5% hydric inclusions of Baile |
| Occoquan loam                            | 17C             | 8-15      | 5% hydric inclusions of Baile |

##### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24031C0160D (Dated 9/29/06) indicates that the study area is not located within the 100-year floodplain.

##### Wetlands and Streams

The results of the field investigation conducted on November 7, 2017 identified one intermittent stream (WL001) (see Table 2 and Attachment 1). The study area consists of scrub shrub vegetation and small trees. Dominant vegetation included eastern red cedar (*Juniperus virginiana*, FACU), white pine (*Pinus strobus*, FACU), Bradford pear (*Pyrus calleryana*, NI), wineberry (*Rubus phoenicolasius*, FACU), and Canada goldenrod (*Solidago canadensis*, FACU). Representative data sheets and photographs of the stream and study area are included in Attachment 2.



## Applying Practical Science to Improve Communities

| TABLE 2.<br>WETLAND/WATERS SUMMARY TABLE<br>SITE 150187UT |  |                        |   |              |
|---|--|------------------------|---|--------------|
| Stream Name   | USFWS Stream Classification                              | Size within Study Area | Stream Use Designation/<br>Closure Date | Sheet Number |
| WL001   | Riverine, Intermittent, Streambed, Cobble-Gravel (R4SB3) | 1,733 SF               | Use IV-P/<br>March 1 through May 31     | 1            |

### Site No. 150197UT

#### Location

Site Number 150197UT is a 0.36 acre site located in the Northern Piedmont region which includes MLRA 148 of LRR S. The study area consisted primarily of an open field with herbaceous vegetation located off of the right shoulder of the southbound lane of MD-108.

#### Soils

The USDA-NRCS soil survey map for Montgomery County (Figure 2) identifies 1 soil map unit within the study area. All soil map units within the study area are presented in Table 3.

| TABLE 3. SOIL MAP UNITS<br>SITE 150197UT |                 |           |        |
|--|-----------------|-----------|--------|
| Map Unit Name                            | Map Unit Symbol | Slope (%) | Hydric |
| Baile silt loam                          | 6A              | 3-8       | Yes    |

#### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24031C0215D (Dated 9/29/06) indicates that the study area is not located within the 100-year floodplain.

#### Wetlands and Streams

The results of the field investigations conducted on November 7, 2017 identified one palustrine emergent wetland (WP001) (see Table 4 and Attachment 1). WP001 is dominated by narrowleaf cattail (*Typha angustifolia*, OBL) and soft rush (*Juncus effusus*, FACW). The upland portion of the study area was dominated by Allegheny blackberry (*Rubus*



## Applying Practical Science to Improve Communities

*allegheensis*, FACU), Virginia broomsedge (*Andropogon virginicus*, FACU), Canada goldenrod, and Bradford pear. Representative data sheets and photographs of the wetland system and study area are included in Attachment 2.

| TABLE 4.<br>WETLAND/WATERS SUMMARY TABLE<br>SITE 150197UT |   |                        |   |              |
|---|---|------------------------|---|--------------|
| Stream Name   | USFWS Stream Classification                                   | Size within Study Area | Stream Use Designation/<br>Closure Date | Sheet Number |
| WP001   | Palustrine, Emergent, Persistent, Temporarily Flooded (PEM1A) | 0.57 Acre              | NA                                      | 2            |

### Site No. 150198UT

#### Location

Site Number 150198UT is a 4.60 site located in the Northern Piedmont region which MLRA 148 of LRR S. The study area consisted primarily of maintained lawn areas with herbaceous vegetation and is located off the right shoulder of the northbound lane of MD-108.

#### Soils

The USDA-NRCS soil survey map for Montgomery County (Figure 2) identifies 3 soil map units within the study area. All soil map units within the study area are presented in Table 5.

| TABLE 5. SOIL MAP UNITS<br>SITE 150198UT |                 |           |                                |
|--|-----------------|-----------|--------------------------------|
| Map Unit Name                            | Map Unit Symbol | Slope (%) | Hydric                         |
| Baile silt loam                          | 6A              | 0-3       | Yes                            |
| Glenelg silt loam                        | 2B              | 3-8       | No                             |
| Glenville silt loam                      | 5A              | 0-3       | 10% hydric inclusions of Baile |

#### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24031C0215D (Dated 9/29/06) indicates that the study area is not located within the 100-year floodplain.





## Applying Practical Science to Improve Communities

---

### Wetlands and Streams

The results of the field investigation conducted on November 7, 2017 identified no wetlands or waters of the U.S. within the study area. Dominant vegetation within the study area consisted of barnyard grass (*Echinochloa crus-galli*, FAC), curly dock (*Rumex crispus*, FAC) and hairy white oldfield aster (*Symphotrichum pilosum*, FAC). Although the vegetation was facultative, there were no hydrology or hydric soil indicators present within the study area. Photographs of the study area are included in Attachment 2.

### Site No. 150215UT

#### Location

Site Number 150215UT is a 0.90 acre site located in the Northern Piedmont region which includes MLRA 148 of LRR S. The study area consisted primarily of an open meadow with agricultural areas in the eastern extent and is located off of the right shoulder of the westbound lane of MD-107.

#### Soils

The USDA-NRCS soil survey map for Montgomery County (Figure 2) identifies 2 soil map units within the study area. All soil map units within the study area are presented in Table 6.

| TABLE 6. SOIL MAP UNITS<br>SITE 150215UT |                 |           |                                |
|--|-----------------|-----------|--------------------------------|
| Map Unit Name                            | Map Unit Symbol | Slope (%) | Hydric                         |
| Bucks silt loam                          | 19B             | 3-8       | No                             |
| Readington silt loam                     | 22A             | 0-3       | 5% hydric inclusions of Croton |

### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24031C0165D (Dated 9/29/06) and [FIRM] No. 24031C0305D (Dated 9/26/2006) indicates that the study area is not located within the 100-year floodplain.

### Wetlands and Streams

The results of the field investigation conducted on November 7, 2017 identified one palustrine emergent wetland (WP001) (see Table 7 and Attachment 1). The wetland was dominated by soft rush and redtop (*Agrostis gigantea*, FACW) the upland portions of the study area consisted of orchard grass (*Dactylis glomerata*, FACU), foxtail grass (*Setaria faberi*, UPL), and broomsedge (*Andropogon virginicus*, FACU). Representative photographs of the wetland system and study area are included in Attachment 2.



*Applying Practical Science to Improve Communities*

| TABLE 7.<br>WETLAND/WATERS SUMMARY TABLE<br>SITE 150215UT |   |                        |                                      |              |
|---|---|------------------------|--------------------------------------|--------------|
| Stream Name   | USFWS Stream Classification                                   | Size within Study Area | Stream Use Designation/ Closure Date | Sheet Number |
| WP001   | Palustrine, Emergent, Persistent, Temporarily Flooded (PEM1A) | 0.03 Acre              | NA                                   | 5            |

#### **Site No. 160317UT**

##### Location

Site Number 160317UT is a 2.02 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study area consisted primarily of old vegetation with some scattered saplings and is located off of the right shoulder of the southbound lane of MD-197.

##### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 5 soil map units within the study area. All soil map units within the study area are presented in Table 8.

| TABLE 8. SOIL MAP UNITS<br>SITE 160317UT   |                 |           |  |
|--|-----------------|-----------|--|
| Map Unit Name                              | Map Unit Symbol | Slope (%) | Hydric   |
| Christiana-Downer complex                  | CcC             | 5-10      | 5% hydric inclusions of Fallsington  |
| Evesboro-Downer complex                    | EwC             | 5-10      | No   |
| Matapeake silt loam                        | MpB             | 2-5       | No   |
| Sassafras sandy loam                       | SaB             | 2-5       | No   |
| Zekiah and Issue soils, frequently flooded | ZS              | 0-2       | 10% hydric inclusions of Widewater, 5% of Longmarsh, and 5% of Fallsington |

##### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0070E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

42 North Main Street | Bel Air, Maryland 21014

410-893-8018 | [info@cemscience.com](mailto:info@cemscience.com) | [cemscience.com](http://cemscience.com)

● @cemscience | ● cemscience | ● Chesapeake Environmental Management, Inc.



## Applying Practical Science to Improve Communities

---

### Wetlands and Streams

The results of the field investigation conducted on November 8, 2017 identified no wetlands or waters of the U.S. within the study area. The area is dominated by eastern red cedar, Bradford pear, foxtail grass, Canada goldenrod, and Chinese bush clover (*Lespedeza cuneata*, FACU). Representative photographs of the study area are included in Attachment 2.

### Site No. 160311UT

#### Location

Site Number 160311UT is a 0.39 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study area consisted primarily of maintained grass areas and scattered trees in the northern portion, located off of the right shoulder of the southbound lane of MD-197.

#### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 2 soil map units within the study area. All soil map units within the study area are presented in Table 9.

| TABLE 9. SOIL MAP UNITS<br>SITE 160311UT   |                 |           |  |
|--|-----------------|-----------|--|
| Map Unit Name                              | Map Unit Symbol | Slope (%) | Hydric   |
| Sassafras sandy loam                       | SaC             | 5-10      | No   |
| Zekiah and Issue soils, frequently flooded | ZS              | 0-2       | 10% hydric inclusions of Widewater, 5% of Longmarsh, and 5% of Fallsington |

#### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0070E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

### Wetlands and Streams

The results of the field investigations conducted on November 8, 2017 identified one intermittent stream (WL001) (see Table 10 and Attachment 1). The rest of the study area is dominated by Bradford pear, sweetgum (*Liquidambar styraciflua*, FAC) foxtail grass, and Chinese bush clover. A representative data sheet and photographs of the stream and study area are included in Attachment 2.



Applying Practical Science to Improve Communities

**TABLE 10.**  
**WETLAND/WATERS SUMMARY TABLE**  
**SITE 160311UT**

| Stream Name | USFWS Stream Classification                              | Size within Study Area | Stream Use Designation/ Closure Date | Sheet Number |
|-------------|--|------------------------|--------------------------------------|--------------|
| WL001       | Riverine, Intermittent, Streambed, Cobble-Gravel (R4SB3) | 76 LF                  | Use I/ March 1 through June 15       | 7            |

**Site No. 160294UT**

**Location**

Site Number 160294UT is a 0.83 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study area consisted primarily of a maintained lawn areas with scattered trees in the northern portion and is located at the intersection of Federal Hill Court and the northbound lane of US-301.

**Soils**

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 1 soil map unit within the study area. The soil map unit within the study area is presented in Table 11.

**TABLE 11. SOIL MAP UNITS**  
**SITE 160294UT**

| Map Unit Name      | Map Unit Symbol | Slope (%) | Hydric |
|--------------------|-----------------|-----------|--------|
| Marr-Dodon complex | MnB             | 2-5       | No     |

**Floodplain**

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24003C0212E (Dated 10/16/12) indicates that the study area is not located within the 100-year floodplain.

**Wetlands and Streams**

The results of the field investigation conducted on November 8, 2017 identified no wetlands or waters of the U.S. within the study area. The study area is a maintained lawn dominated by river birch (*Betula nigra*, FACW), white clover (*Trifolium repens*, FACU), and narrowleaf plantain (*Plantago lanceolata*, FACU). The edge of the field is predominately white pine, Bradford pear, multiflora rose (*Rosa multiflora*, FACU), oriental bittersweet (*Celastrus orbiculatus*, FACU),



## Applying Practical Science to Improve Communities

---

and trumpet creeper (*Campsis radicans*, FAC). Representative photographs of the study area are included in Attachment 2.

### Site No. 160277UT

#### Location

Site Number 160277UT is a 1.08 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study area consisted primarily of a maintained grass areas with a wooded border along the southwest side. The site is located off of the right shoulder of MD-193 southbound.

#### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 3 soil map units within the study area. All soil map units within the study area are presented in Table 12.

| TABLE 12. SOIL MAP UNITS<br>SITE 160277UT     |                 |           |  |
|---|-----------------|-----------|--|
| Map Unit Name                                 | Map Unit Symbol | Slope (%) | Hydric   |
| Adelphia-Holmdel-Urban land complex           | AeB             | 0-5       | No   |
| Collington-Wist-Urban land complex            | CoD             | 5-15      | No   |
| Widewater and Issue soils, frequently flooded | WE              | 0-2       | 10% hydric inclusions of Zekiah, 5% of Longmarsh, and 5% of Shrewsbury |

#### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0170E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

#### Wetlands and Streams

The results of the field investigations conducted on November 9, 2017 identified one ephemeral stream (WL001) and one intermittent stream (WL002) (see Table 13 and Attachment 1). No wetlands were observed within the study area. The maintained lawn areas were dominated by broadleaf plantain (*Plantago major*, FAC), ground ivy (*Glechoma hederacea*, FACU), and mock strawberry (*Potentilla indica*, FACU). The wooded border area was dominated by red maple (*Acer rubrum*, FAC), American hornbeam (*Carpinus caroliniana*, FAC), sweetgum, Japanese honeysuckle (*Lonicera japonica*, FACU), and greenbrier (*Smilax rotundifolia*, FAC). Representative data sheets and photographs of the streams are included in Attachment 2.



*Applying Practical Science to Improve Communities*

---

**TABLE 13.  
WETLAND/WATERS SUMMARY TABLE  
SITE 160277UT**

| Stream Name | USFWS Stream Classification                              | Size within Study Area | Stream Use Designation/ Closure Date | Sheet Number |
|-------------|--|------------------------|--------------------------------------|--------------|
| WL001       | Ephemeral  | 93 LF                  | Use I/ March 1 through June 15       | 9            |
| WL002       | Riverine, Intermittent, Streambed, Cobble-Gravel (R4SB3) | 80 LF                  | Use I/ March 1 through June 15       | 9            |

#### **Site No. 160275UT**

##### Location

Site Number 160275UT is a 0.58 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study areas consisted primarily of a maintained grass areas with a wooded border along the southwest side. The site is located off of the right shoulder of the southbound lane of MD-193.

##### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 1 soil map unit within the study area. The soil map unit within the study area is presented in Table 14.

**TABLE 14. SOIL MAP UNITS  
SITE 160275UT**

| Map Unit Name                       | Map Unit Symbol | Slope (%) | Hydric |
|-------------------------------------|-----------------|-----------|--------|
| Adelphia-Holmdel-Urban land complex | AeB             | 0-5       | No     |

##### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0170E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.



## Applying Practical Science to Improve Communities

---

### Wetlands and Streams

The results of the field investigations conducted on November 9, 2017 identified one intermittent stream (WL001) and one perennial stream (WL002) (see Table 15 and Attachment 1). No wetlands were observed within the study area. The maintained grass area was dominated by broadleaf plantain, ground ivy, and mock strawberry. The wooded border area was dominated by tulip poplar (*Liriodendron tulipifera*, FACU), paw paw (*Asimina triloba*, FAC), sweetgum, and Japanese stiltgrass (*Microstegium vimineum*, FAC). Representative data sheets and photographs of the streams and study area are included in Attachment 2.

| TABLE 15.<br>WETLAND/WATERS SUMMARY TABLE<br>SITE 160275UT |   |                        |                                      |              |
|--|---|------------------------|--------------------------------------|--------------|
| Stream Name  | USFWS Stream Classification   | Size within Study Area | Stream Use Designation/ Closure Date | Sheet Number |
| WL001  | Riverine, Intermittent, Streambed, Sand (R4SB4)                         | 26 LF                  | Use I/ March 1 through June 15       | 10           |
| WL002  | Riverine, Upper Perennial, Unconsolidated Bottom, Cobble-Gravel (R3UB1) | 134 LF                 | Use I/ March 1 through June 15       | 10           |

### Site No. 160288UT

#### Location

Site Number 160288UT is a 1.17 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study areas consisted primarily of a field with old vegetation and is located off of the right shoulder of the northbound lane of US-301.

#### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 3 soil map units within the study area. All soil map units within the study area are presented in Table 16.



## Applying Practical Science to Improve Communities

**TABLE 16. SOIL MAP UNITS  
SITE 160288UT**

| Map Unit Name        | Map Unit Symbol | Slope (%) | Hydric                                  |
|----------------------|-----------------|-----------|---|
| Aquasco silt loam    | ApA             | 0-2       | No                                      |
| Beltsville silt loam | BaB             | 2-5       | 5% hydric inclusions of Lenni-undrained |
| Ingleside sandy loam | InA             | 0-2       | No                                      |

### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0355E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

### Wetlands and Streams

The results of the field investigations conducted on November 8, 2017 identified no wetlands or waters of the U.S. within the study area. Photographs of the study area are included in Attachment 2. The field was dominated by sweetgum saplings, barnyard grass, foxtail grass, dogbane, and Canada thistle (*Cirsium arvense*, FACU).

### Site No. 160287UT

#### Location

Site Number 160287UT is a 3.83 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study area consisted primarily of an old field vegetation with wooded sections bordering the study area, which is located on the right shoulder of the northbound lane of US-301.

#### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 2 soil map units within the study area. All soil map units within the study area are presented in Table 17.

**TABLE 17. SOIL MAP UNITS  
SITE 160287UT**

| Map Unit Name              | Map Unit Symbol | Slope (%) | Hydric |
|----------------------------|-----------------|-----------|--------|
| Ingleside sandy loam       | InA             | 0-2       | No     |
| Lenni and Quindocqua soils | LQA             | 0-2       | Yes    |





## Applying Practical Science to Improve Communities

---

### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0355E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

### Wetlands and Streams

The results of the field investigations conducted on November 8, 2017 identified one palustrine forested wetland (WP001) and one palustrine emergent wetland (WP002) (see Table 18 and Attachment 1). No waters of the U.S. were located within the study area. Representative data sheets and photographs of the wetland systems and study area are included in Attachment 2. WP001 was dominated by red maple, sweetgum, pin oak (*Quercus palustris*, FACW), and willow oak saplings (*Quercus phellos*, FACW), highbush blueberry (*Vaccinium corymbosum*, FACW), soft rush, and wood reedgrass (*Cinna arundinacea*, FACW). WP002 was dominated by barnyard grass, rushes, and sweetgum. The old field area consisted of sweetgum saplings, dogbane, and Japanese stiltgrass. There were no hydric soil or hydrology indicators observed within the old field areas. Non-tidal forested wetlands were observed within the adjacent woodlands surrounding the study area.

| TABLE 18.<br>WETLAND/WATERS SUMMARY TABLE<br>SITE 160287UT |  |                        |                                      |              |
|--|--|------------------------|--------------------------------------|--------------|
| Stream Name  | USFWS Stream Classification  | Size within Study Area | Stream Use Designation/ Closure Date | Sheet Number |
| WP001  | Palustrine Forested, Broad-leaved Deciduous, Temporarily Flooded (PFO1A) | 0.02 Ac                | NA                                   | 12           |
| WP002  | Palustrine, Emergent, Persistent, Temporarily Flooded (PEM1A)            | 0.03 Ac                | NA                                   | 12           |

### Site No. 160280UT

#### Location

Site Number 160280UT is a 0.37 acre site located in the Northern Coastal Plain region which includes MLRA 149A of LRR S. The study areas consisted primarily of an old field and scrub-shrub vegetation.

#### Soils

The USDA-NRCS soil survey map for Prince George's County (Figure 2) identifies 3 soil map units within the study area. All soil map units within the study area are presented in Table 19.



Applying Practical Science to Improve Communities

| TABLE 19. SOIL MAP UNITS<br>SITE 160280UT |                 |           |   |
|---|-----------------|-----------|---|
| Map Unit Name                             | Map Unit Symbol | Slope (%) | Hydric                                  |
| Beltsville silt loam                      | BaA             | 0-2       | No                                      |
| Beltsville silt loam                      | BaB             | 2-5       | 5% hydric inclusions of Lenni-undrained |
| Urdothents, Highway                       | UdaF            | 0-65      | No                                      |

#### Floodplain

A review of the FEMA flood insurance data (Flood Insurance Rate Map) [FIRM] No. 24033C0320E (Dated 9/16/16) indicates that the study area is not located within the 100-year floodplain.

#### Wetlands and Streams

The results of the field investigations conducted on November 8, 2017 identified no wetlands or waters of the U.S. within the study area. The study area was dominated by black locust (*Robinia pseudoacacia*, UPL), American holly (*Ilex opaca*, FAC), Chinese bush clover, Japanese honeysuckle, and multiflora rose. Photographs of the study area are included in Attachment 2.

The US Army Corps of Engineers and Maryland Department of the Environment have not verified the limits or jurisdictional status of the features identified during this delineation. Disturbance to jurisdictional features will require consultation with the regulatory agencies.

Best Regards,

William Twupack  
Project Manager

#### Attachments:

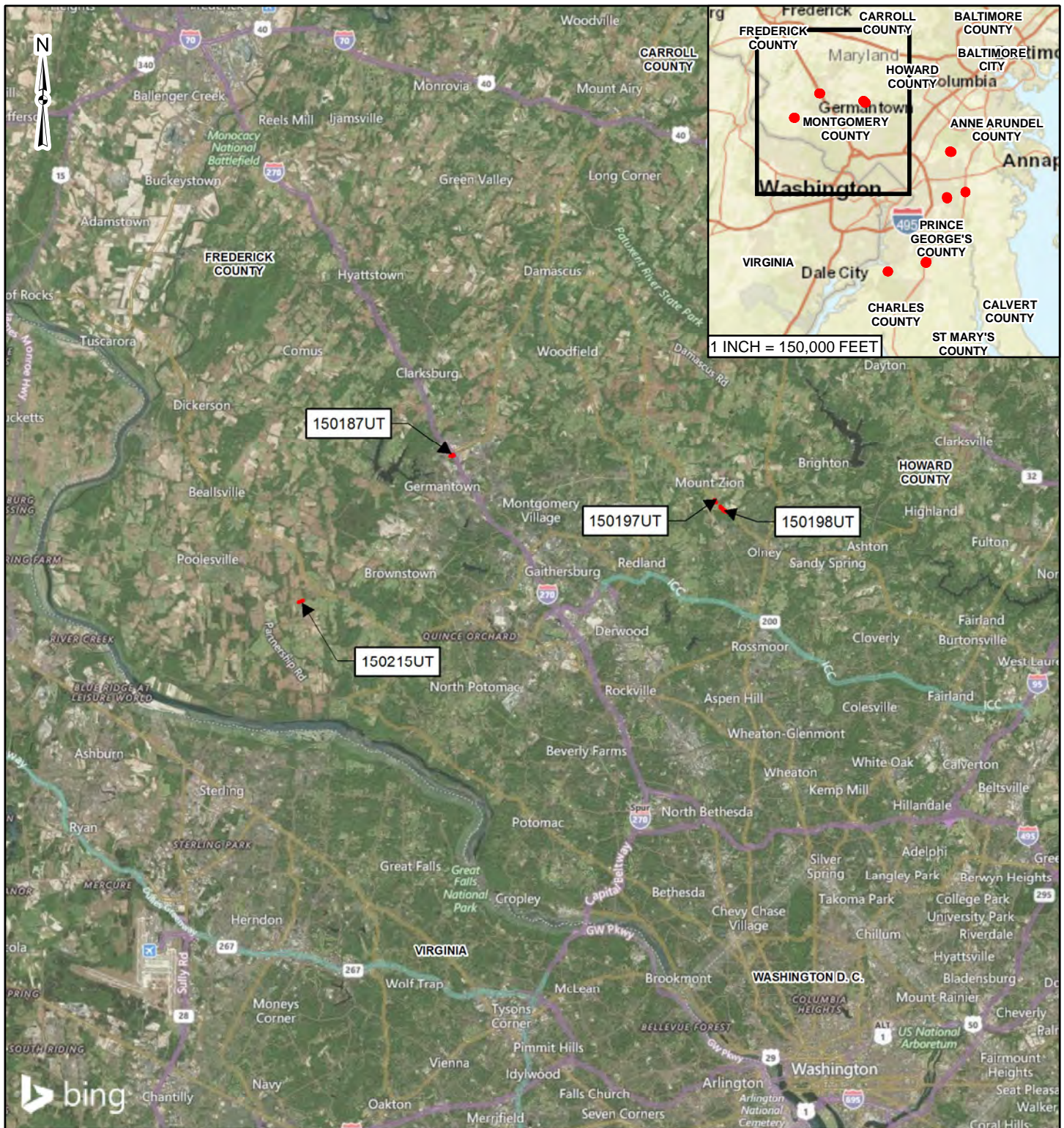
Figure 1: Site Vicinity Map

Figure 2: Natural Resources Map

Attachment 1: Wetland and Stream Location Maps

Attachment 2: Datasheets and Photographs





#### LEGEND

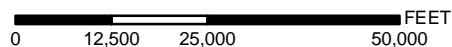
- STUDY AREA
- COUNTY BOUNDARY



42 N. MAIN ST.  
BEL AIR, MD 21014



SCALE: 1 INCH = 25,000 FEET



#### D-3 TMDL TREE PLANTING SITES FIGURE 1: SITE VICINITY MAP

MONTGOMERY COUNTY, MARYLAND

SHEET # 1 OF 2

DATE: NOVEMBER 2017

DATA SOURCES:  
BING HYBRID BASEMAP, MD DEPARTMENT OF  
NATURAL RESOURCES GIS DATA





#### LEGEND

- STUDY AREA
- COUNTY BOUNDARY



42 N. MAIN ST.  
BEL AIR, MD 21014



#### D-3 TMDL TREE PLANTING SITES FIGURE 1: SITE VICINITY MAP

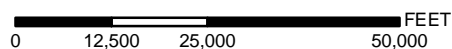
PRINCE GEORGE'S COUNTY, MARYLAND

SHEET # 2 OF 2

DATE: NOVEMBER 2017

DATA SOURCES:  
BING HYBRID BASEMAP, MD DEPARTMENT OF  
NATURAL RESOURCES GIS DATA

SCALE: 1 INCH = 25,000 FEET







#### LEGEND

- STUDY AREA
- NATURAL RESOURCES MAP
- COUNTY BOUNDARY



42 N. MAIN ST.  
BEL AIR, MD 21014



SCALE: 1 INCH = 30,000 FEET

0 15,000 30,000 60,000 FEET

#### D-3 TMDL TREE PLANTING SITES FIGURE 2: NATURAL RESOURCES MAP

MONTGOMERY AND PRINCE GEORGE'S  
COUNTIES, MARYLAND

INDEX SHEET # 1 OF 1

DATE: NOVEMBER 2017

DATA SOURCES:  
BING HYBRID BASEMAP, MD DEPARTMENT  
OF NATURAL RESOURCES GIS DATA

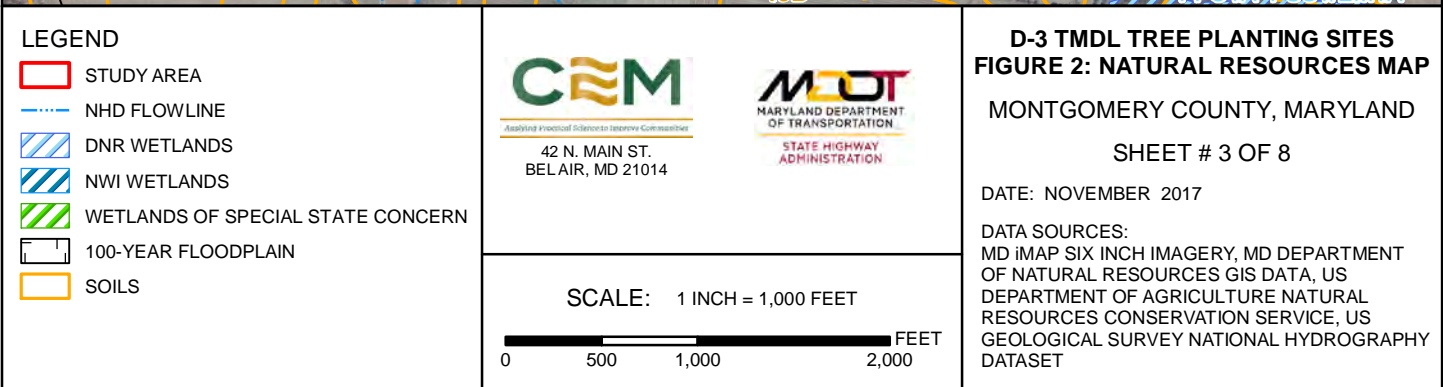






DATA SOURCES:  
MD iMAP SIX INCH IMAGERY, MD DEPARTMENT  
OF NATURAL RESOURCES GIS DATA, US  
DEPARTMENT OF AGRICULTURE NATURAL  
RESOURCES CONSERVATION SERVICE, US  
GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY  
DATASET









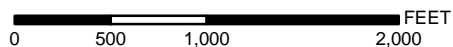
#### LEGEND

- STUDY AREA
- NHD FLOWLINE
- DNR WETLANDS
- NWI WETLANDS
- WETLANDS OF SPECIAL STATE CONCERN
- 100-YEAR FLOODPLAIN
- SOILS

  
 42 N. MAIN ST.  
 BEL AIR, MD 21014

  
 MARYLAND DEPARTMENT  
 OF TRANSPORTATION  
 STATE HIGHWAY  
 ADMINISTRATION

SCALE: 1 INCH = 1,000 FEET



#### D-3 TMDL TREE PLANTING SITES FIGURE 2: NATURAL RESOURCES MAP

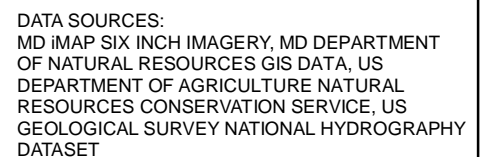
PRINCE GEORGE'S COUNTY, MARYLAND

SHEET # 4 OF 8

DATE: NOVEMBER 2017

DATA SOURCES:  
 MD IMAP SIX INCH IMAGERY, MD DEPARTMENT  
 OF NATURAL RESOURCES GIS DATA, US  
 DEPARTMENT OF AGRICULTURE NATURAL  
 RESOURCES CONSERVATION SERVICE, US  
 GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY  
 DATASET







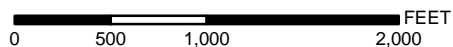


#### LEGEND

- STUDY AREA
- NHD FLOWLINE
- DNR WETLANDS
- NWI WETLANDS
- WETLANDS OF SPECIAL STATE CONCERN
- 100-YEAR FLOODPLAIN
- SOILS



SCALE: 1 INCH = 1,000 FEET



#### D-3 TMDL TREE PLANTING SITES FIGURE 2: NATURAL RESOURCES MAP

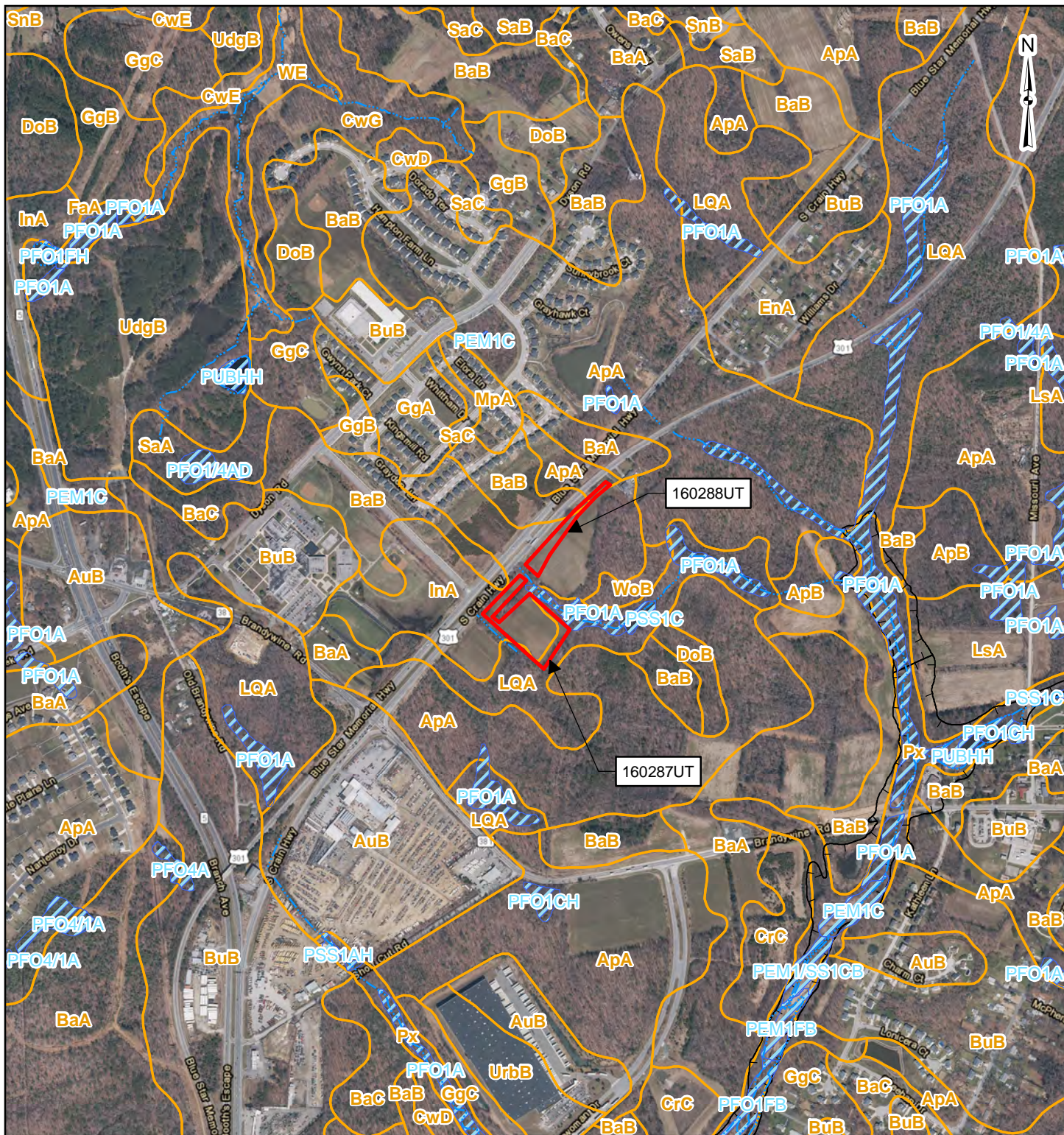
PRINCE GEORGE'S COUNTY, MARYLAND

SHEET # 6 OF 8

DATE: NOVEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA, US DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE, US GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET



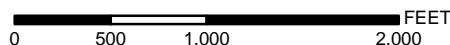


#### LEGEND

- STUDY AREA
- NHD FLOWLINE
- DNR WETLANDS
- NWI WETLANDS
- WETLANDS OF SPECIAL STATE CONCERN
- 100-YEAR FLOODPLAIN
- SOILS



SCALE: 1 INCH = 1,000 FEET



#### D-3 TMDL TREE PLANTING SITES FIGURE 2: NATURAL RESOURCES MAP

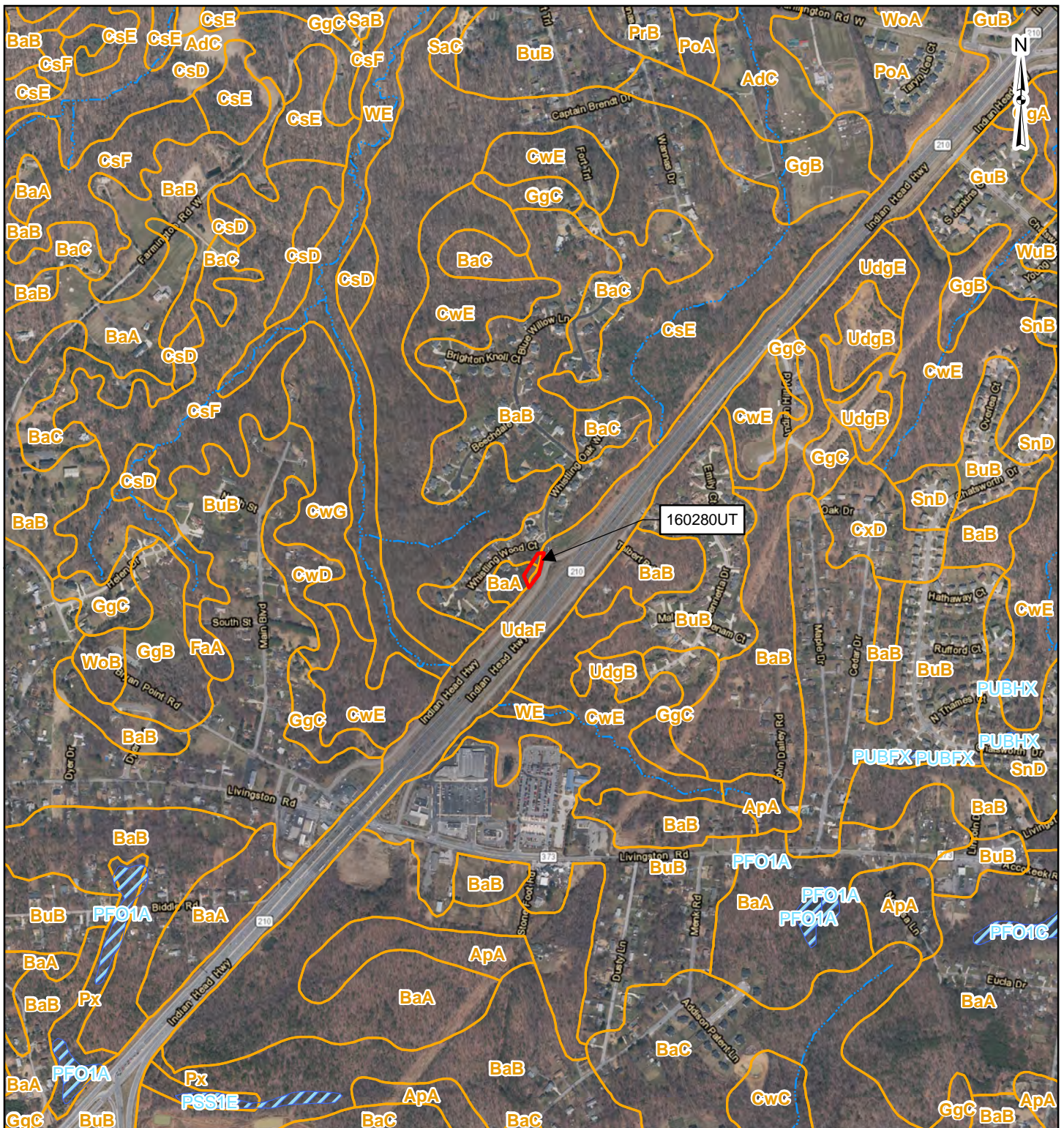
PRINCE GEORGE'S COUNTY, MARYLAND

SHEET # 7 OF 8

DATE: NOVEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT  
OF NATURAL RESOURCES GIS DATA, US  
DEPARTMENT OF AGRICULTURE NATURAL  
RESOURCES CONSERVATION SERVICE, US  
GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY  
DATASET



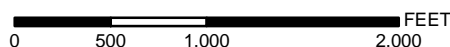


#### LEGEND

- STUDY AREA
- NHD FLOWLINE
- DNR WETLANDS
- NWI WETLANDS
- WETLANDS OF SPECIAL STATE CONCERN
- 100-YEAR FLOODPLAIN
- SOILS



SCALE: 1 INCH = 1,000 FEET



#### D-3 TMDL TREE PLANTING SITES FIGURE 2: NATURAL RESOURCES MAP

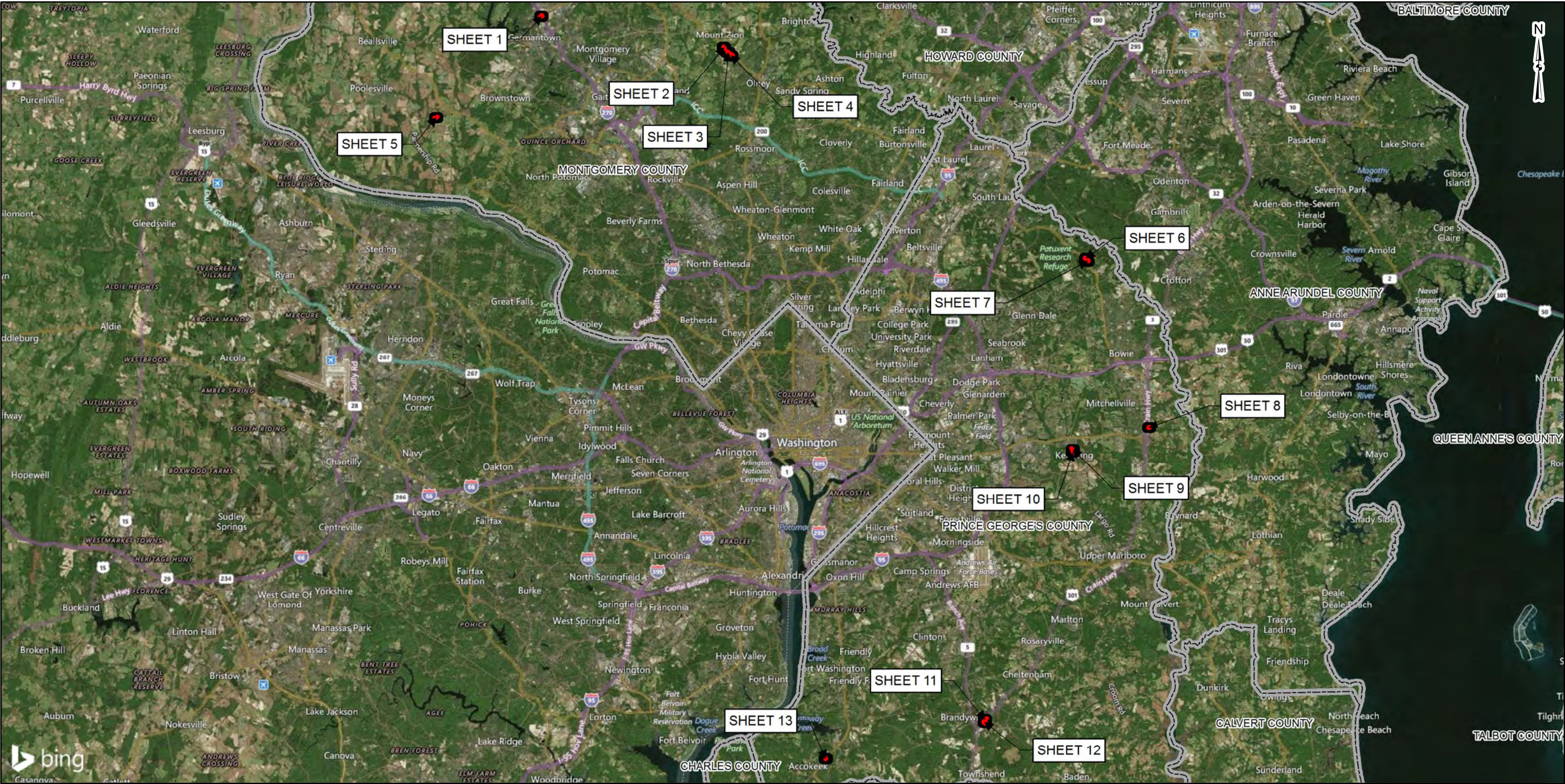
PRINCE GEORGE'S COUNTY, MARYLAND

SHEET # 8 OF 8

DATE: NOVEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT  
OF NATURAL RESOURCES GIS DATA, US  
DEPARTMENT OF AGRICULTURE NATURAL  
RESOURCES CONSERVATION SERVICE, US  
GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY  
DATASET





LEGEND

STUDY AREA

FIELD DELINEATED WETLANDS

FIELD DELINEATED STREAMS

DNR STREAMS

C&EM

42 N. MAIN ST.

BEL AIR, MD 21014

MDOT

MARYLAND DEPARTMENT OF TRANSPORTATION

STATE HIGHWAY ADMINISTRATION

D-3 TMDL TREE PLANTING SITES

ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

INDEX SHEET # 1 OF 1

DATE: NOVEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA

SCALE: 1 INCH = 25,000 FEET

0

12,500

25,000

50,000

FEET



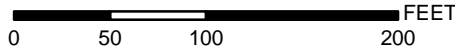


LEGEND

- |  |                               |  |                      |
|--|-------------------------------|--|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

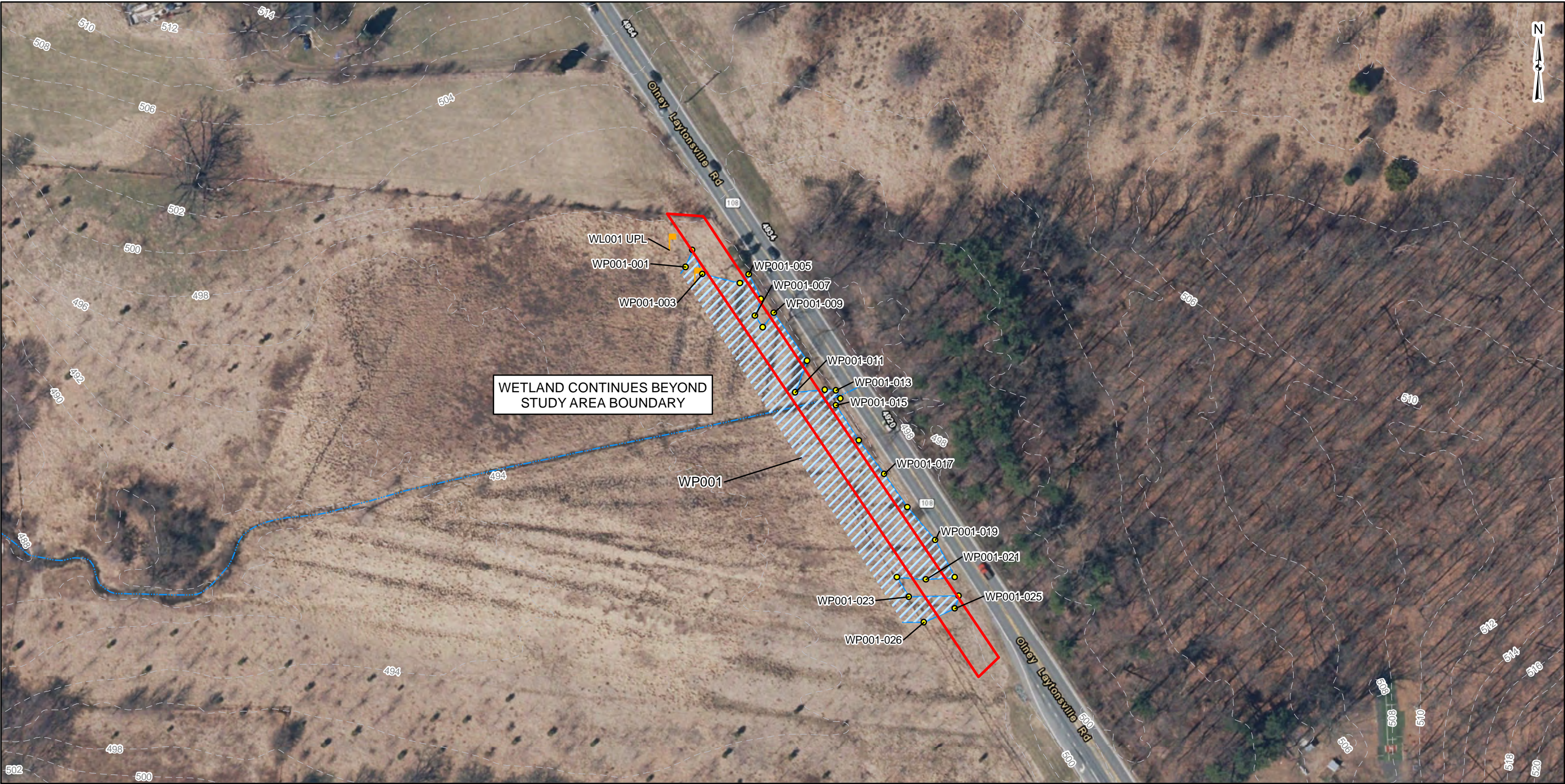
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 1 OF 13  
SITE 150187UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 2 OF 13  
SITE 150197UT

DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





NO STREAMS OR WETLANDS ON THIS SHEET

- LEGEND**
- |  |                               |  |                      |
|--|-------------------------------|--|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |

**CEM**  
Assessing Environmental Scenarios to Improve Communities  
42 N. MAIN ST.  
BEL AIR, MD 21014

**MDOT**  
MARYLAND DEPARTMENT  
OF TRANSPORTATION  
STATE HIGHWAY  
ADMINISTRATION

SCALE: 1 INCH = 100 FEET  
  
0 50 100 200 FEET

**D-3 TMDL TREE PLANTING SITES**  
**ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP**  
**MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD**

SHEET # 3 OF 13  
SITE 150198UT

DATE: DECEMBER 2017









DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





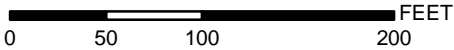
NO STREAMS OR WETLANDS ON THIS SHEET

LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

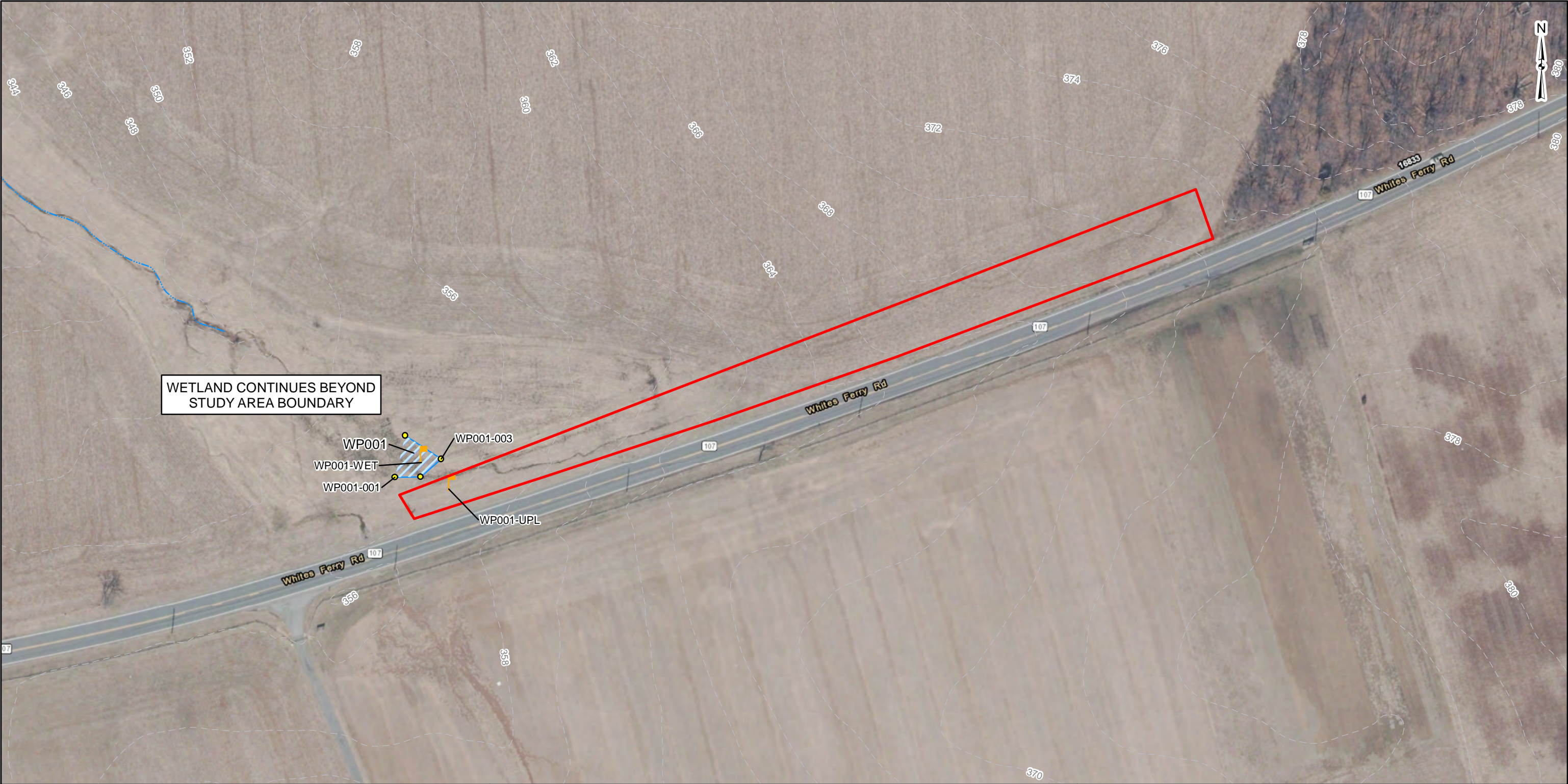
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 4 OF 13  
SITE 150198UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



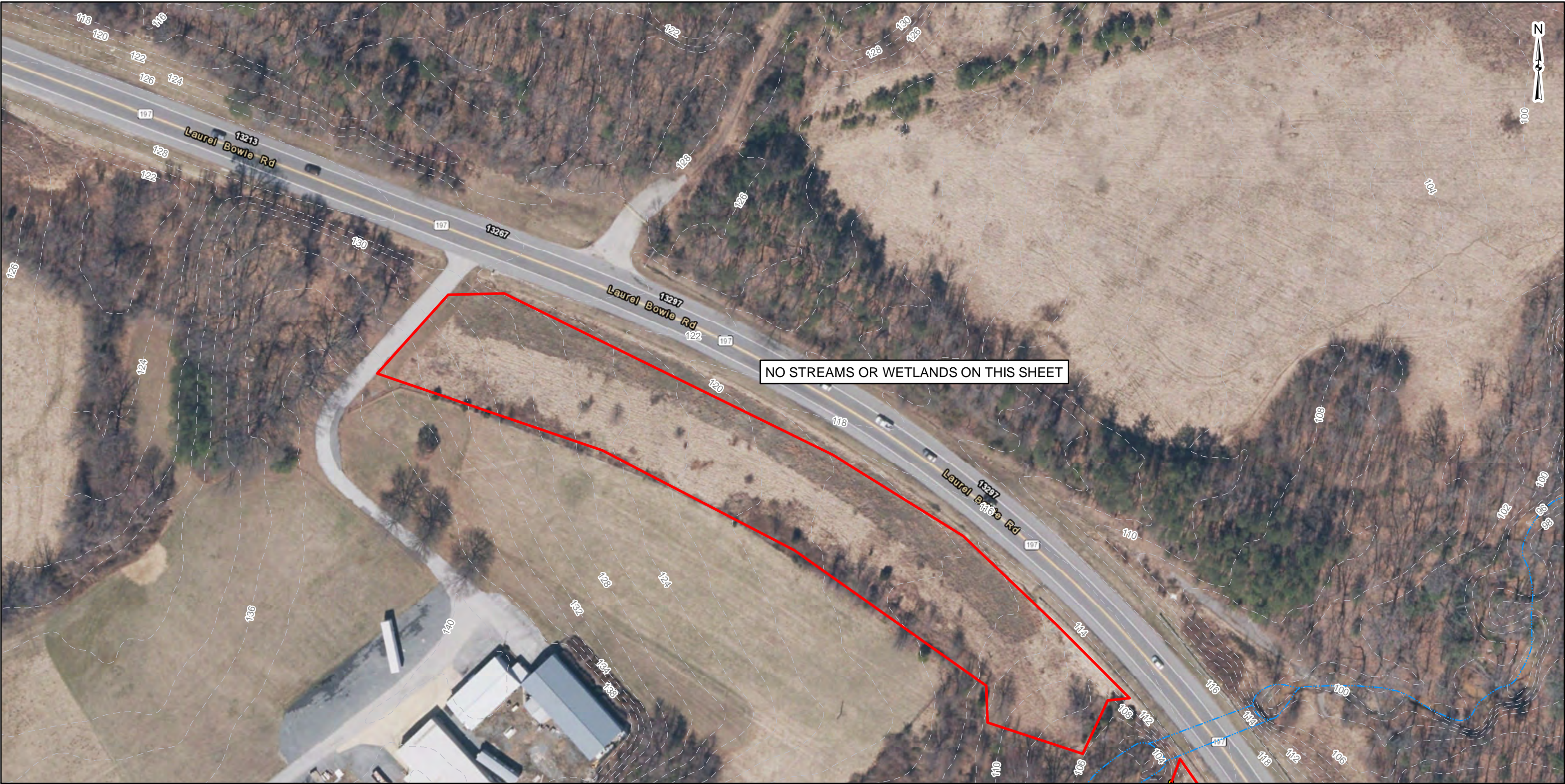
**D-3 TMDL TREE PLANTING SITES**  
**ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP**  
**MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD**

SHEET # 5 OF 13  
SITE 150215UT

DATE: DECEMBER 2017

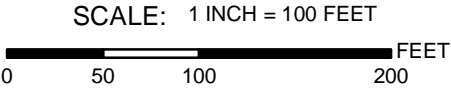
DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





LEGEND

- STUDY AREA
- FIELD DELINEATED PEM WETLANDS
- FIELD DELINEATED PFO WETLANDS
- FIELD DELINEATED STREAMS
- DNR STREAMS
- DATA POINT LOCATION
- WETLAND/STREAM FLAGS
- 100-YEAR FLOODPLAIN



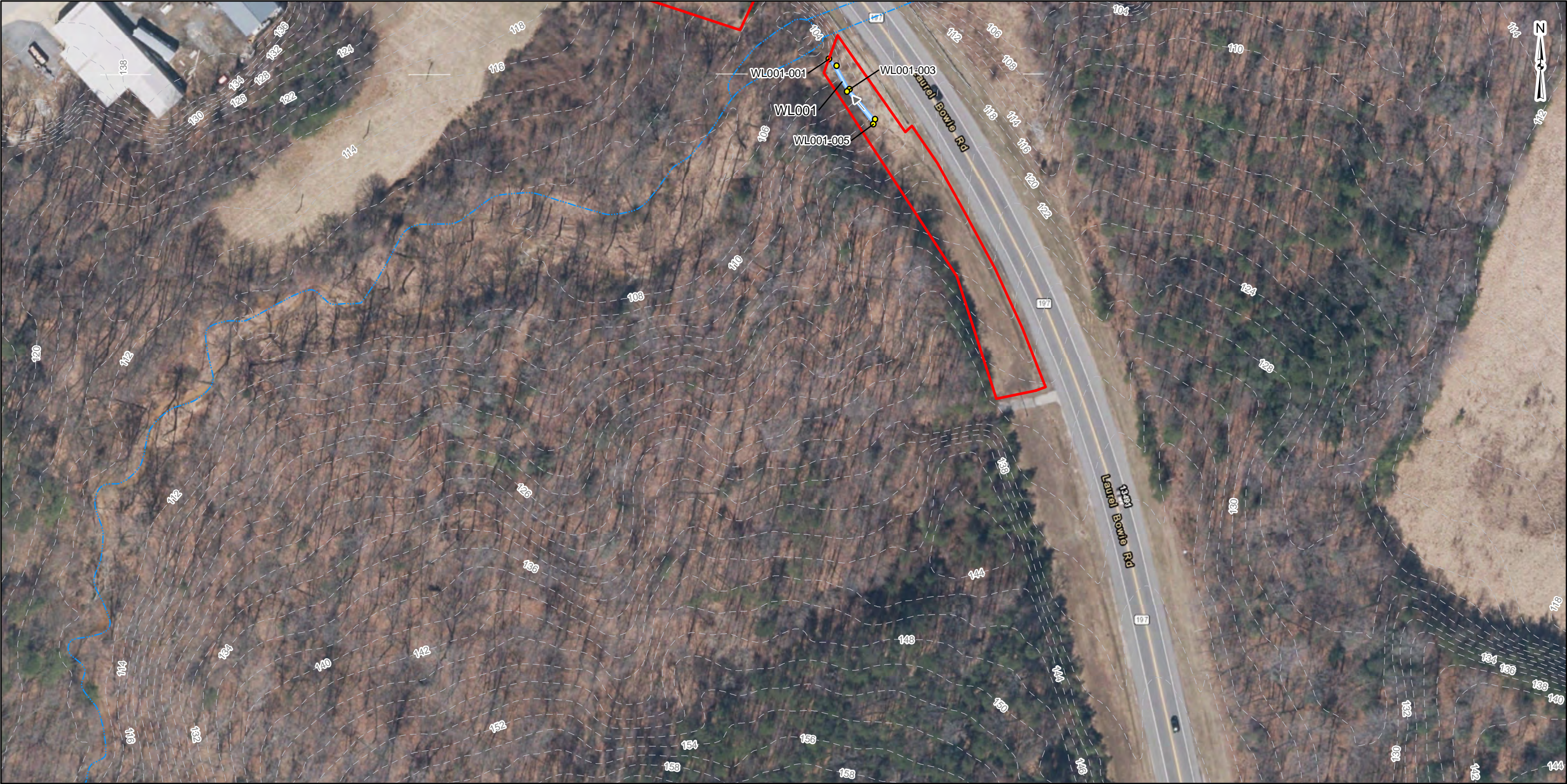
D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP  
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 6 OF 13  
SITE 160317UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA



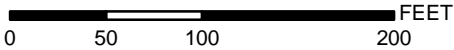


LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 7 OF 13  
SITE 160311UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA



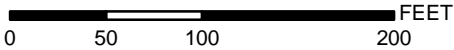


LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



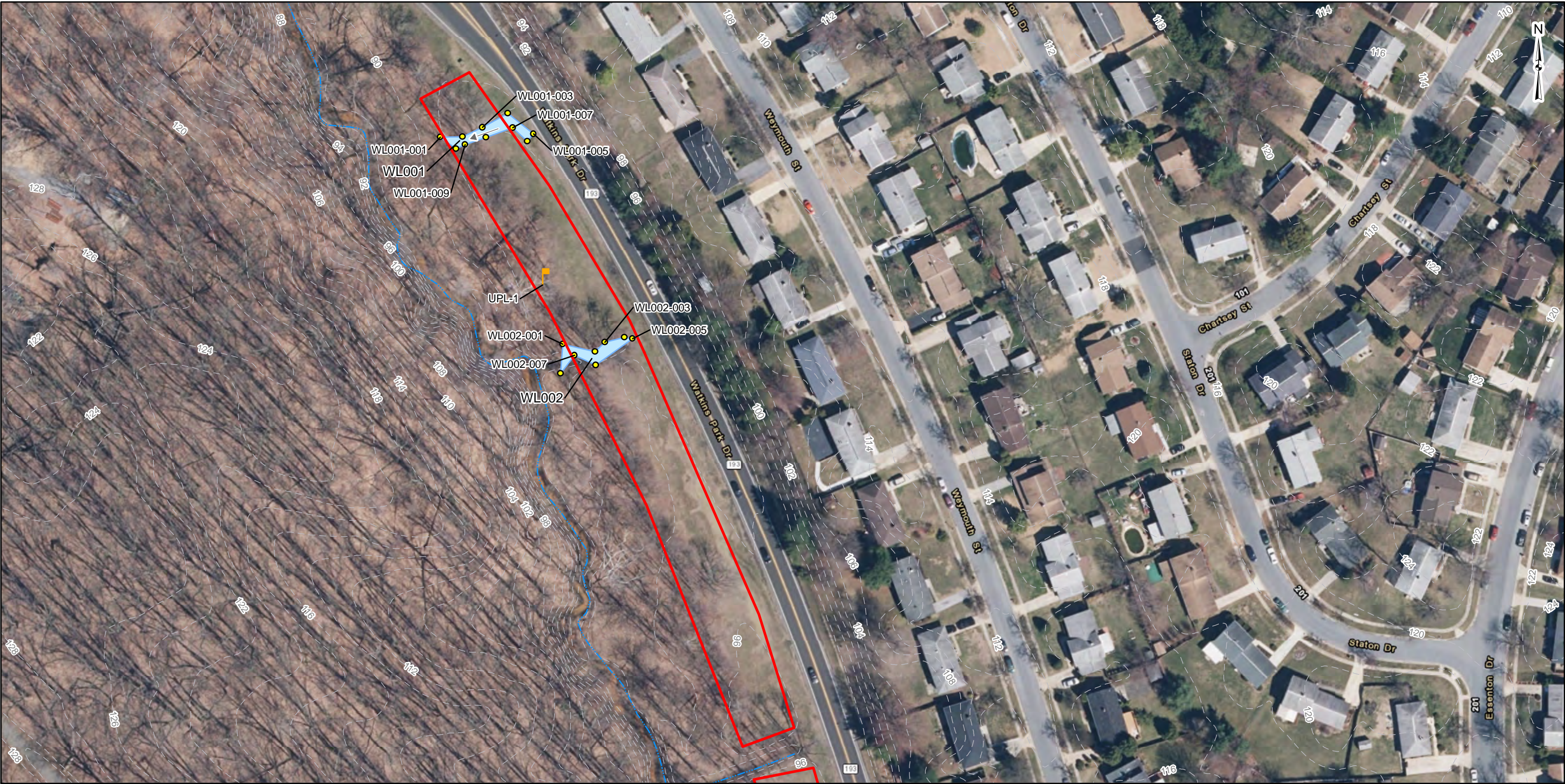
D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP  
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 8 OF 13  
SITE 160294UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA



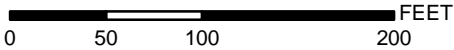


LEGEND

- |   |                               |   |                      |
|---|-------------------------------|---|----------------------|
|  | STUDY AREA                    |  | DNR STREAMS          |
|  | FIELD DELINEATED PEM WETLANDS |  | DATA POINT LOCATION  |
|  | FIELD DELINEATED PFO WETLANDS |  | WETLAND/STREAM FLAGS |
|  | FIELD DELINEATED STREAMS      |  | 100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP

MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 9 OF 13  
SITE 160277UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA



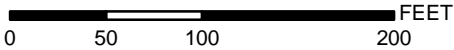


LEGEND

- |   |  |
|---|--|
|  STUDY AREA                    |  DNR STREAMS          |
|  FIELD DELINEATED PEM WETLANDS |  DATA POINT LOCATION  |
|  FIELD DELINEATED PFO WETLANDS |  WETLAND/STREAM FLAGS |
|  FIELD DELINEATED STREAMS      |  100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP  
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 10 OF 13  
SITE 160275UT

DATE: DECEMBER 2017

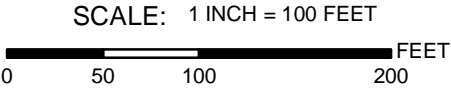
DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





LEGEND

- STUDY AREA
- FIELD DELINEATED PEM WETLANDS
- FIELD DELINEATED PFO WETLANDS
- FIELD DELINEATED STREAMS
- DNR STREAMS
- DATA POINT LOCATION
- WETLAND/STREAM FLAGS
- 100-YEAR FLOODPLAIN



D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP  
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD

SHEET # 11 OF 13  
SITE 160288UT









DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA



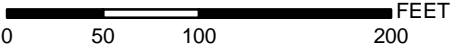


LEGEND

- |   |  |
|---|--|
|  STUDY AREA                    |  DNR STREAMS          |
|  FIELD DELINEATED PEM WETLANDS |  DATA POINT LOCATION  |
|  FIELD DELINEATED PFO WETLANDS |  WETLAND/STREAM FLAGS |
|  FIELD DELINEATED STREAMS      |  100-YEAR FLOODPLAIN  |



SCALE: 1 INCH = 100 FEET



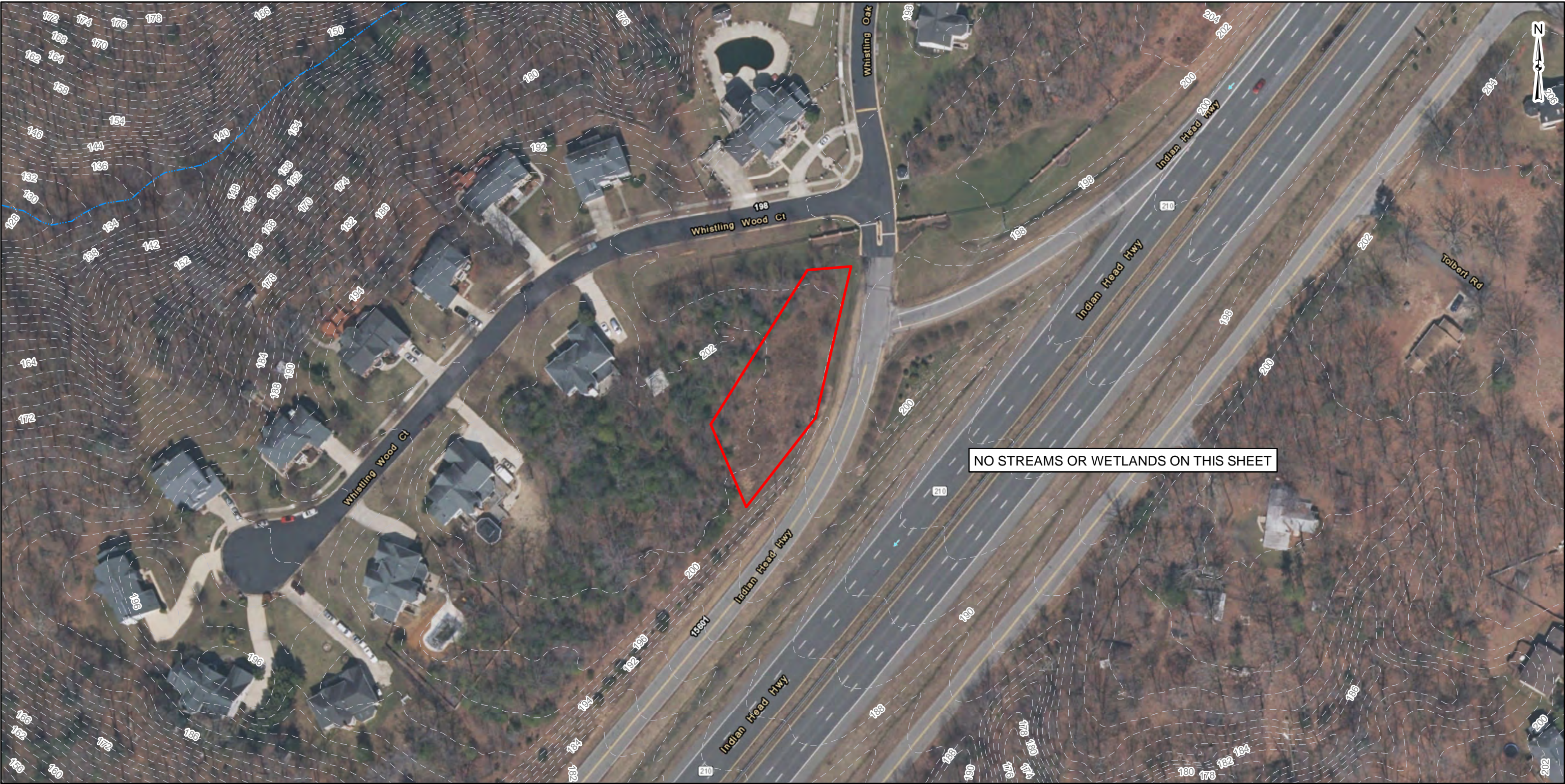
**D-3 TMDL TREE PLANTING SITES**  
**ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP**  
**MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD**

SHEET # 12 OF 13  
SITE 160287UT

DATE: DECEMBER 2017

DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA





LEGEND

- STUDY AREA

FIELD DELINEATED PEM WETLANDS

FIELD DELINEATED PFO WETLANDS

FIELD DELINEATED STREAMS

DNR STREAMS

DATA POINT LOCATION

WETLAND/STREAM FLAGS

100-YEAR FLOODPLAIN
- 
- 
- D-3 TMDL TREE PLANTING SITES  
ATTACHMENT 1: WETLAND AND STREAM LOCATION MAP  
MONTGOMERY AND PRINCE GEORGE'S COUNTIES, MD
- SHEET # 13 OF 13  
SITE 160280UT
- DATE: DECEMBER 2017
- DATA SOURCES:  
MD IMAP SIX INCH IMAGERY, MD DEPARTMENT OF NATURAL RESOURCES GIS DATA
- SCALE: 1 INCH = 100 FEET



## Stream Datasheet

Project: TMDL Site No. 150187UT  
Stream ID: WL001  
Stream Name: Unnamed tributary to Little Seneca Creek

Date: 11/7/17  
Investigators: WT, NC

Use (I-IV): IV-P

Rapanos Class: ☐ TNW

☒ RPW

☐ NRPW

Flow: ☐ Perennial

☒ Intermittent

☐ Ephemeral

If ephemeral, provide justification for flagging: \_\_\_\_\_

Direction of flow: West

Gradient (%): 2-5

Connection to TNW: WL001 is an unnamed tributary to Little Seneca Creek, which flows into Little Seneca Creek, which flows into Seneca Creek, which flows into the Potomac River, which is a TNW.

Avg. Width (Top of Bank): 6'

Avg. Depth (Top of Bank): 6'

Avg. Water Depth: 3"

Avg. Slope of Banks (°): LB 45 RB 45

Has stream been altered? If so, how: Rip rap in channel.

Common Substrate:

☐ Bedrock

☒ Cobble/Gravel

☐ Concrete

☐ Sand

☐ Silt

☒ Other: Rip rap

Habitat Complexity:

☐ Riffles/pools

☐ Undercut Banks

☐ Tree Roots

☐ Woody Debris

Bank Erosion:

☐ Severe

☐ Moderate

☒ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☒ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☐ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

LB: ☐ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

Flags:

WL001-001 to WL001-014

Additional Notes:

Take upstream and downstream photos.





WL001 Downstream, facing west



WL001 Upstream, facing east





Western portion of study area, facing east



Rip rap swale in the eastern portion of the study area, facing east

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: TMDL Site No. 150197UT City/County: Montgomery County Sampling Date: 11/7/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP001-WET  
 Investigator(s): WT, NC Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 148 Lat: 39.175401 Long: -77.099397 Datum: NAD83  
 Soil Map Unit Name: Baile silt loam, 0 to 3 percent slopes (6A) NWI classification: PEM1A

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 <input checked="" type="checkbox"/> | No <input type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |
| Hydric Soil Present?                         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                       |   |                             |
| Wetland Hydrology Present?                   | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/> |                                       |   |                             |
| Remarks:<br>WP001 is located west of MD-108. |   |                             |                                       |   |                             |

## HYDROLOGY

|  |  |  |
|--|--|--|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2"</u><br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   |  |  |
| Remarks:<br>WP001 receives hydrology from runoff from MD-108.<br><br>Flags: WP001-001 to WP001-026   |  |  |



**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP001-WET

| Tree Stratum (Plot size: <u>30 ft</u> )                       | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status |  |
|---|---------------------|----------------------|---------------------|--|
| 1. _____  | _____               | _____                | _____               |  |
| 2. _____  | _____               | _____                | _____               |  |
| 3. _____  | _____               | _____                | _____               |  |
| 4. _____  | _____               | _____                | _____               |  |
| 5. _____  | _____               | _____                | _____               |  |
| 6. _____  | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover  |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____           |                     |                      |                     |  |
| Sapling Stratum (Plot size: <u>30 ft</u> )                    |                     |                      |                     |  |
| 1. _____  | _____               | _____                | _____               |  |
| 2. _____  | _____               | _____                | _____               |  |
| 3. _____  | _____               | _____                | _____               |  |
| 4. _____  | _____               | _____                | _____               |  |
| 5. _____  | _____               | _____                | _____               |  |
| 6. _____  | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover  |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____           |                     |                      |                     |  |
| Shrub Stratum (Plot size: <u>30 ft</u> )                      |                     |                      |                     |  |
| 1. _____  | _____               | _____                | _____               |  |
| 2. _____  | _____               | _____                | _____               |  |
| 3. _____  | _____               | _____                | _____               |  |
| 4. _____  | _____               | _____                | _____               |  |
| 5. _____  | _____               | _____                | _____               |  |
| 6. _____  | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover  |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____           |                     |                      |                     |  |
| Herb Stratum (Plot size: <u>30 ft</u> )                       |                     |                      |                     |  |
| 1. <u>Typha angustifolia</u>                                  | <u>40</u>           | <u>Yes</u>           | <u>OBL</u>          |  |
| 2. <u>Juncus effusus</u>                                      | <u>20</u>           | <u>Yes</u>           | <u>FACW</u>         |  |
| 3. <u>Persicaria sagittata</u>                                | <u>15</u>           | <u>No</u>            | <u>OBL</u>          |  |
| 4. <u>Cephalanthus occidentalis</u>                           | <u>5</u>            | <u>No</u>            | <u>OBL</u>          |  |
| 5. _____  | _____               | _____                | _____               |  |
| 6. _____  | _____               | _____                | _____               |  |
| 7. _____  | _____               | _____                | _____               |  |
| 8. _____  | _____               | _____                | _____               |  |
| 9. _____  | _____               | _____                | _____               |  |
| 10. _____   | _____               | _____                | _____               |  |
| 11. _____   | _____               | _____                | _____               |  |
| <u>80</u> = Total Cover                                       |                     |                      |                     |  |
| 50% of total cover: <u>40</u> 20% of total cover: <u>16</u>   |                     |                      |                     |  |
| Woody Vine Stratum (Plot size: <u>30 ft</u> )                 |                     |                      |                     |  |
| 1. _____  | _____               | _____                | _____               |  |
| 2. _____  | _____               | _____                | _____               |  |
| 3. _____  | _____               | _____                | _____               |  |
| 4. _____  | _____               | _____                | _____               |  |
| 5. _____  | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover  |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____           |                     |                      |                     |  |
| Remarks: (Include photo numbers here or on a separate sheet.) |                     |                      |                     |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)  
 Total Number of Dominant Species Across All Strata: 2 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  

| Total % Cover of:        | Multiply by: |
|--------------------------|--------------|
| OBL species _____        | x 1 = _____  |
| FACW species _____       | x 2 = _____  |
| FAC species _____        | x 3 = _____  |
| FACU species _____       | x 4 = _____  |
| UPL species _____        | x 5 = _____  |
| Column Totals: _____ (A) | _____ (B)    |

Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
☐ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?**

Yes ☒
No ☐



## SOIL

Sampling Point: WP001-WET

| <b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |    |                |    |                   |                  |                 |         |
|--|---------------|----|----------------|----|-------------------|------------------|-----------------|---------|
| Depth<br>(inches)  | Matrix        |    | Redox Features |    |                   |                  | Texture         | Remarks |
|  | Color (moist) | %  | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |                 |         |
| 0-6  | 10YR 4/1      | 70 | 5YR 5/6        | 30 | C                 | M                | Silt loam       |         |
| 6-14   | 7.5YR 5/1     | 60 | 5YR 5/6        | 40 | C                 | M                | Silty clay loam |         |
| 14-20  | 10YR 6/1      | 60 | 7.5YR 5/6      | 40 | C                 | M                | Clay            |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |
|  |               |    |                |    |                   |                  |                 |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

|   |  |   |  |   |  |
|---|--|---|--|---|--|
| <b>Hydric Soil Indicators:</b><br><input type="checkbox"/> Histosol (A1)<br><input type="checkbox"/> Histic Epipedon (A2)<br><input type="checkbox"/> Black Histic (A3)<br><input type="checkbox"/> Hydrogen Sulfide (A4)<br><input type="checkbox"/> Stratified Layers (A5)<br><input checked="" type="checkbox"/> 2 cm Muck (A10) ( <b>LRR N</b> )<br><input type="checkbox"/> Depleted Below Dark Surface (A11)<br><input type="checkbox"/> Thick Dark Surface (A12)<br><input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR N, MLRA 147, 148</b> )<br><br><input type="checkbox"/> Sandy Gleyed Matrix (S4)<br><input type="checkbox"/> Sandy Redox (S5)<br><input type="checkbox"/> Stripped Matrix (S6) |  | <input type="checkbox"/> Dark Surface (S7)<br><input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>MLRA 147, 148</b> )<br><input type="checkbox"/> Thin Dark Surface (S9) ( <b>MLRA 147, 148</b> )<br><input type="checkbox"/> Loamy Gleyed Matrix (F2)<br><input checked="" type="checkbox"/> Depleted Matrix (F3)<br><input type="checkbox"/> Redox Dark Surface (F6)<br><input type="checkbox"/> Depleted Dark Surface (F7)<br><input type="checkbox"/> Redox Depressions (F8)<br><input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR N, MLRA 136</b> )<br><br><input type="checkbox"/> Umbric Surface (F13) ( <b>MLRA 136, 122</b> )<br><input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 148</b> )<br><input type="checkbox"/> Red Parent Material (F21) ( <b>MLRA 127, 147</b> ) |  | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b><br><input type="checkbox"/> 2 cm Muck (A10) ( <b>MLRA 147</b> )<br><input type="checkbox"/> Coast Prairie Redox (A16) ( <b>MLRA 147, 148</b> )<br><input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 136, 147</b> )<br><input type="checkbox"/> Very Shallow Dark Surface (TF12)<br><input type="checkbox"/> Other (Explain in Remarks) |  |
|---|--|---|--|---|--|

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

|   |  |
|---|--|
| <b>Restrictive Layer (if observed):</b><br><br>Type: _____<br>Depth (inches): _____ | Hydric Soil Present?   Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Remarks:  |  |

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: TMDL Site No. 150197UT City/County: Montgomery County Sampling Date: 11/7/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP001-UPL  
 Investigator(s): WT, NC Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 148 Lat: 39.175526 Long: -77.099428 Datum: NAD83  
 Soil Map Unit Name: Baile silt loam, 0 to 3 percent slopes (6A) NWI classification: None

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 <input type="checkbox"/>            | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                         | Yes <input checked="" type="checkbox"/> | No <input type="checkbox"/>            |                                       |                              |  |
| Wetland Hydrology Present?                   | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |                                       |                              |  |
| Remarks:<br>Scrub shrub area north of WP001. |   |  |                                       |                              |  |

## HYDROLOGY

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

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP001-UPL

| Tree Stratum (Plot size: <u>30 ft</u> )                              | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status |  |
|--|---------------------|----------------------|---------------------|--|
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )                    |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )                      |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Herb Stratum</b> (Plot size: <u>30 ft</u> )                       |                     |                      |                     |  |
| 1. <u>Rubus allegheniensis</u>                                       | <u>40</u>           | <u>Yes</u>           | <u>FACU</u>         |  |
| 2. <u>Pyrus calleryana</u>   | <u>20</u>           | <u>Yes</u>           | <u>NI</u>           |  |
| 3. <u>Solidago canadensis</u>  | <u>20</u>           | <u>Yes</u>           | <u>FACU</u>         |  |
| 4. <u>Lonicera japonica</u>  | <u>15</u>           | <u>No</u>            | <u>FACU</u>         |  |
| 5. <u>Sorghastrum nutans</u>   | <u>5</u>            | <u>No</u>            | <u>FACU</u>         |  |
| 6. _____   | _____               | _____                | _____               |  |
| 7. _____   | _____               | _____                | _____               |  |
| 8. _____   | _____               | _____                | _____               |  |
| 9. _____   | _____               | _____                | _____               |  |
| 10. _____  | _____               | _____                | _____               |  |
| 11. _____  | _____               | _____                | _____               |  |
| <u>100</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: <u>50</u> 20% of total cover: <u>20</u>          |                     |                      |                     |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )                 |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Remarks:</b> (Include photo numbers here or on a separate sheet.) |                     |                      |                     |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)  
 Total Number of Dominant Species Across All Strata: 2 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

**Prevalence Index worksheet:**  

|                                   |                  |
|-----------------------------------|------------------|
| Total % Cover of:                 | Multiply by:     |
| OBL species _____                 | x 1 = _____      |
| FACW species _____                | x 2 = _____      |
| FAC species _____                 | x 3 = _____      |
| FACU species <u>80</u>            | x 4 = <u>360</u> |
| UPL species _____                 | x 5 = _____      |
| Column Totals: _____ (A)          | _____ (B)        |
| Prevalence Index = B/A = <u>4</u> |                  |

**Hydrophytic Vegetation Indicators:**  
☐ 1 - Rapid Test for Hydrophytic Vegetation  
☐ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?**

Yes ☐
No ☒

## SOIL

Sampling Point: WP001-UPL

**Profile Description:** (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

[illegible]

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

### Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☒ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☒ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

### Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) **(MLRA 147)**  
☐ Coast Prairie Redox (A16)  
**(MLRA 147, 148)**  
☐ Piedmont Floodplain Soils (F19)  
**(MLRA 136, 147)**  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:





WP001-WET, facing west



WP001-UPL, facing northwest





Old field area in the southern portion of the study area, facing southeast



Emergent wetland in the central portion of the study area, facing west

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: TMDL Site No. 150198UT City/County: Montgomery County Sampling Date: 11/7/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: UPL-1  
 Investigator(s): WT, NC Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): None Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 148 Lat: 39.171239 Long: -77.094569 Datum: NAD83  
 Soil Map Unit Name: Glenelg silt loam, 3 to 8 percent slopes (2B) NWI classification: None

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 <input checked="" type="checkbox"/> | No <input type="checkbox"/>            | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                                       | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |                                       |                              |  |
| Wetland Hydrology Present?                                 | Yes <input type="checkbox"/>            | No <input checked="" type="checkbox"/> |                                       |                              |  |
| Remarks:<br>Area is an open field adjacent to the roadway. |   |  |                                       |                              |  |

## HYDROLOGY

|  |  |  |  |
|--|--|--|--|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |  |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   |  |  |  |
| Remarks:<br>No hydrology observed. Area drains to a culvert at Olney Laytonsville Road and is conveyed to the southwest.   |  |  |  |

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: UPL-1

| Tree Stratum (Plot size: <u>30 ft</u> )                              | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status |  |
|--|---------------------|----------------------|---------------------|--|
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )                    |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )                      |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Herb Stratum</b> (Plot size: <u>30 ft</u> )                       |                     |                      |                     |  |
| 1. <u>Echinochloa crus-galli</u>                                     | <u>30</u>           | <u>Yes</u>           | <u>FAC</u>          |  |
| 2. <u>Rumex crispus</u>  | <u>20</u>           | <u>Yes</u>           | <u>FAC</u>          |  |
| 3. <u>Symphotrichum pilosum</u>                                      | <u>20</u>           | <u>Yes</u>           | <u>FAC</u>          |  |
| 4. <u>Microstegium vimineum</u>                                      | <u>10</u>           | <u>No</u>            | <u>FAC</u>          |  |
| 5. <u>Persicaria pennsylvanica</u>                                   | <u>10</u>           | <u>No</u>            | <u>FACW</u>         |  |
| 6. <u>Toxicodendron radicans</u>                                     | <u>5</u>            | <u>No</u>            | <u>FAC</u>          |  |
| 7. <u>Cirsium arvense</u>  | <u>5</u>            | <u>No</u>            | <u>FACU</u>         |  |
| 8. _____   | _____               | _____                | _____               |  |
| 9. _____   | _____               | _____                | _____               |  |
| 10. _____  | _____               | _____                | _____               |  |
| 11. _____  | _____               | _____                | _____               |  |
| <u>100</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: <u>50</u> 20% of total cover: <u>20</u>          |                     |                      |                     |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )                 |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Remarks:</b> (Include photo numbers here or on a separate sheet.) |                     |                      |                     |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)  
 Total Number of Dominant Species Across All Strata: 3 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  

|                               |                  |
|-------------------------------|------------------|
| Total % Cover of:             | Multiply by:     |
| OBL species _____             | x 1 = _____      |
| FACW species <u>10</u>        | x 2 = <u>20</u>  |
| FAC species <u>85</u>         | x 3 = <u>255</u> |
| FACU species <u>5</u>         | x 4 = <u>20</u>  |
| UPL species _____             | x 5 = _____      |
| Column Totals: <u>100</u> (A) | <u>295</u> (B)   |

Prevalence Index = B/A = 2.95

**Hydrophytic Vegetation Indicators:**  
☐ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  

**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?**

Yes ☒
No ☐



## SOIL

Sampling Point: UPL-1

[illegible]

STRU\_ID: 150198UT, 11/7/2017



Upland data point #1 in the north-central portion of the study area, facing northwest



Non-hydric soil profile from central portion of the study area





Maintained lawn area in the southern portion of the study area, facing east



Maintained lawn area in the south-central portion of the study area, facing northwest





Maintained lawn area in the northern portion of the study area, facing northwest



Rip-Rap swale at inlet at Volunteer Drive in the southern portion of the study area, facing east

# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: TMDL Site No. 150215UT City/County: Montgomery County Sampling Date: 11/7/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP001-WET  
 Investigator(s): WT, NC Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 148 Lat: 39.125057 Long: -77.360068 Datum: NAD83  
 Soil Map Unit Name: Bucks silt loam, 3 to 8 percent slopes (19B) NWI classification: PEM1A

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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present?   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |                                       |   |
| Wetland Hydrology Present?   | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |                                       |   |
| Remarks:<br>WP001 is a PEM located north of MD-197. Area was determined to be outside of study area. |   |                                       |   |

## HYDROLOGY

|  |  |  |  |
|--|--|--|--|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> True Aquatic Plants (B14)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Iron Deposits (B5)<br><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9)<br><input type="checkbox"/> Aquatic Fauna (B13) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input checked="" type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Stunted or Stressed Plants (D1)<br><input checked="" type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> Microtopographic Relief (D4)<br><input type="checkbox"/> FAC-Neutral Test (D5) |  |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1"</u><br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>   |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   |  |  |  |
| Remarks:<br>Receives hydrology from runoff from MD-197 and adjacent agricultural field. An ephemeral drainage swale was visible from aerial imagery.<br><br>Flags: WP001-001 to WP001-004  |  |  |  |



**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP001-WET

| Tree Stratum (Plot size: <u>30 ft</u> )                              | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status |  |
|--|---------------------|----------------------|---------------------|--|
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )                    |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )                      |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Herb Stratum</b> (Plot size: <u>30 ft</u> )                       |                     |                      |                     |  |
| 1. <u>Juncus effusus</u>   | 40                  | Yes                  | FACW                |  |
| 2. <u>Agrostis gigantea</u>  | 30                  | Yes                  | FACW                |  |
| 3. <u>Dactylis glomerata</u>   | 10                  | No                   | FACU                |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| 6. _____   | _____               | _____                | _____               |  |
| 7. _____   | _____               | _____                | _____               |  |
| 8. _____   | _____               | _____                | _____               |  |
| 9. _____   | _____               | _____                | _____               |  |
| 10. _____  | _____               | _____                | _____               |  |
| 11. _____  | _____               | _____                | _____               |  |
| <u>80</u> = Total Cover  |                     |                      |                     |  |
| 50% of total cover: <u>40</u> 20% of total cover: <u>16</u>          |                     |                      |                     |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )                 |                     |                      |                     |  |
| 1. _____   | _____               | _____                | _____               |  |
| 2. _____   | _____               | _____                | _____               |  |
| 3. _____   | _____               | _____                | _____               |  |
| 4. _____   | _____               | _____                | _____               |  |
| 5. _____   | _____               | _____                | _____               |  |
| <u>0</u> = Total Cover   |                     |                      |                     |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                     |                      |                     |  |
| <b>Remarks:</b> (Include photo numbers here or on a separate sheet.) |                     |                      |                     |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)  
 Total Number of Dominant Species Across All Strata: 2 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  

|                                |              |
|--------------------------------|--------------|
| Total % Cover of:              | Multiply by: |
| OBL species _____              | x 1 = _____  |
| FACW species _____             | x 2 = _____  |
| FAC species _____              | x 3 = _____  |
| FACU species _____             | x 4 = _____  |
| UPL species _____              | x 5 = _____  |
| Column Totals: _____ (A)       | _____ (B)    |
| Prevalence Index = B/A = _____ |              |

**Hydrophytic Vegetation Indicators:**  
☐ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)  
  
<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?**

Yes ☒
No ☐

## SOIL

Sampling Point: WP001-WET

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

| Depth<br>(inches) | Matrix        |    | Redox Features |    |                   |                  | Texture   | Remarks |
|-------------------|---------------|----|----------------|----|-------------------|------------------|-----------|---------|
|                   | Color (moist) | %  | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |           |         |
| 0-4               | 5YR 4/3       | 95 | 10YR 4/6       | 5  | C                 | M                | Silt loam |         |
| 4-20              | 5YR 5-2       | 90 | 10YR 5/6       | 10 | C                 | M                | Silt loam |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |
|                   |               |    |                |    |                   |                  |           |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

## Hydric Soil Indicators:

- ☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☐ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)

- ☐ Dark Surface (S7)  
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Gleyed Matrix (F2)  
☒ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 136, 122**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils<sup>3</sup>:

- ☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

## Restrictive Layer (if observed):

Type: \_\_\_\_\_

Depth (inches): \_\_\_\_\_

Hydric Soil Present? Yes ☒ No ☐

Remarks:



# WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: TMDL Site No. 150215UT City/County: Montgomery County Sampling Date: 11/7/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP001-UPL  
 Investigator(s): WT, NC Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Field Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 148 Lat: 39.125032 Long: -77.359767 Datum: NAD83  
 Soil Map Unit Name: Redington silt loam, 0 to 3 percent slopes (22A) NWI classification: None

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 <input type="checkbox"/> | No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |
| Hydric Soil Present?                            | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |                                       |                              |  |
| Wetland Hydrology Present?                      | Yes <input type="checkbox"/> | No <input checked="" type="checkbox"/> |                                       |                              |  |
| Remarks:<br>Field area adjacent to the roadway. |                              |  |                                       |                              |  |

## HYDROLOGY

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

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP001-UPL

| <p><b>Tree Stratum</b> (Plot size: <u>30 ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Absolute<br/>% Cover</th> <th style="width: 10%; text-align: center;">Dominant<br/>Species?</th> <th style="width: 20%; text-align: center;">Indicator<br/>Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td style="text-align: right;"><u>0</u> = Total Cover</td> <td colspan="3"></td> </tr> <tr> <td style="text-align: right;">50% of total cover: _____</td> <td colspan="3">20% of total cover: _____</td> </tr> </tbody> </table> <p><b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Absolute<br/>% Cover</th> <th style="width: 10%; text-align: center;">Dominant<br/>Species?</th> <th style="width: 20%; text-align: center;">Indicator<br/>Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td style="text-align: right;"><u>0</u> = Total Cover</td> <td colspan="3"></td> </tr> <tr> <td style="text-align: right;">50% of total cover: _____</td> <td colspan="3">20% of total cover: _____</td> </tr> </tbody> </table> <p><b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Absolute<br/>% Cover</th> <th style="width: 10%; text-align: center;">Dominant<br/>Species?</th> <th style="width: 20%; text-align: center;">Indicator<br/>Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td style="text-align: right;"><u>0</u> = Total Cover</td> <td colspan="3"></td> </tr> <tr> <td style="text-align: right;">50% of total cover: _____</td> <td colspan="3">20% of total cover: _____</td> </tr> </tbody> </table> <p><b>Herb Stratum</b> (Plot size: <u>30 ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Absolute<br/>% Cover</th> <th style="width: 10%; text-align: center;">Dominant<br/>Species?</th> <th style="width: 20%; text-align: center;">Indicator<br/>Status</th> </tr> </thead> <tbody> <tr><td>1. <u>Dactylis glomerata</u></td><td style="text-align: center;"><u>50</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>2. <u>Setaria faberi</u></td><td style="text-align: center;"><u>20</u></td><td style="text-align: center;"><u>Yes</u></td><td style="text-align: center;"><u>UPL</u></td></tr> <tr><td>3. <u>Adropogon virginicus</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>4. <u>Apocynum cannabinum</u></td><td style="text-align: center;"><u>10</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FACU</u></td></tr> <tr><td>5. <u>Oenothera fruticosa</u></td><td style="text-align: center;"><u>5</u></td><td style="text-align: center;"><u>No</u></td><td style="text-align: center;"><u>FAC</u></td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>10. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>11. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td style="text-align: right;"><u>95</u> = Total Cover</td> <td colspan="3"></td> </tr> <tr> <td style="text-align: right;">50% of total cover: <u>47.5</u></td> <td colspan="3">20% of total cover: <u>19</u></td> </tr> </tbody> </table> <p><b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 60%;"></th> <th style="width: 10%; text-align: center;">Absolute<br/>% Cover</th> <th style="width: 10%; text-align: center;">Dominant<br/>Species?</th> <th style="width: 20%; text-align: center;">Indicator<br/>Status</th> </tr> </thead> <tbody> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td style="text-align: right;"><u>0</u> = Total Cover</td> <td colspan="3"></td> </tr> <tr> <td style="text-align: right;">50% of total cover: _____</td> <td colspan="3">20% of total cover: _____</td> </tr> </tbody> </table> <p>Remarks: (Include photo numbers here or on a separate sheet.)</p> |                               | Absolute<br>% Cover  | Dominant<br>Species? | Indicator<br>Status | 1. _____ | _____ | _____ | _____ | 2. _____ | _____ | _____ | _____ | 3. _____ | _____ | _____ | _____ | 4. _____ | _____ | _____ | _____ | 5. _____ | _____ | _____ | _____ | 6. _____ | _____ | _____ | _____ | <u>0</u> = Total Cover |  |  |  | 50% of total cover: _____ | 20% of total cover: _____ |  |  |  | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | 1. _____ | _____ | _____ | _____ | 2. _____ | _____ | _____ | _____ | 3. _____ | _____ | _____ | _____ | 4. _____ | _____ | _____ | _____ | 5. _____ | _____ | _____ | _____ | 6. _____ | _____ | _____ | _____ | <u>0</u> = Total Cover |  |  |  | 50% of total cover: _____ | 20% of total cover: _____ |  |  |  | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | 1. _____ | _____ | _____ | _____ | 2. _____ | _____ | _____ | _____ | 3. _____ | _____ | _____ | _____ | 4. _____ | _____ | _____ | _____ | 5. _____ | _____ | _____ | _____ | 6. _____ | _____ | _____ | _____ | <u>0</u> = Total Cover |  |  |  | 50% of total cover: _____ | 20% of total cover: _____ |  |  |  | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | 1. <u>Dactylis glomerata</u> | <u>50</u> | <u>Yes</u> | <u>FACU</u> | 2. <u>Setaria faberi</u> | <u>20</u> | <u>Yes</u> | <u>UPL</u> | 3. <u>Adropogon virginicus</u> | <u>10</u> | <u>No</u> | <u>FACU</u> | 4. <u>Apocynum cannabinum</u> | <u>10</u> | <u>No</u> | <u>FACU</u> | 5. <u>Oenothera fruticosa</u> | <u>5</u> | <u>No</u> | <u>FAC</u> | 6. _____ | _____ | _____ | _____ | 7. _____ | _____ | _____ | _____ | 8. _____ | _____ | _____ | _____ | 9. _____ | _____ | _____ | _____ | 10. _____ | _____ | _____ | _____ | 11. _____ | _____ | _____ | _____ | <u>95</u> = Total Cover |  |  |  | 50% of total cover: <u>47.5</u> | 20% of total cover: <u>19</u> |  |  |  | Absolute<br>% Cover | Dominant<br>Species? | Indicator<br>Status | 1. _____ | _____ | _____ | _____ | 2. _____ | _____ | _____ | _____ | 3. _____ | _____ | _____ | _____ | 4. _____ | _____ | _____ | _____ | 5. _____ | _____ | _____ | _____ | <u>0</u> = Total Cover |  |  |  | 50% of total cover: _____ | 20% of total cover: _____ |  |  | <p><b>Dominance Test worksheet:</b></p> <p>Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A)</p> <p>Total Number of Dominant Species Across All Strata: <u>2</u> (B)</p> <p>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)</p> <p><b>Prevalence Index worksheet:</b></p> <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species <u>5</u></td> <td>x 3 = <u>15</u></td> </tr> <tr> <td>FACU species <u>70</u></td> <td>x 4 = <u>280</u></td> </tr> <tr> <td>UPL species <u>20</u></td> <td>x 5 = <u>100</u></td> </tr> <tr> <td>Column Totals: <u>95</u> (A)</td> <td><u>395</u> (B)</td> </tr> </table> <p style="text-align: right;">Prevalence Index = B/A = <u>4.16</u></p> <p><b>Hydrophytic Vegetation Indicators:</b></p> <p><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation</p> <p><input type="checkbox"/> 2 - Dominance Test is &gt;50%</p> <p><input type="checkbox"/> 3 - Prevalence Index is ≤3.0<sup>1</sup></p> <p><input type="checkbox"/> 4 - Morphological Adaptations<sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)</p> <p><sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</p> <p><b>Definitions of Five Vegetation Strata:</b></p> <p><b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).</p> <p><b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.</p> <p><b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.</p> <p><b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.</p> <p><b>Woody vine</b> – All woody vines, regardless of height.</p> <p><b>Hydrophytic Vegetation Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/></p> | Total % Cover of: | Multiply by: | OBL species _____ | x 1 = _____ | FACW species _____ | x 2 = _____ | FAC species <u>5</u> | x 3 = <u>15</u> | FACU species <u>70</u> | x 4 = <u>280</u> | UPL species <u>20</u> | x 5 = <u>100</u> | Column Totals: <u>95</u> (A) | <u>395</u> (B) |
|---|-------------------------------|----------------------|----------------------|---------------------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|------------------------|--|--|--|---------------------------|---------------------------|--|--|--|---------------------|----------------------|---------------------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|------------------------|--|--|--|---------------------------|---------------------------|--|--|--|---------------------|----------------------|---------------------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|------------------------|--|--|--|---------------------------|---------------------------|--|--|--|---------------------|----------------------|---------------------|------------------------------|-----------|------------|-------------|--------------------------|-----------|------------|------------|--------------------------------|-----------|-----------|-------------|-------------------------------|-----------|-----------|-------------|-------------------------------|----------|-----------|------------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|-----------|-------|-------|-------|-----------|-------|-------|-------|-------------------------|--|--|--|---------------------------------|-------------------------------|--|--|--|---------------------|----------------------|---------------------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|----------|-------|-------|-------|------------------------|--|--|--|---------------------------|---------------------------|--|--|---|-------------------|--------------|-------------------|-------------|--------------------|-------------|----------------------|-----------------|------------------------|------------------|-----------------------|------------------|------------------------------|----------------|
|   | Absolute<br>% Cover           | Dominant<br>Species? | Indicator<br>Status  |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 1. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 2. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 3. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 4. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 5. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 6. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| <u>0</u> = Total Cover  |                               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 50% of total cover: _____   | 20% of total cover: _____     |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
|   | Absolute<br>% Cover           | Dominant<br>Species? | Indicator<br>Status  |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 1. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 2. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 3. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 4. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 5. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 6. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| <u>0</u> = Total Cover  |                               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 50% of total cover: _____   | 20% of total cover: _____     |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
|   | Absolute<br>% Cover           | Dominant<br>Species? | Indicator<br>Status  |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 1. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 2. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 3. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 4. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 5. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 6. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| <u>0</u> = Total Cover  |                               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 50% of total cover: _____   | 20% of total cover: _____     |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
|   | Absolute<br>% Cover           | Dominant<br>Species? | Indicator<br>Status  |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 1. <u>Dactylis glomerata</u>  | <u>50</u>                     | <u>Yes</u>           | <u>FACU</u>          |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 2. <u>Setaria faberi</u>  | <u>20</u>                     | <u>Yes</u>           | <u>UPL</u>           |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 3. <u>Adropogon virginicus</u>  | <u>10</u>                     | <u>No</u>            | <u>FACU</u>          |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 4. <u>Apocynum cannabinum</u>   | <u>10</u>                     | <u>No</u>            | <u>FACU</u>          |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 5. <u>Oenothera fruticosa</u>   | <u>5</u>                      | <u>No</u>            | <u>FAC</u>           |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 6. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 7. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 8. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 9. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 10. _____   | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 11. _____   | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| <u>95</u> = Total Cover   |                               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 50% of total cover: <u>47.5</u>   | 20% of total cover: <u>19</u> |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
|   | Absolute<br>% Cover           | Dominant<br>Species? | Indicator<br>Status  |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 1. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 2. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 3. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 4. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 5. _____  | _____                         | _____                | _____                |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| <u>0</u> = Total Cover  |                               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| 50% of total cover: _____   | 20% of total cover: _____     |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| Total % Cover of:   | Multiply by:                  |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| OBL species _____   | x 1 = _____                   |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| FACW species _____  | x 2 = _____                   |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| FAC species <u>5</u>  | x 3 = <u>15</u>               |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| FACU species <u>70</u>  | x 4 = <u>280</u>              |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| UPL species <u>20</u>   | x 5 = <u>100</u>              |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |
| Column Totals: <u>95</u> (A)  | <u>395</u> (B)                |                      |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |  |                     |                      |                     |                              |           |            |             |                          |           |            |            |                                |           |           |             |                               |           |           |             |                               |          |           |            |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |           |       |       |       |           |       |       |       |                         |  |  |  |                                 |                               |  |  |  |                     |                      |                     |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |          |       |       |       |                        |  |  |  |                           |                           |  |  |   |                   |              |                   |             |                    |             |                      |                 |                        |                  |                       |                  |                              |                |



## SOIL

Sampling Point: WP001-UPL

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |     |                |   |                   |                  |           |         |
|---|---------------|-----|----------------|---|-------------------|------------------|-----------|---------|
| Depth<br>(inches)   | Matrix        |     | Redox Features |   |                   |                  | Texture   | Remarks |
|   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |           |         |
| 0-3   | 5YR 4/2       | 100 |                |   |                   |                  | Silt loam |         |
| 3-12  | 5YR 4/3       | 100 |                |   |                   |                  | Silt loam |         |
| 12-20   | 5YR 4/4       | 100 |                |   |                   |                  | Silt loam |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |
|   |               |     |                |   |                   |                  |           |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

☐ Histosol (A1)  
☐ Histic Epipedon (A2)  
☐ Black Histic (A3)  
☐ Hydrogen Sulfide (A4)  
☐ Stratified Layers (A5)  
☒ 2 cm Muck (A10) (**LRR N**)  
☐ Depleted Below Dark Surface (A11)  
☐ Thick Dark Surface (A12)  
☐ Sandy Mucky Mineral (S1) (**LRR N,**  
         **MLRA 147, 148**)  
☐ Sandy Gleyed Matrix (S4)  
☐ Sandy Redox (S5)  
☐ Stripped Matrix (S6)

☐ Dark Surface (S7)  
☐ Polyvalue Below Surface (S8) (**MLRA 147, 148**)  
☐ Thin Dark Surface (S9) (**MLRA 147, 148**)  
☐ Loamy Gleyed Matrix (F2)  
☐ Depleted Matrix (F3)  
☐ Redox Dark Surface (F6)  
☐ Depleted Dark Surface (F7)  
☐ Redox Depressions (F8)  
☐ Iron-Manganese Masses (F12) (**LRR N,**  
         **MLRA 136**)  
☐ Umbric Surface (F13) (**MLRA 136, 122**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 148**)  
☐ Red Parent Material (F21) (**MLRA 127, 147**)

Indicators for Problematic Hydric Soils<sup>3</sup>:

☐ 2 cm Muck (A10) (**MLRA 147**)  
☐ Coast Prairie Redox (A16) (**MLRA 147, 148**)  
☐ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)  
☐ Very Shallow Dark Surface (TF12)  
☐ Other (Explain in Remarks)

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: \_\_\_\_\_  
Depth (inches): \_\_\_\_\_

Hydric Soil Present?

Yes ☐

No ☒

Remarks:



WP001-WET, facing northwest



WP001-UPL, facing east





Western portion of the study area, facing west



Agricultural field in the eastern portion of the study area, facing east

# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160275UT City/County: Prince George's County Sampling Date: 11/9/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: UPL-1  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): None Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 38.892012 Long: -76.785586 Datum: NAD83  
 Soil Map Unit Name: Adelphia-Holmdel-Urban land complex (AeB) NWI classification: None

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 <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>            |   |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>      |   |
| Remarks:<br>UPL-1 is a wooded area on the west side of site no. 160275UT.                           |   |

## HYDROLOGY

|  |  |   |
|--|--|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>   |  |   |
| Remarks:<br>No hydrology observed.   |  |   |



**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: UPL-1

| Tree Stratum (Plot size: <u>30 ft</u> )   | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. <u><i>Liriodendron tulipifera</i></u>  | <u>15</u>        | <u>yes</u>        | <u>FACU</u>      | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>6</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)   |
| 2. <u><i>Asimina triloba</i></u>  | <u>15</u>        | <u>yes</u>        | <u>FAC</u>       |  |
| 3. <u><i>Liquidambar styraciflua</i></u>  | <u>10</u>        | <u>yes</u>        | <u>FAC</u>       |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| <u>40</u> = Total Cover<br>50% of total cover: <u>20</u> 20% of total cover: <u>8</u> |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species <u>40</u> x 3 = <u>120</u><br>FACU species <u>25</u> x 4 = <u>100</u><br>UPL species _____ x 5 = _____<br>Column Totals: <u>65</u> (A) <u>220</u> (B)<br><br>Prevalence Index = B/A = <u>3.38</u>   |
| <b>Sapling Stratum (Plot size: <u>30 ft</u> )</b>                                     |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover<br>50% of total cover: _____    20% of total cover: _____      |                  |                   |                  |  |
| <b>Shrub Stratum (Plot size: <u>30 ft</u> )</b>                                       |                  |                   |                  | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is $\leq 3.0^1$<br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)<br><br><sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.  |
| 1. <u><i>Phytolacca americana</i></u>   | <u>5</u>         | <u>yes</u>        | <u>FACU</u>      |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| <u>5</u> = Total Cover<br>50% of total cover: <u>2.5</u> 20% of total cover: <u>1</u> |                  |                   |                  |  |
| <b>Herb Stratum (Plot size: <u>30 ft</u> )</b>  |                  |                   |                  | <b>Definitions of Five Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).<br><br><b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.<br><br><b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, <u>and</u> woody plants, except woody vines, less than approximately 3 ft (1 m) in height.<br><br><b>Woody vine</b> – All woody vines, regardless of height. |
| 1. <u><i>Microstegium vimineum</i></u>  | <u>15</u>        | <u>yes</u>        | <u>FAC</u>       |  |
| 2. <u><i>Allium canadense</i></u>   | <u>5</u>         | <u>yes</u>        | <u>FACU</u>      |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 7. _____  | _____            | _____             | _____            |  |
| 8. _____  | _____            | _____             | _____            |  |
| 9. _____  | _____            | _____             | _____            |  |
| 10. _____   | _____            | _____             | _____            |  |
| <u>20</u> = Total Cover<br>50% of total cover: <u>10</u> 20% of total cover: <u>4</u> |                  |                   |                  |  |
| <b>Woody Vine Stratum (Plot size: <u>30 ft</u> )</b>                                  |                  |                   |                  | <b>Hydrophytic Vegetation Present?</b> Yes _____ No <input checked="" type="checkbox"/>  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover<br>50% of total cover: _____    20% of total cover: _____      |                  |                   |                  |  |
| Remarks: (If observed, list morphological adaptations below).                         |                  |                   |                  |  |

## SOIL

Sampling Point: UPL-1

[illegible]





UPL-1, facing south





Southern portion of study area, facing south



Grass swale in the southern portion of the study area, facing south



## Stream Datasheet

Project: TMDL Site No. 160275UT  
Stream ID: WL001  
Stream Name: Unnamed tributary to NE Br. W Br. Patuxent River

Date: 11/9/17  
Investigators: WT, RS

Use (I-IV): I

Rapanos Class: ☐ TNW

☒ RPW

☐ NRPW

Flow: ☐ Perennial

☒ Intermittent

☐ Ephemeral

If ephemeral, provide justification for flagging: \_\_\_\_\_  
\_\_\_\_\_

Direction of flow: West

Gradient (%): 2-5

Connection to TNW: WL001 flows into WL002, which flows into an unnamed tributary to the Northeast Branch of the West Branch of the Patuxent River, which flows into the Northeast Branch of the West Branch of the Patuxent River, which flows into the West Branch of the Patuxent River, which flows into the Patuxent River, which is a TNW.

Avg. Width (Top of Bank): 3'

Avg. Depth (Top of Bank): 6'

Avg. Water Depth: 3"

Avg. Slope of Banks (°): LB 70 RB 45

Has stream been altered? If so, how: WL001 is piped at the upstream extent.

Common Substrate:

☐ Bedrock

☐ Cobble/Gravel

☐ Concrete

☒ Sand

☒ Silt

☐ Other: \_\_\_\_\_

Habitat Complexity:

☒ Riffles/pools

☒ Undercut Banks

☒ Tree Roots

☒ Woody Debris

Bank Erosion:

☐ Severe

☒ Moderate

☐ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☒ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☒ Maintained

LB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☒ Maintained

Flags:

WL001-001 to WL001-006

Additional Notes:

Take upstream and downstream photos.



WL001 Downstream, facing west



WL001 Upstream, facing east



## Stream Datasheet

Project: TMDL Site No. 160275UT  
Stream ID: WL002  
Stream Name: Unnamed tributary to NE Br. W Br. Patuxent River

Date: 11/9/17  
Investigators: WT, RS

Use (I-IV): I

Rapanos Class: ☐ TNW

☒ RPW

☐ NRPW

Flow: ☒ Perennial

☐ Intermittent

☐ Ephemeral

If ephemeral, provide justification for flagging: \_\_\_\_\_  
\_\_\_\_\_

Direction of flow: North

Gradient (%): 2-5

Connection to TNW: WL002 flows into an unnamed tributary to the Northeast Branch of the West Branch of the Patuxent River, which flows into the Northeast Branch of the West Branch of the Patuxent River, which flows into the West Branch of the Patuxent River, which flows into the Patuxent River, which is a TNW.

Avg. Width (Top of Bank): 12'

Avg. Depth (Top of Bank): 10'

Avg. Water Depth: 4"

Avg. Slope of Banks (°): LB 45 RB 90

Has stream been altered? If so, how: WL002 is culverted at the upstream extent.  
\_\_\_\_\_

Common Substrate:

☐ Bedrock

☒ Cobble/Gravel

☐ Concrete

☒ Sand

☒ Silt

☐ Other: \_\_\_\_\_

Habitat Complexity:

☒ Riffles/pools

☒ Undercut Banks

☒ Tree Roots

☒ Woody Debris

Bank Erosion:

☒ Severe

☐ Moderate

☐ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☒ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☒ Developed

☒ Maintained

LB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

Flags:

WL002-001 to WL002-006

Additional Notes:

Take upstream and downstream photos.



WL002 Downstream, facing north



WL002 Upstream, facing south



# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160277UT City/County: Prince George's County Sampling Date: 11/9/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: UPL-1  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): None Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 38.893129 Long: -76.786184 Datum: NAD83  
 Soil Map Unit Name: Collington-Wist-Urban land complex (CoD) NWI classification: None

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 <input type="checkbox"/> No <input checked="" type="checkbox"/>  | Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> |
| Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |   |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |   |
| Remarks:<br>Hydrophytic vegetation present, but there are no hydrology or hydric soil indicators observed. Area is a wooded section bordering the west side of the study area. |   |

## HYDROLOGY

|  |  |   |
|--|--|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>   |  |   |
| Remarks:<br>No hydrology observed.   |  |   |

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: UPL-1

| Tree Stratum (Plot size: <u>30 ft</u> )                              | Absolute % Cover | Dominant Species? | Indicator Status |  |
|--|------------------|-------------------|------------------|--|
| 1. <u>Acer rubrum</u>  | <u>15</u>        | <u>yes</u>        | <u>FAC</u>       | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>5</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>6</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>83</u> (A/B)   |
| 2. <u>Liquidambar styraciflua</u>                                    | <u>10</u>        | <u>yes</u>        | <u>FAC</u>       |  |
| 3. <u>Carpinus caroliniana</u>                                       | <u>10</u>        | <u>yes</u>        | <u>FACU</u>      |  |
| 4. <u>Fagus grandifolia</u>  | <u>5</u>         | <u>no</u>         | <u>FACU</u>      |  |
| 5. <u>Platanus occidentalis</u>                                      | <u>5</u>         | <u>no</u>         | <u>FACW</u>      |  |
| 6. <u>Fraxinus pennsylvanica</u>                                     | <u>5</u>         | <u>no</u>         | <u>FACW</u>      |  |
| <u>50</u> = Total Cover  |                  |                   |                  | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species <u>10</u> x 2 = <u>20</u><br>FAC species <u>50</u> x 3 = <u>150</u><br>FACU species <u>40</u> x 4 = <u>160</u><br>UPL species _____ x 5 = _____<br>Column Totals: <u>100</u> (A) <u>330</u> (B)<br><br>Prevalence Index = B/A = <u>3.3</u>   |
| 50% of total cover: <u>25</u> 20% of total cover: <u>10</u>          |                  |                   |                  |  |
| <b>Sapling Stratum (Plot size: <u>30 ft</u> )</b>                    |                  |                   |                  |  |
| 1. <u>Asimina triloba</u>  | <u>10</u>        | <u>yes</u>        | <u>FAC</u>       | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  |
| 2. _____   | _____            | _____             | _____            |  |
| 3. _____   | _____            | _____             | _____            |  |
| 4. _____   | _____            | _____             | _____            |  |
| 5. _____   | _____            | _____             | _____            |  |
| 6. _____   | _____            | _____             | _____            |  |
| <u>10</u> = Total Cover  |                  |                   |                  | <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.   |
| 50% of total cover: <u>5</u> 20% of total cover: <u>2</u>            |                  |                   |                  |  |
| <b>Shrub Stratum (Plot size: <u>30 ft</u> )</b>                      |                  |                   |                  |  |
| 1. _____   | _____            | _____             | _____            | <b>Definitions of Five Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).<br><br><b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.<br><br><b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, <u>and</u> woody plants, except woody vines, less than approximately 3 ft (1 m) in height.<br><br><b>Woody vine</b> – All woody vines, regardless of height. |
| 2. _____   | _____            | _____             | _____            |  |
| 3. _____   | _____            | _____             | _____            |  |
| 4. _____   | _____            | _____             | _____            |  |
| 5. _____   | _____            | _____             | _____            |  |
| 6. _____   | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover   |                  |                   |                  | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No _____  |
| 50% of total cover: _____ 20% of total cover: _____                  |                  |                   |                  |  |
| <b>Herb Stratum (Plot size: <u>30 ft</u> )</b>                       |                  |                   |                  |  |
| 1. <u>Lonicera japonica</u>  | <u>20</u>        | <u>yes</u>        | <u>FACU</u>      | (This section is part of the main form grid and contains no content)   |
| 2. <u>Smilax rotundifolia</u>  | <u>10</u>        | <u>yes</u>        | <u>FAC</u>       |  |
| 3. <u>Glechoma hederacea</u>   | <u>5</u>         | <u>no</u>         | <u>FACU</u>      |  |
| 4. <u>Acer negundo</u>   | <u>5</u>         | <u>no</u>         | <u>FAC</u>       |  |
| 5. _____   | _____            | _____             | _____            |  |
| 6. _____   | _____            | _____             | _____            |  |
| 7. _____   | _____            | _____             | _____            |  |
| 8. _____   | _____            | _____             | _____            |  |
| 9. _____   | _____            | _____             | _____            |  |
| 10. _____  | _____            | _____             | _____            |  |
| 11. _____  | _____            | _____             | _____            |  |
| <u>40</u> = Total Cover  |                  |                   |                  |  |
| 50% of total cover: <u>20</u> 20% of total cover: <u>8</u>           |                  |                   |                  |  |
| <b>Woody Vine Stratum (Plot size: <u>30 ft</u> )</b>                 |                  |                   |                  |  |
| 1. _____   | _____            | _____             | _____            |  |
| 2. _____   | _____            | _____             | _____            |  |
| 3. _____   | _____            | _____             | _____            |  |
| 4. _____   | _____            | _____             | _____            |  |
| 5. _____   | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____                  |                  |                   |                  |  |
| <b>Remarks: (If observed, list morphological adaptations below).</b> |                  |                   |                  |  |



## SOIL

Sampling Point: UPL-1

| <b>Profile Description:</b> (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |     |  |   |                   |   |  |         |
|--|---------------|-----|--|---|-------------------|---|--|---------|
| Depth<br>(inches)  | Matrix        |     | Redox Features   |   |                   |   | Texture  | Remarks |
|  | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup>  |  |         |
| 0-3  | 2.5Y 3/3      | 100 |  |   |                   |   | Sandy clay loam                                  |         |
| 3-20   | 2.5Y 4/3      | 100 |  |   |                   |   | Sandy clay loam                                  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
|  |               |     |  |   |                   |   |  |         |
| <sup>1</sup> Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.                                 |               |     |  |   |                   |   | <sup>2</sup> Location: PL=Pore Lining, M=Matrix. |         |
| <b>Hydric Soil Indicators:</b> (Applicable to all LRRs, unless otherwise noted.)   |               |     |  |   |                   | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b>   |  |         |
| <input type="checkbox"/> Histosol (A1)   |               |     | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR S, T, U</b> )                 |   |                   | <input type="checkbox"/> 1 cm Muck (A9) ( <b>LRR O</b> )  |  |         |
| <input type="checkbox"/> Histic Epipedon (A2)  |               |     | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR S, T, U</b> )                       |   |                   | <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR S</b> )   |  |         |
| <input type="checkbox"/> Black Histic (A3)   |               |     | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR O</b> )                           |   |                   | <input type="checkbox"/> Reduced Vertic (F18) ( <b>outside MLRA 150A,B</b> )  |  |         |
| <input type="checkbox"/> Hydrogen Sulfide (A4)   |               |     | <input type="checkbox"/> Loamy Gleyed Matrix (F2)  |   |                   | <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>LRR P, S, T</b> )   |  |         |
| <input type="checkbox"/> Stratified Layers (A5)  |               |     | <input type="checkbox"/> Depleted Matrix (F3)  |   |                   | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20)<br><b>(MLRA 153B)</b>   |  |         |
| <input type="checkbox"/> Organic Bodies (A6) ( <b>LRR P, T, U</b> )  |               |     | <input type="checkbox"/> Redox Dark Surface (F6)   |   |                   | <input type="checkbox"/> Red Parent Material (TF2)  |  |         |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) ( <b>LRR P, T, U</b> )  |               |     | <input type="checkbox"/> Depleted Dark Surface (F7)  |   |                   | <input type="checkbox"/> Very Shallow Dark Surface (TF12)   |  |         |
| <input type="checkbox"/> Muck Presence (A8) ( <b>LRR U</b> )   |               |     | <input type="checkbox"/> Redox Depressions (F8)  |   |                   | <input type="checkbox"/> Other (Explain in Remarks)   |  |         |
| <input type="checkbox"/> 1 cm Muck (A9) ( <b>LRR P, T</b> )  |               |     | <input type="checkbox"/> Marl (F10) ( <b>LRR U</b> )   |   |                   |   |  |         |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)   |               |     | <input type="checkbox"/> Depleted Ochric (F11) ( <b>MLRA 151</b> )                           |   |                   | <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |  |         |
| <input type="checkbox"/> Thick Dark Surface (A12)  |               |     | <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR O, P, T</b> )                  |   |                   |   |  |         |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>MLRA 150A</b> )  |               |     | <input type="checkbox"/> Umbric Surface (F13) ( <b>LRR P, T, U</b> )                         |   |                   |   |  |         |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR O, S</b> )  |               |     | <input type="checkbox"/> Delta Ochric (F17) ( <b>MLRA 151</b> )                              |   |                   |   |  |         |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)  |               |     | <input type="checkbox"/> Reduced Vertic (F18) ( <b>MLRA 150A, 150B</b> )                     |   |                   |   |  |         |
| <input type="checkbox"/> Sandy Redox (S5)  |               |     | <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149A</b> )                |   |                   |   |  |         |
| <input type="checkbox"/> Stripped Matrix (S6)  |               |     | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) ( <b>MLRA 149A, 153C, 153D</b> ) |   |                   |   |  |         |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR P, S, T, U</b> )   |               |     |  |   |                   |   |  |         |
| <b>Restrictive Layer (if observed):</b>  |               |     |  |   |                   |   |  |         |
| Type: _____  |               |     |  |   |                   |   |  |         |
| Depth (inches): _____  |               |     |  |   |                   | Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>   |  |         |
| Remarks:<br><br><br><br>   |               |     |  |   |                   |   |  |         |



UPL-1, facing north





Northern portion of study area, facing north



Southern portion of the study area, facing south

## Stream Datasheet

Project: TMDL Site No. 160277UT  
Stream ID: WL001  
Stream Name: Unnamed tributary to NE Br. W Br. Patuxent River

Date: 11/9/17  
Investigators: WT, RS

Use (I-IV): I

Rapanos Class: ☐ TNW

☐ RPW

☒ NRPW

Flow: ☐ Perennial

☐ Intermittent

☒ Ephemeral

If ephemeral, provide justification for flagging: Defined bed and banks and receives flow from sheetflow runoff from roadway.

Direction of flow: West

Gradient (%): 0-2

Connection to TNW: WL001 flows into an unnamed tributary to the Northeast Branch of the West Branch of the Patuxent River, which flows into the Northeast Branch of the West Branch of the Patuxent River, which flows into the West Branch of the Patuxent River, which flows into the Patuxent River, which is a TNW.

Avg. Width (Top of Bank): 3'

Avg. Depth (Top of Bank): 1'

Avg. Water Depth: 1"

Avg. Slope of Banks (°): LB 15 RB 10

Has stream been altered? If so, how: \_\_\_\_\_

Common Substrate:

☐ Bedrock

☐ Cobble/Gravel

☐ Concrete

☒ Sand

☒ Silt

☒ Other: Leaf litter

Habitat Complexity:

☐ Riffles/pools

☐ Undercut Banks

☐ Tree Roots

☐ Woody Debris

Bank Erosion:

☐ Severe

☐ Moderate

☐ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☐ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

LB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

Flags:

WL001-001 to WL001-010

Additional Notes:

Take upstream and downstream photos.





WL001 Downstream, facing west



WL001 Upstream, facing east

## Stream Datasheet

Project: TMDL Site No. 160277UT  
Stream ID: WL002  
Stream Name: Unnamed tributary to NE Br. W Br. Patuxent River

Date: 11/9/17  
Investigators: WT, RS

Use (I-IV): I

Rapans Class: ☐ TNW

☒ RPW

☐ NRPW

Flow: ☐ Perennial

☒ Intermittent

☐ Ephemeral

If ephemeral, provide justification for flagging: \_\_\_\_\_  
\_\_\_\_\_

Direction of flow: West

Gradient (%): 2-5

Connection to TNW: WL002 flows into an unnamed tributary to the Northeast Branch of the West Branch of the Patuxent River, which flows into the Northeast Branch of the West Branch of the Patuxent River, which flows into the West Branch of the Patuxent River, which flows into the Patuxent River, which is a TNW.

Avg. Width (Top of Bank): 4'

Avg. Depth (Top of Bank): 5'

Avg. Water Depth: 6"

Avg. Slope of Banks (°): LB 80 RB 50

Has stream been altered? If so, how: \_\_\_\_\_  
\_\_\_\_\_

Common Substrate:

☐ Bedrock

☒ Cobble/Gravel

☐ Concrete

☒ Sand

☒ Silt

☐ Other: \_\_\_\_\_

Habitat Complexity:

☒ Riffles/pools

☒ Undercut Banks

☒ Tree Roots

☒ Woody Debris

Bank Erosion:

☐ Severe

☐ Moderate

☒ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☒ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☒ Maintained

LB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☒ Maintained

Flags:

WL002-001 to WL002-008

Additional Notes:

Take upstream and downstream photos.





WL002 Downstream, facing west



WL002 Upstream, facing east



# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160287UT City/County: Prince George's Sampling Date: 11/8/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP001-WET  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 38.699970 Long: -76.864306 Datum: NAD83  
 Soil Map Unit Name: Lenoi and Quindocqua soils (LQA) NWI classification: PFO1A

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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Remarks:<br>WP001 is located at the southwest corner of site No. 160287UT                           |  |  |   |

## HYDROLOGY

|   |  |  |
|---|--|--|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input checked="" type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)  | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>  |  |  |
| Remarks:<br>WP001 receives hydrology from runoff from adjacent uplands.<br><br>Flags: WP001-001 to WP001-004  |  |  |



**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP001-WET

| Tree Stratum (Plot size: <u>30 ft</u> )                       | Absolute % Cover | Dominant Species?             | Indicator Status |   |
|---|------------------|-------------------------------|------------------|---|
| 1. <u>Acer rubrum</u>   | <u>30</u>        | <u>yes</u>                    | <u>FAC</u>       | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>8</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)   |
| 2. <u>Liquidambar styraciflua</u>                             | <u>15</u>        | <u>yes</u>                    | <u>FAC</u>       |   |
| 3. <u>Quercus palustris</u>                                   | <u>10</u>        | <u>no</u>                     | <u>FACW</u>      |   |
| 4. <u>Nyssa sylvatica</u>                                     | <u>10</u>        | <u>no</u>                     | <u>FAC</u>       |   |
| 5. _____  | _____            | _____                         | _____            |   |
| 6. _____  | _____            | _____                         | _____            |   |
| <u>65</u> = Total Cover                                       |                  |                               |                  |   |
| 50% of total cover: <u>32.5</u>                               |                  | 20% of total cover: <u>13</u> |                  |   |
| <b>Sapling Stratum (Plot size: <u>30 ft</u> )</b>             |                  |                               |                  |   |
| 1. <u>Acer rubrum</u>   | <u>20</u>        | <u>yes</u>                    | <u>FAC</u>       | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species _____ x 3 = _____<br>FACU species _____ x 4 = _____<br>UPL species _____ x 5 = _____<br>Column Totals: _____ (A) _____ (B)<br><br>Prevalence Index = B/A = _____   |
| 2. <u>Quercus palustris</u>                                   | <u>10</u>        | <u>yes</u>                    | <u>FACW</u>      |   |
| 3. <u>Quercus phellos</u>                                     | <u>10</u>        | <u>yes</u>                    | <u>FACW</u>      |   |
| 4. _____  | _____            | _____                         | _____            |   |
| 5. _____  | _____            | _____                         | _____            |   |
| 6. _____  | _____            | _____                         | _____            |   |
| <u>40</u> = Total Cover                                       |                  |                               |                  |   |
| 50% of total cover: <u>20</u>                                 |                  | 20% of total cover: <u>8</u>  |                  |   |
| <b>Shrub Stratum (Plot size: <u>30 ft</u> )</b>               |                  |                               |                  |   |
| 1. <u>Vaccinium corymbosum</u>                                | <u>10</u>        | <u>yes</u>                    | <u>FACW</u>      | <b>Hydrophytic Vegetation Indicators:</b><br><input type="checkbox"/> 1 - Rapid Test for Hydrophytic Vegetation<br><input checked="" type="checkbox"/> 2 - Dominance Test is >50%<br><input type="checkbox"/> 3 - Prevalence Index is ≤3.0 <sup>1</sup><br><input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)   |
| 2. _____  | _____            | _____                         | _____            |   |
| 3. _____  | _____            | _____                         | _____            |   |
| 4. _____  | _____            | _____                         | _____            |   |
| 5. _____  | _____            | _____                         | _____            |   |
| 6. _____  | _____            | _____                         | _____            |   |
| <u>10</u> = Total Cover                                       |                  |                               |                  |   |
| 50% of total cover: <u>5</u>                                  |                  | 20% of total cover: <u>2</u>  |                  |   |
| <b>Herb Stratum (Plot size: <u>30 ft</u> )</b>                |                  |                               |                  |   |
| 1. <u>Cinna arundinacea</u>                                   | <u>15</u>        | <u>yes</u>                    | <u>FACW</u>      | <b>Definitions of Five Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).<br><br><b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.<br><br><b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.<br><br><b>Woody vine</b> – All woody vines, regardless of height. |
| 2. <u>Juncus effusus</u>                                      | <u>10</u>        | <u>yes</u>                    | <u>FACW</u>      |   |
| 3. _____  | _____            | _____                         | _____            |   |
| 4. _____  | _____            | _____                         | _____            |   |
| 5. _____  | _____            | _____                         | _____            |   |
| 6. _____  | _____            | _____                         | _____            |   |
| 7. _____  | _____            | _____                         | _____            |   |
| 8. _____  | _____            | _____                         | _____            |   |
| 9. _____  | _____            | _____                         | _____            |   |
| 10. _____   | _____            | _____                         | _____            |   |
| 11. _____   | _____            | _____                         | _____            |   |
| <u>25</u> = Total Cover                                       |                  |                               |                  |   |
| 50% of total cover: <u>17.5</u>                               |                  | 20% of total cover: <u>5</u>  |                  |   |
| <b>Woody Vine Stratum (Plot size: <u>30 ft</u> )</b>          |                  |                               |                  |   |
| 1. _____  | _____            | _____                         | _____            | <b>Hydrophytic Vegetation Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  |
| 2. _____  | _____            | _____                         | _____            |   |
| 3. _____  | _____            | _____                         | _____            |   |
| 4. _____  | _____            | _____                         | _____            |   |
| 5. _____  | _____            | _____                         | _____            |   |
| 6. _____  | _____            | _____                         | _____            |   |
| <u>0</u> = Total Cover  |                  |                               |                  |   |
| 50% of total cover: _____                                     |                  | 20% of total cover: _____     |                  |   |
| Remarks: (If observed, list morphological adaptations below). |                  |                               |                  |   |

## SOIL

Sampling Point: WP001-WET

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |     |                |    |                   |                  |            |         |
|---|---------------|-----|----------------|----|-------------------|------------------|------------|---------|
| Depth<br>(inches)   | Matrix        |     | Redox Features |    |                   |                  | Texture    | Remarks |
|   | Color (moist) | %   | Color (moist)  | %  | Type <sup>1</sup> | Loc <sup>2</sup> |            |         |
| 0-3   | 10YR 3/2      | 100 |                |    |                   |                  | Sandy loam |         |
| 3-10  | 10YR 5/2      | 95  | 10YR 5/6       | 5  | C                 | M                | Sandy loam |         |
| 10-20   | 10YR 5/2      | 75  | 10YR 5/4       | 20 | C                 | M                | Sandy clay |         |
|   |               |     | 10YR 5/6       | 5  | C                 | M                |            |         |
|   |               |     |                |    |                   |                  |            |         |
|   |               |     |                |    |                   |                  |            |         |
|   |               |     |                |    |                   |                  |            |         |
|   |               |     |                |    |                   |                  |            |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.      <sup>2</sup>Location: PL=Pore Lining, M=Matrix.

| Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.) | Indicators for Problematic Hydric Soils <sup>3</sup> :                              |
|---|---|
| <input type="checkbox"/> Histosol (A1)                                    | <input type="checkbox"/> Polyvalue Below Surface (S8) (LRR S, T, U)                 |
| <input type="checkbox"/> Histic Epipedon (A2)                             | <input type="checkbox"/> Thin Dark Surface (S9) (LRR S, T, U)                       |
| <input type="checkbox"/> Black Histic (A3)                                | <input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR O)                           |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                            | <input type="checkbox"/> Loamy Gleyed Matrix (F2)                                   |
| <input type="checkbox"/> Stratified Layers (A5)                           | <input checked="" type="checkbox"/> Depleted Matrix (F3)                            |
| <input type="checkbox"/> Organic Bodies (A6) (LRR P, T, U)                | <input type="checkbox"/> Redox Dark Surface (F6)                                    |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) (LRR P, T, U)            | <input type="checkbox"/> Depleted Dark Surface (F7)                                 |
| <input type="checkbox"/> Muck Presence (A8) (LRR U)                       | <input type="checkbox"/> Redox Depressions (F8)                                     |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR P, T)                        | <input type="checkbox"/> Marl (F10) (LRR U)   |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)                | <input type="checkbox"/> Depleted Ochric (F11) (MLRA 151)                           |
| <input type="checkbox"/> Thick Dark Surface (A12)                         | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR O, P, T)                  |
| <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 150A)            | <input type="checkbox"/> Umbric Surface (F13) (LRR P, T, U)                         |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR O, S)              | <input type="checkbox"/> Delta Ochric (F17) (MLRA 151)                              |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                         | <input type="checkbox"/> Reduced Vertic (F18) (MLRA 150A, 150B)                     |
| <input type="checkbox"/> Sandy Redox (S5)                                 | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149A)                |
| <input type="checkbox"/> Stripped Matrix (S6)                             | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D) |
| <input type="checkbox"/> Dark Surface (S7) (LRR P, S, T, U)               |   |

<sup>3</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

|   |   |
|---|---|
| <b>Restrictive Layer (if observed):</b><br>Type: _____<br>Depth (inches): _____ | <b>Hydric Soil Present?</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
|---|---|

Remarks:



# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160287UT City/County: Prince George's County Sampling Date: 11/8/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: UPL-1  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Field Local relief (concave, convex, none): None Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 38.700529 Long: -76.864190 Datum: NAD83  
 Soil Map Unit Name: Ingleside ssandy loam (InA) NWI classification: None

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 <input type="checkbox"/> No <input checked="" type="checkbox"/>   | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |   |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |   |
| Remarks:<br>Hydrophytic vegetation is present, but there are no hydrology or hydric soil indicators present. UPL-1 is located in the south end of the open field. |   |

## HYDROLOGY

|  |  |   |
|--|--|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | <b>Wetland Hydrology Present?</b> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>   |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>   |  |   |
| Remarks:<br>No hydrology observed.   |  |   |

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: UPL-1

| Tree Stratum (Plot size: <u>30 ft</u> )                       | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| <b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )             |                  |                   |                  |  |
| 1. <u>Liquidambar styraciflua</u>                             | 30               | yes               | FAC              |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 30 = Total Cover  |                  |                   |                  |  |
| 50% of total cover: <u>15</u> 20% of total cover: <u>6</u>    |                  |                   |                  |  |
| <b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )               |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| <b>Herb Stratum</b> (Plot size: <u>30 ft</u> )                |                  |                   |                  |  |
| 1. <u>Andropogon virginicus</u>                               | 40               | yes               | FAC              |  |
| 2. <u>Microstegium vimineum</u>                               | 10               | no                | FAC              |  |
| 3. <u>Allium canadense</u>                                    | 5                | no                | FACU             |  |
| 4. <u>Dichanthelium clandestinum</u>                          | 5                | no                | FACW             |  |
| 5. <u>Apocynum cannabinum</u>                                 | 5                | no                | FACU             |  |
| 6. _____  | _____            | _____             | _____            |  |
| 7. _____  | _____            | _____             | _____            |  |
| 8. _____  | _____            | _____             | _____            |  |
| 9. _____  | _____            | _____             | _____            |  |
| 10. _____   | _____            | _____             | _____            |  |
| 11. _____   | _____            | _____             | _____            |  |
| 65 = Total Cover  |                  |                   |                  |  |
| 50% of total cover: <u>32.5</u> 20% of total cover: <u>13</u> |                  |                   |                  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )          |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| Remarks: (If observed, list morphological adaptations below). |                  |                   |                  |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)  
 Total Number of Dominant Species Across All Strata: 2 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

**Prevalence Index worksheet:**  

|   |                    |
|---|--------------------|
| Total % Cover of: _____                     | Multiply by: _____ |
| OBL species _____ x 1 = _____               |                    |
| FACW species <u>5</u> x 2 = <u>10</u>       |                    |
| FAC species <u>80</u> x 3 = <u>240</u>      |                    |
| FACU species <u>10</u> x 4 = <u>40</u>      |                    |
| UPL species _____ x 5 = _____               |                    |
| Column Totals: <u>95</u> (A) <u>290</u> (B) |                    |
| Prevalence Index = B/A = <u>3.05</u>        |                    |

**Hydrophytic Vegetation Indicators:**  
 \_\_\_\_\_ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
 \_\_\_\_\_ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
 \_\_\_\_\_ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

<sup>1</sup>Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

**Definitions of Five Vegetation Strata:**  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No \_\_\_\_\_



## SOIL

Sampling Point: UPL-1

[illegible]



WP001-WET, facing south



WP001-UPL, facing south



# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160287UT City/County: Prince George's County Sampling Date: 11/8/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP002-WET  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 39.701138 Long: -76.865814 Datum: NAD83  
 Soil Map Unit Name: Ingleside sandy loam, 0 to 2 percent slopes (InA) NWI classification: PEM1A

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 <input checked="" type="checkbox"/> No <input type="checkbox"/> | Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Remarks:<br>WP002 is located south of MD-301 in the northwest corner of the site.                   |  |  |   |

## HYDROLOGY

|  |  |   |
|--|--|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input checked="" type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3"</u><br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u><br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>          </u><br>(includes capillary fringe)   | Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |   |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:<br><br>   |  |   |
| Remarks:<br>WP002 receives hydrology from runoff from adjacent uplands.<br>Flags: WP002-001 to WP002-006   |  |   |

**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP002-WET

| Tree Stratum (Plot size: <u>30 ft</u> )                       | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| <b>Sapling Stratum</b> (Plot size: <u>30 ft</u> )             |                  |                   |                  |  |
| 1. <u>Liquidambar styraciflua</u>                             | 15               | yes               | FAC              |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 15 = Total Cover  |                  |                   |                  |  |
| 50% of total cover: <u>7.5</u> 20% of total cover: <u>3</u>   |                  |                   |                  |  |
| <b>Shrub Stratum</b> (Plot size: <u>30 ft</u> )               |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| <b>Herb Stratum</b> (Plot size: <u>30 ft</u> )                |                  |                   |                  |  |
| 1. <u>Echinochloa crus-galli</u>                              | 20               | yes               | FAC              |  |
| 2. <u>Rush sp.</u>  | 20               | yes               |                  |  |
| 3. <u>Persicaria hydropiperoides</u>                          | 10               | no                | OBL              |  |
| 4. <u>Panicum sp.</u>   | 5                | no                |                  |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 7. _____  | _____            | _____             | _____            |  |
| 8. _____  | _____            | _____             | _____            |  |
| 9. _____  | _____            | _____             | _____            |  |
| 10. _____   | _____            | _____             | _____            |  |
| 11. _____   | _____            | _____             | _____            |  |
| 55 = Total Cover  |                  |                   |                  |  |
| 50% of total cover: <u>27.5</u> 20% of total cover: <u>11</u> |                  |                   |                  |  |
| <b>Woody Vine Stratum</b> (Plot size: <u>30 ft</u> )          |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            |  |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 0 = Total Cover   |                  |                   |                  |  |
| 50% of total cover: _____ 20% of total cover: _____           |                  |                   |                  |  |
| Remarks: (If observed, list morphological adaptations below). |                  |                   |                  |  |

**Dominance Test worksheet:**  
 Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)  
 Total Number of Dominant Species Across All Strata: 3 (B)  
 Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

**Prevalence Index worksheet:**  
 Total % Cover of: \_\_\_\_\_ Multiply by: \_\_\_\_\_  
 OBL species \_\_\_\_\_ x 1 = \_\_\_\_\_  
 FACW species \_\_\_\_\_ x 2 = \_\_\_\_\_  
 FAC species \_\_\_\_\_ x 3 = \_\_\_\_\_  
 FACU species \_\_\_\_\_ x 4 = \_\_\_\_\_  
 UPL species \_\_\_\_\_ x 5 = \_\_\_\_\_  
 Column Totals: \_\_\_\_\_ (A) \_\_\_\_\_ (B)  
 Prevalence Index = B/A = \_\_\_\_\_

**Hydrophytic Vegetation Indicators:**  
☐ 1 - Rapid Test for Hydrophytic Vegetation  
☒ 2 - Dominance Test is >50%  
☐ 3 - Prevalence Index is ≤3.0<sup>1</sup>  
☐ Problematic Hydrophytic Vegetation<sup>1</sup> (Explain)

**Definitions of Five Vegetation Strata:**  
**Tree** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).  
**Sapling** – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.  
**Shrub** – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.  
**Herb** – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.  
**Woody vine** – All woody vines, regardless of height.

**Hydrophytic Vegetation Present?** Yes ☒ No ☐



## SOIL

Sampling Point: WP002-WET

[illegible]

# WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: TMDL Site No. 160287UT City/County: Prince George's County Sampling Date: 11/8/17  
 Applicant/Owner: Maryland Department of Transportation State Highway Administration State: MD Sampling Point: WP002-UPL  
 Investigator(s): WT, RS Section, Township, Range: N/A  
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 0-2  
 Subregion (LRR or MLRA): LRR S MLRA 149A Lat: 38.701274 Long: -76.865751 Datum: NAD83  
 Soil Map Unit Name: Ingleside sandy loam (InA) NWI classification: None

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 <input type="checkbox"/> No <input checked="" type="checkbox"/> | Is the Sampled Area within a Wetland? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> |
| Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>            |   |
| Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>      |   |
| Remarks:<br>Area is a scrub shrub hillslope north of WP002.   |   |

## HYDROLOGY

|  |  |   |
|--|--|---|
| <b>Wetland Hydrology Indicators:</b><br><u>Primary Indicators (minimum of one is required; check all that apply)</u><br><input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Aquatic Fauna (B13)<br><input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Marl Deposits (B15) (LRR U)<br><input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Hydrogen Sulfide Odor (C1)<br><input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)<br><input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Presence of Reduced Iron (C4)<br><input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)<br><input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Thin Muck Surface (C7)<br><input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Other (Explain in Remarks)<br><input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)<br><input type="checkbox"/> Water-Stained Leaves (B9) |  | <u>Secondary Indicators (minimum of two required)</u><br><input type="checkbox"/> Surface Soil Cracks (B6)<br><input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)<br><input type="checkbox"/> Drainage Patterns (B10)<br><input type="checkbox"/> Moss Trim Lines (B16)<br><input type="checkbox"/> Dry-Season Water Table (C2)<br><input type="checkbox"/> Crayfish Burrows (C8)<br><input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)<br><input type="checkbox"/> Geomorphic Position (D2)<br><input type="checkbox"/> Shallow Aquitard (D3)<br><input type="checkbox"/> FAC-Neutral Test (D5)<br><input type="checkbox"/> Sphagnum moss (D8) (LRR T, U) |
| <b>Field Observations:</b><br>Surface Water Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Water Table Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>Saturation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): _____<br>(includes capillary fringe)   |  | Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>  |
| Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:   |  |   |
| Remarks:<br>No hydrology observed.   |  |   |



**VEGETATION (Five Strata) – Use scientific names of plants.**

 Sampling Point: WP002-UPL

| Tree Stratum (Plot size: <u>30 ft</u> )                       | Absolute % Cover | Dominant Species? | Indicator Status |  |
|---|------------------|-------------------|------------------|--|
| 1. <u>Liquidambar styraciflua</u>                             | <u>15</u>        | <u>yes</u>        | <u>FAC</u>       | <b>Dominance Test worksheet:</b><br>Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A)<br><br>Total Number of Dominant Species Across All Strata: <u>6</u> (B)<br><br>Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50</u> (A/B)   |
| 2. <u>Juniperus virginiana</u>                                | <u>15</u>        | <u>yes</u>        | <u>FACU</u>      |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| <u>30</u> = Total Cover                                       |                  |                   |                  |  |
| 50% of total cover: <u>15</u> 20% of total cover: <u>6</u>    |                  |                   |                  |  |
| <b>Sapling Stratum (Plot size: <u>30 ft</u> )</b>             |                  |                   |                  |  |
| 1. <u>Acer rubrum</u>   | <u>10</u>        | <u>yes</u>        | <u>FAC</u>       | <b>Prevalence Index worksheet:</b><br>Total % Cover of: _____ Multiply by: _____<br>OBL species _____ x 1 = _____<br>FACW species _____ x 2 = _____<br>FAC species <u>50</u> x 3 = <u>150</u><br>FACU species <u>35</u> x 4 = <u>140</u><br>UPL species _____ x 5 = _____<br>Column Totals: <u>85</u> (A) <u>290</u> (B)<br><br>Prevalence Index = B/A = <u>3.41</u>   |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| <u>10</u> = Total Cover                                       |                  |                   |                  |  |
| 50% of total cover: <u>5</u> 20% of total cover: <u>2</u>     |                  |                   |                  |  |
| <b>Shrub Stratum (Plot size: <u>30 ft</u> )</b>               |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            | <b>Hydrophytic Vegetation Indicators:</b><br>___ 1 - Rapid Test for Hydrophytic Vegetation<br>___ 2 - Dominance Test is >50%<br>___ 3 - Prevalence Index is ≤3.0 <sup>1</sup><br>___ Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)   |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover  |                  |                   |                  |  |
| 50% of total cover: _____    20% of total cover: _____        |                  |                   |                  |  |
| <b>Herb Stratum (Plot size: <u>30 ft</u> )</b>                |                  |                   |                  |  |
| 1. <u>Smilax rotundifolia</u>                                 | <u>25</u>        | <u>yes</u>        | <u>FAC</u>       | <b>Definitions of Five Vegetation Strata:</b><br><br><b>Tree</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).<br><br><b>Sapling</b> – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.<br><br><b>Shrub</b> – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.<br><br><b>Herb</b> – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, <u>and</u> woody plants, except woody vines, less than approximately 3 ft (1 m) in height.<br><br><b>Woody vine</b> – All woody vines, regardless of height. |
| 2. <u>Lonicera japonica</u>                                   | <u>10</u>        | <u>yes</u>        | <u>FACU</u>      |  |
| 3. <u>Juniperus virginiana</u>                                | <u>10</u>        | <u>yes</u>        | <u>FACU</u>      |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| 7. _____  | _____            | _____             | _____            |  |
| 8. _____  | _____            | _____             | _____            |  |
| 9. _____  | _____            | _____             | _____            |  |
| 10. _____   | _____            | _____             | _____            |  |
| 11. _____   | _____            | _____             | _____            |  |
| <u>45</u> = Total Cover                                       |                  |                   |                  |  |
| 50% of total cover: <u>22.5</u> 20% of total cover: <u>9</u>  |                  |                   |                  |  |
| <b>Woody Vine Stratum (Plot size: <u>30 ft</u> )</b>          |                  |                   |                  |  |
| 1. _____  | _____            | _____             | _____            | <b>Hydrophytic Vegetation Present?</b> Yes _____ No <u>✓</u>   |
| 2. _____  | _____            | _____             | _____            |  |
| 3. _____  | _____            | _____             | _____            |  |
| 4. _____  | _____            | _____             | _____            |  |
| 5. _____  | _____            | _____             | _____            |  |
| 6. _____  | _____            | _____             | _____            |  |
| <u>0</u> = Total Cover  |                  |                   |                  |  |
| 50% of total cover: _____    20% of total cover: _____        |                  |                   |                  |  |
| Remarks: (If observed, list morphological adaptations below). |                  |                   |                  |  |

## SOIL

Sampling Point: WP002-UPL

| Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.) |               |     |                |   |                   |                  |            |         |
|---|---------------|-----|----------------|---|-------------------|------------------|------------|---------|
| Depth<br>(inches)   | Matrix        |     | Redox Features |   |                   |                  | Texture    | Remarks |
|   | Color (moist) | %   | Color (moist)  | % | Type <sup>1</sup> | Loc <sup>2</sup> |            |         |
| 0-4   | 10YR 4/3      | 100 |                |   |                   |                  | Sandy loam |         |
| 4-11  | 10YR 5/4      | 100 |                |   |                   |                  | Sandy loam |         |
| 11-20   | 10YR 5/6      | 100 |                |   |                   |                  | Sandy loam |         |
|   |               |     |                |   |                   |                  |            |         |
|   |               |     |                |   |                   |                  |            |         |
|   |               |     |                |   |                   |                  |            |         |
|   |               |     |                |   |                   |                  |            |         |
|   |               |     |                |   |                   |                  |            |         |

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

<sup>2</sup>Location: PL=Pore Lining, M=Matrix.

|  |  |   |   |  |  |
|--|--|---|---|--|--|
| <b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> |  |   | <b>Indicators for Problematic Hydric Soils<sup>3</sup>:</b> |  |  |
| <input type="checkbox"/> Histosol (A1)   | <input type="checkbox"/> Polyvalue Below Surface (S8) ( <b>LRR S, T, U</b> )                 | <input type="checkbox"/> 1 cm Muck (A9) ( <b>LRR O</b> )  |   |  |  |
| <input type="checkbox"/> Histic Epipedon (A2)                                    | <input type="checkbox"/> Thin Dark Surface (S9) ( <b>LRR S, T, U</b> )                       | <input type="checkbox"/> 2 cm Muck (A10) ( <b>LRR S</b> )   |   |  |  |
| <input type="checkbox"/> Black Histic (A3)                                       | <input type="checkbox"/> Loamy Mucky Mineral (F1) ( <b>LRR O</b> )                           | <input type="checkbox"/> Reduced Vertic (F18) ( <b>outside MLRA 150A,B</b> )  |   |  |  |
| <input type="checkbox"/> Hydrogen Sulfide (A4)                                   | <input type="checkbox"/> Loamy Gleyed Matrix (F2)  | <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>LRR P, S, T</b> )   |   |  |  |
| <input type="checkbox"/> Stratified Layers (A5)                                  | <input type="checkbox"/> Depleted Matrix (F3)  | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20)   |   |  |  |
| <input type="checkbox"/> Organic Bodies (A6) ( <b>LRR P, T, U</b> )              | <input type="checkbox"/> Redox Dark Surface (F6)   | <input type="checkbox"/> ( <b>MLRA 153B</b> )   |   |  |  |
| <input type="checkbox"/> 5 cm Mucky Mineral (A7) ( <b>LRR P, T, U</b> )          | <input type="checkbox"/> Depleted Dark Surface (F7)  | <input type="checkbox"/> Red Parent Material (TF2)  |   |  |  |
| <input type="checkbox"/> Muck Presence (A8) ( <b>LRR U</b> )                     | <input type="checkbox"/> Redox Depressions (F8)  | <input type="checkbox"/> Very Shallow Dark Surface (TF12)   |   |  |  |
| <input type="checkbox"/> 1 cm Muck (A9) ( <b>LRR P, T</b> )                      | <input type="checkbox"/> Marl (F10) ( <b>LRR U</b> )   | <input type="checkbox"/> Other (Explain in Remarks)   |   |  |  |
| <input type="checkbox"/> Depleted Below Dark Surface (A11)                       | <input type="checkbox"/> Depleted Ochric (F11) ( <b>MLRA 151</b> )                           | <sup>3</sup> Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic. |   |  |  |
| <input type="checkbox"/> Thick Dark Surface (A12)                                | <input type="checkbox"/> Iron-Manganese Masses (F12) ( <b>LRR O, P, T</b> )                  |   |   |  |  |
| <input type="checkbox"/> Coast Prairie Redox (A16) ( <b>MLRA 150A</b> )          | <input type="checkbox"/> Umbric Surface (F13) ( <b>LRR P, T, U</b> )                         |   |   |  |  |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) ( <b>LRR O, S</b> )            | <input type="checkbox"/> Delta Ochric (F17) ( <b>MLRA 151</b> )                              |   |   |  |  |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4)                                | <input type="checkbox"/> Reduced Vertic (F18) ( <b>MLRA 150A, 150B</b> )                     |   |   |  |  |
| <input type="checkbox"/> Sandy Redox (S5)  | <input type="checkbox"/> Piedmont Floodplain Soils (F19) ( <b>MLRA 149A</b> )                |   |   |  |  |
| <input type="checkbox"/> Stripped Matrix (S6)                                    | <input type="checkbox"/> Anomalous Bright Loamy Soils (F20) ( <b>MLRA 149A, 153C, 153D</b> ) |   |   |  |  |
| <input type="checkbox"/> Dark Surface (S7) ( <b>LRR P, S, T, U</b> )             |  |   |   |  |  |

|   |  |  |
|---|--|--|
| <b>Restrictive Layer (if observed):</b> |  |  |
| Type: _____                             |  |  |
| Depth (inches): _____                   |  |  |

|                             |           |  |
|-----------------------------|-----------|--|
| <b>Hydric Soil Present?</b> | Yes _____ | No <input checked="" type="checkbox"/> |
|-----------------------------|-----------|--|

Remarks:



STRU\_ID: 160287UT, 11/8/2017



WP002-WET, facing southeast



WP002-UPL, facing northeast



STRU\_ID: 160287UT, 11/8/2017



Scrub-shrub area, facing southeast



Off-site intermittent stream located north of the study area, facing west



## Stream Datasheet

Project: TMDL Site No. 160311UT  
Stream ID: WL001  
Stream Name: Unnamed tributary to Patuxent River

Date: 11/8/17  
Investigators: WT, RS

Use (I-IV): I

Rapanos Class: ☐ TNW

☒ RPW

☐ NRPW

Flow: ☐ Perennial

☒ Intermittent

☐ Ephemeral

If ephemeral, provide justification for flagging: \_\_\_\_\_  
\_\_\_\_\_

Direction of flow: North

Gradient (%): 2-5

Connection to TNW: WL001 flows into an unnamed tributary to the Patuxent River, which flows into the Patuxent River, which is a TNW.  
\_\_\_\_\_

Avg. Width (Top of Bank): 3'

Avg. Depth (Top of Bank): 8"

Avg. Water Depth: 3"

Avg. Slope of Banks (°): LB 40 RB 35

Has stream been altered? If so, how: Some rip rap in channel.  
\_\_\_\_\_

Common Substrate:

☐ Bedrock

☒ Cobble/Gravel

☐ Concrete

☒ Sand

☐ Silt

☒ Other: Rip rap

Habitat Complexity:

☒ Riffles/pools

☐ Undercut Banks

☐ Tree Roots

☐ Woody Debris

Bank Erosion:

☐ Severe

☐ Moderate

☒ Minor

Silt Deposition:

☐ Severe

☐ Moderate

☒ Minor

Is the stream problematically incised? ☐ Yes ☒ No

Riparian Zone:

RB: ☐ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☒ Maintained

LB: ☒ Forested

☒ Shrub

☒ Herb.

☐ Wetlands

☐ Developed

☐ Maintained

Flags:

WL001-001 to WL001-007

Additional Notes:

Take upstream and downstream photos.





WL001-Upstream, facing southeast



WL001-Downstream, facing northwest





Northern portion of the study area, facing south



Southern portion of the study area, facing north





Old field vegetation in the western portion of the study area, facing east



Old field vegetation in the eastern portion of the study area, facing southwest





Non-hydric soil profile from western portion of the study area



Roadside rip-rap swale located in the eastern portion of the study area, facing northwest



## APPENDIX C: SHPO Consultation





# United States Department of the Interior

National Capital Parks-East  
NATIONAL PARK SERVICE  
Interior Region 1- National Capital Area  
1900 Anacostia Drive, S.E.  
Washington, D.C. 20020

IN REPLY REFER TO:

## 1. A.1. (NCR-NACE)

April 28, 2020

Elizabeth Hughes  
State Historic Preservation Officer  
Maryland Historical Trust  
Division of Historical & Cultural Programs  
100 Community Place  
Crownsville, Maryland 21032

Dear Ms. Hughes:

National Capital Parks-East (NACE), a unit of the National Park Service (NPS), in collaboration with Washington Suburban Sanitary Commission (WSSC), has prepared an Environmental Assessment, in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA), to relocate a 400 foot section of a 21-inch sanitary sewer pipe located along Still Creek within the Greenbelt Park, located in Prince George's County, Maryland..

Concurrent with the NEPA process, NPS and WSSC is consulting with the Maryland Historical Trust (MHT) in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. § 470f) and its implementing regulations (36 CFR § 800). We submit for your review and concurrence this finding of a No Adverse Effect for this undertaking.

### Management Summary

The NPS, in cooperation with the Federal Highway Administration (FHWA), previously prepared an Environmental Assessment (EA) that analyzed the impacts of proposed improvements to the rehabilitation of the Park's roadways, parking lots, guardrails and drainage structures (2012). The EA looked at the replacement of an existing double culvert with a bridge over Still Creek. It was determined that undertaking was found to have "No Significant Impact" on the environment (FONSI) and "No Adverse Effect" to cultural resources.

On January 31, 2019, the Federal Highway Administration (FHWA) entered into a contract with Eclipse Co. LLC ("Contractor") to rehabilitate existing Greenbelt Park roadways and make improvements to drainage features, including building a new bridge over Still Creek (PEPC #28240). During construction of the Still Creek bridge it was determined that a WSSC-owned 21-inch reinforced concrete sewer line along the south abutment required relocation. The existing pipe is in threatened condition and the lateral distance between sewer line and south abutment is less than 12-inches. WSSC standards state that the sewer line must be approximately five feet from another utility or infrastructure.

---

#### INTERIOR REGION 1 • NORTH ATLANTIC-APPALACHIAN

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS,  
NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, VERMONT,  
VIRGINIA, WEST VIRGINIA

The relocation is required due to the poor condition of the pipe and to accommodate a new bridge over Still Creek currently under construction. WSSC proposes to relocate the sanitary sewer line approximately thirty feet south of its original location

### **Description of the Undertaking Relevant to Section 106 of the National Historic Preservation Act and Identification of Historic Properties**

WSSC proposes to relocate the existing 21-inch sewer line 30-feet south of the existing alignment for a course of approximately 400-feet. The WSSC would use a cut and cover (conventional excavation) to install the proposed new line, which would be installed at a depth at approximately 10-feet. The realignment would temporarily impact approximately .01 acres of wetland. Construction of this segment is anticipated to require 4-6 months to complete. The realignment will require the installation of three new manholes; the abandonment of an existing manhole; the construction of two temporary access roads, both approximately 180-feet in length, and the temporary installation of a bypass system as the relocation work is completed. This work would also require the loss of 29 trees.

The Area of Potential Effects (APE) includes a portion of the existing Greenbelt Park road and adjacent wetlands. (see attachment of location map). The APE is within the boundaries of Greenbelt Park. Situated along the scenic and historic Baltimore-Washington Parkway, Greenbelt Park, established in 1950, is part of the comprehensive and continuous development of the park system of the national capital region. The park provides high quality camping, picnicking, and hiking in wooded area and along stream corridors, preserving forests, and contributing to the protection of water quality in the Anacostia River watershed. This 1,100-acre park features a 174- site campground, nine (9) miles of trails, and three picnic areas.

Though it has not been formally nominated or listed, nor has a determination of eligibility been done, the NPS, in consultation with Maryland Historical Trust, has discussed that Greenbelt Park is potentially eligible for listing in the National Register of Historic Places. The NPS considers Greenbelt Park potentially significant under National Register Criterion A, C, and D due to social history, historic structures associated with the NPS Mission 66 era, cultural landscape, and potentially both information yielding prehistoric and historic archeological resources.

### **Description of Potential Effects to Historic Properties**

With the proposed project actions, the Greenbelt Park cultural landscape would be temporarily impacted by project staging in the area surrounding the identified LOD including the construction of necessary access roads. However, the sewer line relocation itself will occur underground, thereby not impacting the character of the cultural landscape. The project will not impact the alignment or design integrity of the historic park road. Based on the 2012 Phase IA Archeological Report that was completed for the bridge and roadway rehabilitation EA and through consultation with the NPS, National Capital Area Regional Archeologist, no known recorded sites will be impacted by the project and that there is a limited potential to effect subsurface resources.

### **Consultation with Native American Groups**

Based on known information about Native American groups in the study area, we have determined that there are no federally recognized tribes listed that might attach cultural or religious significance to the APE. Therefore, no consultation with Native American groups has occurred. Additionally, it is not believed that this undertaking would affect ethnographic resources.



## **Finding of Effects**

After applying the criteria of adverse effect in accordance with 36 CFR Part 800.5 we have determined that the proposed undertaking will have a No Adverse Effect upon historic properties within Greenbelt Park.

## **Unanticipated Discoveries**

If during the relocation of the sewer line, archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources can be identified and documented and an appropriate mitigation strategy developed. If necessary, consultation with your office and/or the NPS Regional Archeologist will be coordinated to ensure that resources are protected. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.

Enclosed are relevant maps to illustrate the location of the APE, photos of existing conditions, and design of the relocation of the sewer line. We request your concurrence with the determination of 'No Adverse Effect on historic properties.'

Sincerely,

*Matthew D. Carroll*

Matthew Carroll  
Superintendent

Enclosure

I concur that the planned relocation of the WSSC 21-inch sewer line does not reflect an adverse effect on historic properties

---

Maryland Historical Trust (SHPO)

---

Date

202002184

F  
NPS  
EJR



## United States Department of the Interior

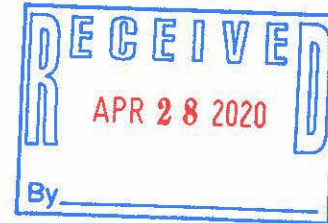
National Capital Parks-East  
NATIONAL PARK SERVICE  
Interior Region 1- National Capital Area  
1900 Anacostia Drive, S.E.  
Washington, D.C. 20020

IN REPLY REFER TO:

1. A.1. (NCR-NACE)

April 28, 2020

Elizabeth Hughes  
State Historic Preservation Officer  
Maryland Historical Trust  
Division of Historical & Cultural Programs  
100 Community Place  
Crownsville, Maryland 21032



Dear Ms. Hughes:

National Capital Parks-East (NACE), a unit of the National Park Service (NPS), in collaboration with Washington Suburban Sanitary Commission (WSSC), has prepared an Environmental Assessment, in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA), to relocate a 400 foot section of a 21-inch sanitary sewer pipe located along Still Creek within the Greenbelt Park, located in Prince George's County, Maryland..

Concurrent with the NEPA process, NPS and WSSC is consulting with the Maryland Historical Trust (MHT) in compliance with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. § 470f) and its implementing regulations (36 CFR § 800). We submit for your review and concurrence this finding of a No Adverse Effect for this undertaking.

### Management Summary

The NPS, in cooperation with the Federal Highway Administration (FHWA), previously prepared an Environmental Assessment (EA) that analyzed the impacts of proposed improvements to the rehabilitation of the Park's roadways, parking lots, guardrails and drainage structures (2012). The EA looked at the replacement of an existing double culvert with a bridge over Still Creek. It was determined that undertaking was found to have "No Significant Impact" on the environment (FONSI) and "No Adverse Effect" to cultural resources.

On January 31, 2019, the Federal Highway Administration (FHWA) entered into a contract with Eclipse Co. LLC ("Contractor") to rehabilitate existing Greenbelt Park roadways and make improvements to drainage features, including building a new bridge over Still Creek (PEPC #28240). During construction of the Still Creek bridge it was determined that a WSSC-owned 21-inch reinforced concrete sewer line along the south abutment required relocation. The existing pipe is in threatened condition and the lateral distance between sewer line and south abutment is less than 12-inches. WSSC standards state that the sewer line must be approximately five feet from another utility or infrastructure.

INTERIOR REGION 1 • NORTH ATLANTIC-APPALACHIAN

CONNECTICUT, DELAWARE, DISTRICT OF COLUMBIA, KENTUCKY, MAINE, MARYLAND, MASSACHUSETTS,  
NEW HAMPSHIRE, NEW JERSEY, NEW YORK, PENNSYLVANIA, RHODE ISLAND, VERMONT,  
VIRGINIA, WEST VIRGINIA

#2NA BC 5/1/2020 PL: 1.7-1.9



The relocation is required due to the poor condition of the pipe and to accommodate a new bridge over Still Creek currently under construction. WSSC proposes to relocate the sanitary sewer line approximately thirty feet south of its original location

### **Description of the Undertaking Relevant to Section 106 of the National Historic Preservation Act and Identification of Historic Properties**

WSSC proposes to relocate the existing 21-inch sewer line 30-feet south of the existing alignment for a course of approximately 400-feet. The WSSC would use a cut and cover (conventional excavation) to install the proposed new line, which would be installed at a depth at approximately 10-feet. The realignment would temporarily impact approximately .01 acres of wetland. Construction of this segment is anticipated to require 4-6 months to complete. The realignment will require the installation of three new manholes; the abandonment of an existing manhole; the construction of two temporary access roads, both approximately 180-feet in length, and the temporary installation of a bypass system as the relocation work is completed. This work would also require the loss of 29 trees.

The Area of Potential Effects (APE) includes a portion of the existing Greenbelt Park road and adjacent wetlands. (see attachment of location map). The APE is within the boundaries of Greenbelt Park. Situated along the scenic and historic Baltimore-Washington Parkway, Greenbelt Park, established in 1950, is part of the comprehensive and continuous development of the park system of the national capital region. The park provides high quality camping, picnicking, and hiking in wooded area and along stream corridors, preserving forests, and contributing to the protection of water quality in the Anacostia River watershed. This 1,100-acre park features a 174- site campground, nine (9) miles of trails, and three picnic areas.

Though it has not been formally nominated or listed, nor has a determination of eligibility been done, the NPS, in consultation with Maryland Historical Trust, has discussed that Greenbelt Park is potentially eligible for listing in the National Register of Historic Places. The NPS considers Greenbelt Park potentially significant under National Register Criterion A, C, and D due to social history, historic structures associated with the NPS Mission 66 era, cultural landscape, and potentially both information yielding prehistoric and historic archeological resources.

### **Description of Potential Effects to Historic Properties**

With the proposed project actions, the Greenbelt Park cultural landscape would be temporarily impacted by project staging in the area surrounding the identified LOD including the construction of necessary access roads. However, the sewer line relocation itself will occur underground, thereby not impacting the character of the cultural landscape. The project will not impact the alignment or design integrity of the historic park road. Based on the 2012 Phase IA Archeological Report that was completed for the bridge and roadway rehabilitation EA and through consultation with the NPS, National Capital Area Regional Archeologist, no known recorded sites will be impacted by the project and that there is a limited potential to effect subsurface resources.

### **Consultation with Native American Groups**

Based on known information about Native American groups in the study area, we have determined that there are no federally recognized tribes listed that might attach cultural or religious significance to the APE. Therefore, no consultation with Native American groups has occurred. Additionally, it is not believed that this undertaking would affect ethnographic resources.

## Finding of Effects

After applying the criteria of adverse effect in accordance with 36 CFR Part 800.5 we have determined that the proposed undertaking will have a No Adverse Effect upon historic properties within Greenbelt Park.

## Unanticipated Discoveries

If during the relocation of the sewer line, archeological resources are discovered, all work in the immediate vicinity of the discovery would be halted until the resources can be identified and documented and an appropriate mitigation strategy developed. If necessary, consultation with your office and/or the NPS Regional Archeologist will be coordinated to ensure that resources are protected. In the unlikely event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (25 USC 3001) of 1990 would be followed.

Enclosed are relevant maps to illustrate the location of the APE, photos of existing conditions, and design of the relocation of the sewer line. We request your concurrence with the determination of 'No Adverse Effect on historic properties.'

Sincerely,

*Matthew D. Carroll*

Matthew Carroll  
Superintendent

Enclosure

I concur that the planned relocation of the WSSC 21-inch sewer line does not reflect an adverse effect on historic properties

*Beth Cole*

Maryland Historical Trust (SHPO)

*5/1/2020*

Date