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MEMORANDUM

Date: March 2, 2018

To: William Pines- MDTA

From: Ed Tinney

CC: James Harkness, Serena Liu, Peter Mattejat, Pam McNicholas, Don MacLean, Lauren Waesche- MDTA; Mitch Scott & Greg O'Hare- RK&K

Re: I-95 5th Lane Widening from MD 152 to MD 24 – Natural Resource Inventory (Revised)

Rummel Klepper & Kahl environmental scientists conducted a Natural Resources Inventory (NRI), including wetland delineation, forest stand characterization and tree inventory on behalf of the Maryland Transportation Authority (MDTA) along the I-95 corridor from MD 152 to MD 24 from April to July 2017. The project will add a 5th lane to northbound I-95 beginning at the gore of the northbound MD 152 on-ramp and ending where the two farthest outside lanes merge onto the exit ramps to MD 24. The 5th lane will be an extension of the MD 152 northbound on-ramp to MD 24. The 5th lane widening is needed to address safety and increase capacity along this section of I-95.

Nineteen wetland features, 27 Waters of the US, 10 forest stands, six hedgerows and two reforestation areas were identified within the project study area. A Pre-Application field review was conducted on December 20, 2017 with Maryland Department of the Environment (MDE) and US Army Corps of Engineers (USACE) staff to verify the identified wetland/waters features. Mapping of the project area is attached in **Appendix A, Figure 1**.

BACKGROUND INFORMATION

RK&K environmental scientists conducted a desktop investigation of mapped information, prior to beginning the field investigation. The desktop investigation of the mapped information identified site topography, 100-year floodplain, vegetative cover, non-tidal waters and wetlands and their associated buffers, and hydric and highly erodible soils. Mapped resources reviewed for this project included:

- The United States Department of Agriculture, Natural Resource Conservation Service (USDA-NRCS) *Web Soil Survey (WSS) for Harford County, Maryland*
- The Eastern Shore Regional GIS Cooperative (ESRGC) LIDAR (2-foot contours)
- Federal Emergency Management Agency (FEMA) GIS data
- National Wetlands Inventory (NWI) GIS data
- Maryland Department of Natural Resources Wetlands and Waters GIS data

A letter requesting information on historic resources was sent to the Maryland Historical Trust (MHT) on July 25, 2017. Letters requesting information on the presence of rare, threatened, or endangered species, and fisheries resources, were also sent to the Maryland Department of Natural Resources Project Review Division (MDNR-PRD) and Wildlife and Heritage Section (MDNR-WH) on July 25, 2017.

A response was received from MHT on August 22, 2017 stating there are no historic properties affected by the project. MDNR-PRD sent a response letter on September 13, 2017, stating that the project will impact Winter's Run, which is classified as a Use I-P stream, and no instream work is allowed between February 15th and June 15th. A response letter was received from MDNR-WHS on August 22, 2017, stating that no State or Federal records exist for listed RTE species within the project area. An Official Species List and Online Certification Letter were received from the U.S. Fish and Wildlife Service (USFWS) on February 5, 2018 indicated that there are no Federal endangered or threatened species records within the project study area. Agency Correspondence documents can be found in **Appendix F**.

Desktop investigation results are summarized below:

Geology and Topography

The project study area is located in the Piedmont Plateau physiographic province, within the Perry Hall Upland District of Harford County, which is characterized by a transition between crystalline Piedmont and unconsolidated Coast Plain. Many hilltops are capped by Cretaceous gravels and sediments that thicken to the southeast, and rivers flow across the region in steep-walled valleys incised into crystalline rock. Elevation ranges from 30 to 180 feet above sea level, (**Appendix A, Figure 5**).

Soils

The USDA-NRCS Web Soil Survey for Harford County, Maryland identified 26 mapped soil units within the project study area, as shown in **Appendix A, Figure 4**, with three hydric soil units, one predominately hydric soil unit, seven predominately non-hydric soil units and fifteen non-hydric soil units identified. Seventeen highly erodible soils (K-factor ≥ 0.35) are mapped within the study area (**Table 1**).

Table 1: Mapped Soils

Map Unit Symbol	Map Unit Name	K-Factor*	Hydric Rating**	Hydrologic Soil Group	Drainage Class
Av	Alluvial land	0.43	100	D	Poorly drained
BeB	Beltsville silt loam, 2 to 5 percent slopes	0.37	5	C	Moderately well drained
BeC	Beltsville silt loam, 5 to 10 percent slopes	0.43	0	C	Moderately well drained
ChB2	Chillum silt loam, 2 to 5 percent slopes, moderately eroded	0.32	0	C	Well drained
CkC2	Chillum-Neshaminy silt loams, 5 to 10 percent slopes, moderately eroded	0.49	0	B	Well drained

Map Unit Symbol	Map Unit Name	K-Factor*	Hydric Rating**	Hydrologic Soil Group	Drainage Class
Cu	Codorus silt loam	0.32	15	C	Moderately well drained
Cv	Comus silt loam	0.37	5	B	Well drained
DcA	Delanco silt loam, 0 to 3 percent slopes	0.37	0	C	Moderately well drained
DcB	Delanco silt loam, 3 to 8 percent slopes	0.37	0	C	Moderately well drained
En	Elkton silt loam	0.43	95	C/D	Poorly drained
EsB2	Elsinboro loam, 2 to 5 percent slopes, moderately eroded	0.49	0	B	Well drained
EsC2	Elsinboro loam, 5 to 10 percent slopes, moderately eroded	0.49	0	B	Well drained
GcC3	Glenelg loam, 8 to 15 percent slopes, severely eroded	0.32	0	B	Well drained
GcD3	Glenelg loam, 15 to 25 percent slopes, severely eroded	0.32	0	B	Well drained
JpC	Joppa gravelly sandy loam, 5 to 10 percent slopes	0.10	0	A	Well drained
KpA	Keyport silt loam, 0 to 2 percent slopes	0.49	5	D	Moderately well drained
KpB	Keyport silt loam, 2 to 5 percent slopes	0.49	5	D	Moderately well drained
KrA	Kinkora silt loam, 0 to 3 percent slopes	0.43	100	C/D	Poorly drained
KrB	Kinkora silt loam, 3 to 8 percent slopes	0.43	100	C/D	Poorly drained
LgC3	Legore silty clay loam, 8 to 15 percent slopes, severely eroded	0.37	0	B	Well drained
LgD3	Legore silty clay loam, 15 to 25 percent slopes, severely eroded	0.37	0	B	Well drained
LyB	Loamy and clayey land, 0 to 5 percent slopes	0.28	0	C	Moderately well drained
LyD	Loamy and clayey land, 5 to 15 percent slopes	0.28	0	C	Moderately well drained
MlB	Mattapex silt loam, 2 to 5 percent slopes, Northern Coastal Plain	0.49	5	C	Moderately well drained
SlB2	Sassafras loam, 2 to 5 percent slopes	0.32	5	B	Well drained
SlC2	Sassafras loam, 5 to 10 percent slopes	0.32	0	B	Well drained

**Erodibility Coefficient – Value assigned to soil types by NRCS. K > 0.35 are considered to be highly erodible soils*

***Hydric Rating – Value is based on the percentage of hydric soils within the soil type. Non-hydric soils have a value of 0, predominantly non-hydric soils have a value between 0 and 33, partially hydric soils have a value between 33 and 66, predominantly hydric soils have a value between 66 and 99, and hydric soils have a value of 100.*

Wetlands and Waters of the United States

One wetland is located within the study area according to Maryland Department of Natural Resources (DNR) GIS mapping and this wetland was identified as Winters Run during the field delineation. National Wetland Inventory (NWI) GIS mapping did not identify any wetlands within the study area. DNR and NWI GIS mapping both identified two waterways that were delineated during the field review. DNR and NWI wetland and waterway GIS mapping can be found in **Appendix A, Figure 3**.

Chesapeake Bay Critical Area and 100 Year Floodplain

The study area does not impact the Chesapeake Bay Critical Area (CBCA), but does fall within the 100-year floodplain of Winter's Run according to CBCA GIS data and Federal Emergency Management Agency (FEMA) GIS data for Harford County, respectively (**Appendix A, Figure 3).**

FOREST STAND CHARACTERIZATION AND TREE SURVEY- Methods

The investigation methods employed for this forest stand characterization were based on the State Forest Conservation Technical Manual, Third Edition, 1997. Maryland DNR defines a forest as "a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or greater", and not less than 35 feet in width. Forest includes (1) areas that have at least 100 trees per acre with at least 50% of those having a two-inch diameter measured at 4.5 feet above the ground, and (2) forest areas that have been cut but not cleared."

A characterization of forest types and overall conditions was completed for the study area using a Walk-Through Forest Stand Analysis datasheet. The forest characteristics recorded include the type of forest community; dominant species in the canopy, understory, and herbaceous layer; dominant canopy size class; percent canopy closure; stand successional stage; downed woody debris; invasive species present; invasive species cover; and general stand conditions. A full forest stand delineation was not required for this project and no plot points were recorded.

An inventory of specimen trees, defined by MDNR as "trees 30 inches DBH (diameter at breast height) or greater or 75% or more of the DBH of the current State champion of that species", and individual stand-alone trees regardless of size, was completed in the project study area. The DBH, species, and condition were recorded for each of the inventoried trees. The condition of each tree is assessed by an ocular estimation of growth form, visible signs of decay, live crown ratio, and indications of disease or insect infestation. Each inventoried tree was tagged and numbered consecutively. Data obtained from the field reconnaissance was collected with an iPad and a map with the tree locations was provided to a survey team for follow-up field location using traditional survey methods.

FOREST STAND CHARACTERIZATION AND TREE SURVEY – Results

Rummel Klepper & Kahl environmental scientists conducted a walk-through forest stand analysis and tree inventory within the project study area between April and July 2017. The field investigation identified ten forest stands (FS1 through FS10), six hedgerows (H1 through H6) and two reforestation areas (REF1 and REF2). The location of these features can be found on the NRI Plan in **Appendix G**. Photos of the forest stands can be found in **Appendix B** and datasheets for the forest stand characterizations can be found in **Appendix D**.

Forest Stand 1 (FS1): Chestnut Oak Association (Maps 1-5)
FS1 is a mid-successional Chestnut Oak Association forest located south of northbound I-95, and east of MD-152 in the southwestern portion of the study area. The dominant size class is 12-20 inches DBH, with a canopy closure estimated at approximately 80%. The dominant canopy species in FS1 consists of chestnut oak, (*Quercus montana*), white oak, (*Quercus alba*), tulip polar (*Liriodendron tulipifera*) and red maple (*Acer rubrum),* with inclusions of white pine (*Pinus strobus*), and Virginia pine (*Pinus virginiana*). The dominant understory species include American beech (*Fagus grandifolia*), American holly (*Ilex opaca*) and mountain laurel (*Kalmia latifolia*). The herbaceous layer includes round-leaf greenbrier (*Smilax rotundifolia),* multiflora rose (*Rosa multiflora),* and wild onion (*Allium* sp.). FS1 is in good condition overall, with moderate downed woody debris, and low levels of invasive species. FS1 has high retention value due to species composition, low invasive species cover, overall stand condition, and the presence of streams, wetlands and specimen trees within the stand.

Forest Stand 2 (FS2): Red Maple Association (Maps 4-8)
FS2 is an early to mid-successional Red Maple Association forest located south of northbound I-95, east of Clayton Rd in the central portion of the study area. The dominant size class is 2-11 inches DBH, with a canopy closure estimated at approximately 90%. The dominant canopy species in FS1 consist of red maple, tulip polar, and sweet gum (*Liquidambar styraciflua),* with inclusions of loblolly pine (*Pinus taeda*), and American sycamore (*Platanus occidentalis*). The dominant understory species include sweet gum, red maple, and red cedar (*Juniperus virginiana*). The herbaceous layer includes round-leaf greenbrier, multiflora rose, wild onion, and Japanese honeysuckle (*Lonicera japonica*). FS2 is in fair condition overall, with moderate downed woody debris, and high levels of invasive species. FS2 has high retention value due to the presence of streams and wetlands within the stand and its relatively large, contiguous nature.

Forest Stand 3 (FS3): White Oak-Black Oak-Northern Red Oak Association (Map 10)
FS3 is a mid-successional White Oak-Black Oak-Northern Red Oak Association forest located within the gore area of the ramp from northbound I-95 to MD-24 in the northeastern portion of the study area. The dominant size class is 12-30 inches DBH, with a canopy closure estimated at approximately 80%. The dominant canopy species in FS3 consist of white oak, northern red oak, (*Quercus rubra*), and American beech. The dominant understory species include American beech, American holly, sweet gum, red cedar and mountain laurel (*Kalmia latifolia*). The herbaceous layer includes round-leaf greenbrier, Japanese honeysuckle, poison ivy (*Toxicodendron radicans*), and Virginia creeper (*Parthenocissus quinquefolia*). FS3 is in fair condition overall, with moderate downed woody debris, and moderate levels of invasive species. FS3 has high retention value due to species composition, large dominant size class, and the presence of wetlands and specimen trees within the stand.

Forest Stand 4 (FS4): Red Maple Association (Maps 7-10)
FS4 is a mid-successional Red Maple Association forest located south of northbound I-95, and west of MD-24 in the northeastern portion of the study area. The dominant size class is 6-20 inches DBH, with a canopy closure estimated at approximately 80%. The dominant canopy species in FS4 consist of red maple, green ash (*Fraxinus pennsylvanica*) and pin oak (*Quercus palustris*). The dominant understory species include red maple, green ash, round-leaf greenbrier and multiflora rose. The herbaceous layer includes poison ivy, Japanese honeysuckle, round-leaf greenbrier and multiflora rose. FS4 is in fair to

poor condition overall, with moderate downed woody debris, and moderate levels of invasive species. FS4 has moderate retention value due to the presence of streams and wetlands within the stand.

Forest Stand 5 (FS5): White Oak-Black Oak-Northern Red Oak Association (Maps 10-11)
FS5 is a mid-successional White Oak-Black Oak-Northern Red Oak Association forest located within the cloverleaf of the ramp from southbound I-95 to MD-24, in the northeastern portion of the study area. The dominant size class is 12-30 inches DBH, with a canopy closure estimated at approximately 90%. The dominant canopy species in FS5 consist of black oak (*Quercus velutina*), northern red oak, tulip polar, red maple and American beech. The dominant understory species is American beech with inclusions of black gum. The herbaceous layer includes sensitive fern (*Onoclea sensibilis*), and cinnamon fern (*Osmundastrum cinnamomeum*). FS5 is in good condition overall, with moderate downed woody debris, and low levels of invasive species. FS5 has high retention value due to species composition, low invasive species cover, overall stand condition, and the presence of streams, wetlands and specimen trees within the stand.

Forest Stand 6 (FS6): Tulip Poplar Association (Maps 9-11)
FS6 is a mid-successional Tulip Poplar Association forest located within the gore area of the ramp from southbound MD-24 to southbound I-95, in the northeastern portion of the study area. The dominant size class is 12-20 inches DBH, with a canopy closure estimated at approximately 90%. The dominant canopy species in FS6 consist of American beech, tulip poplar, white oak and red maple. The dominant understory species include American beech, sweet gum and red maple. The herbaceous layer includes round-leaf greenbrier, and American beech and red maple seedlings. FS6 is in good condition overall, with moderate downed woody debris, and low levels of invasive species. FS6 has high retention value due to low invasive species cover, and the presence of streams, wetlands, and specimen trees within the stand.

Forest Stand 7 (FS7): Tulip Poplar Association (Maps 10-11)
FS7 is a mid-successional Tulip Poplar Association forest located northwest of the ramp from southbound MD-24 to southbound I-95, in the northeastern portion of the study area. The dominant size class is 6-20 inches DBH, with a canopy closure estimated at approximately 80%. The dominant canopy species in FS7 consist of red maple, American beech, tulip poplar, and white oak. The dominant understory species include American beech, and black gum. The dominate species in the herbaceous layer is American beech seedlings. FS7 is in good condition overall, with moderate downed woody debris, and low levels of invasive species. FS7 has moderate retention value due to low invasive species cover, overall stand condition, and presence of specimen trees within the stand.

Forest Stand 8 (FS8): Tulip Poplar Association (Maps 8-9)
FS8 is an early successional Tulip Poplar Association forest located north of southbound I-95, west of MD-24 in the northeastern portion of the study area. The dominant size class is 6-20 inches DBH, with a canopy closure estimated at approximately 75%. The dominant canopy species in FS8 consist of red maple, sweet gum, tulip poplar, and American beech. The dominant understory species include American beech, sweet gum and red maple. The herbaceous layer includes round-leaf greenbrier, multiflora rose, poison ivy and Japanese honeysuckle. FS8 is in fair condition overall, with low downed woody debris, and high levels of invasive species. FS8 has high retention value due to the presence of streams within the stand.

Forest Stand 9 (FS9): Tulip Poplar Association (Maps 4-8)
FS9 is an early successional Tulip Poplar Association forest located north of southbound I-95, and east of Clayton Road in the central portion of the study area. The dominant size class is 6-11 inches DBH, with a canopy closure estimated at approximately 70%. The dominant canopy species in FS9 consist of red maple, green ash, black gum, sweet gum and tulip poplar. The dominant understory species include American beech, northern red oak, black haw (*Viburnum prunifolium*) and arrowwood (*Viburnum dentatum*). The herbaceous layer includes round-leaf greenbrier, multiflora rose, poison ivy, Japanese honeysuckle and blackberry (*Rubus allegheniensis*). FS9 is in poor to fair condition overall, with moderate downed woody debris, and high levels of invasive species. FS9 has moderate retention value due to its function as privacy screening, and the presence of streams and wetlands within the stand.

Forest Stand 10 (FS10): Red Maple Association (Maps 1-4)
FS10 is a mid-successional Red Maple Association forest located north of southbound I-95, and east of MD-152 in the southwestern portion of the study area. The dominant size class is 6-20 inches DBH, with a canopy closure estimated at approximately 75%. The dominant canopy species in FS10 consist of red maple and sweet gum. The dominant understory species include American beech, sweet gum and red maple. The herbaceous layer includes round-leaf greenbrier, multiflora rose, red maple and sweet gum. FS10 is in good condition overall, with moderate downed woody debris, and low levels of invasive species. FS10 has high retention value due to good overall condition, low invasive species cover, and presence of streams, wetlands and specimen trees within the stand.

Hedgerow 1 (H1): Eastern Red Cedar Association (Maps 1-2)
This vegetated area was classified as a hedgerow during the field investigation, since it lacked the woody stem density to meet the MD DNR definition of forest. H1 is an early-successional Eastern Red Cedar Association. The dominant species include red cedar and callery pear (*Pyrus calleryana*), with a dominant size class of 2-6 inches DBH. The dominant understory species include eastern baccharis (*Baccharis halimifolia*) and sweet gum. The dominant herbaceous layer species is Japanese honeysuckle. H1 is in fair condition overall, with moderate downed woody debris and high levels of invasive species. H1 has low retention value due to its early successional stage and extensive invasive species cover.

Hedgerow 2 (H2): Eastern Red Cedar Association (Maps 1-2)
This vegetated area was classified as a hedgerow during the field investigation, since it lacked the woody stem density to meet the MD DNR definition of forest. H2 is an early-successional Eastern Red Cedar Association. The dominant species include red cedar, callery pear, tree of heaven (*Ailanthus altissima*), and black locust (*Robinia pseudoacacia*), with a dominant size class of 2-11 inches DBH. The dominant understory species include eastern baccharis, tree of heaven and bush honeysuckle (*Lonicera tatarica*). The dominant herbaceous layer species include Japanese honeysuckle, Japanese knotweed (*Reynoutria japonica*), and poison ivy. H2 is in poor condition overall, with moderate downed woody debris and high levels of invasive species. H2 has low retention value due to its early successional stage, extensive invasive species cover and minimal canopy cover.

Hedgerow 3 (H3): Red Maple Association (Map 10)
This vegetated area was classified as a hedgerow during the field investigation since it did not meet the MD DNR size requirements (<10,000 SF) for forest. H3 is an early-successional Red Maple

Association. The dominant species include red maple and sweet gum, with a dominant size class of 2-11 inches DBH. The dominant understory species include red cedar, red maple and round-leaf greenbrier. The dominant herbaceous layer species include poison ivy, bush honeysuckle, and multiflora rose. H3 is in fair condition overall, with low downed woody debris and high levels of invasive species. H3 has moderate retention value due to its early successional stage and high invasive species cover.

Hedgerow 4 (H4): White Oak Association (Map 1)
This vegetated area was classified as a hedgerow during the field investigation, since it lacked the woody stem density to meet the MD DNR definition of forest. H4 is a mid-successional White Oak Association. The dominant species include white oak, sweet gum and Virginia pine, with a dominant size class of 6-20 inches DBH. The dominant understory species include sweet gum, bush honeysuckle, Virginia pine, willow oak (*Quercus phellos*) and American holly. The dominant herbaceous layer species include poison ivy, Japanese honeysuckle, multiflora rose, white oak and round-leaf greenbrier. H4 is in fair condition overall, with low downed woody debris and high levels of invasive species. H4 has moderate retention value due to a stream that runs through the hedgerow.

Hedgerow 5 (H5): Pin Oak-Sweet Gum Association (Map 1)
This vegetated area was classified as a hedgerow during the field investigation since it lacked the woody stem DBH and density requirements to meet the MD DNR definition of forest. H5 is an early-successional Pin Oak-Sweet Gum Association. The dominant species include pin oak, sweet gum and callery pear, with a dominant size class of 6-11 inches DBH. The dominant understory species include sweet gum, eastern baccharis and Japanese knotweed. The dominant herbaceous layer species include poison ivy, Japanese honeysuckle and Japanese knotweed. H5 is in poor condition overall, with low downed woody debris and high levels of invasive species. H5 has low retention value due to high invasive species cover and poor overall condition.

Hedgerow 6 (H6): Red Maple Association (Map 1)
This vegetated area was classified as a hedgerow during the field investigation since it did not meet the MD DNR size requirements (<35 feet wide) for forest. H6 is a mid-successional Red Maple Association. The dominant species include red maple, white oak, sweet gum and white mulberry, with a dominant size class of 6-20 inches DBH. The dominant understory species include Oriental bittersweet (*Celastrus orbiculatus*), poison ivy, rose of Sharon (*Hibiscus syriacus*) and slippery elm (*Ulmus rubra*). The dominant herbaceous layer species include Japanese knotweed and Virginia creeper. H6 is in fair condition overall, with low downed woody debris and high levels of invasive species. H6 has moderate retention value due to its function as privacy screening.

Reforestation Area 1 (REF1): Map 11
REF1 is an early successional reforestation planting next to a stormwater management facility in the northeastern portion of the study area. The dominant canopy species include black gum, willow oak, Virginia pine, sweet gum, black oak and black locust, with a dominant size class of 2-6 inches DBH. There are no dominant understory species. The dominant herbaceous layer species include white snakeroot (*Ageratina altissima*), soft rush (*Juncus effusus*), pennycress (*Thlaspi* sp.), lespedeza (*Lespedeza cuneata)* and broom sedge (*Andropogon virginicus*). REF1 is in good condition overall, with low downed woody debris and no invasive species.

Reforestation Area 2 (REF2): Map 9-10
REF2 is an early successional reforestation planting that bridges a canopy gap between FS7 and FS8 in the northeastern portion of the study area. The dominant canopy species include sweet gum, red maple, pin oak, swamp white oak (*Quercus bicolor*) and American holly, with a dominant size class of 2-6 inches DBH. There are no dominant understory species. The dominant herbaceous layer species include white snakeroot, lespedeza and mugwort (*Artemisia* sp.). REF2 is in good condition overall, with low downed woody debris and low levels of invasive species.

INVENTORIED TREES
Forty specimen trees (≥ 30" DBH) and 25 individual, stand-alone trees were identified within the study area. Information regarding the inventoried trees is summarized in the tree table in **Appendix E**, and the locations of the trees are displayed on the NRI Plan in **Appendix G**.

WETLANDS/WATERS OF THE U.S. DELINEATION-Methods
A team of environmental scientists delineated waters of the U.S., including wetlands, within the study area, and completed the applicable data form for each delineated feature. Each delineated feature was given a unique identifier and photographed. Boundary points were identified for each feature, marked with pink flagging, and numbered consecutively. Boundary point positions were located using traditional survey methods.

Wetlands were delineated in accordance with the *U.S. Army Corps of Engineers Wetlands Delineation Manual, Y-87-I* (Environmental Laboratory, 1987); U. S. Army Corps of Engineers. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region Version 2.0*, ed. J.F. Berkowitz, J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-12-9. Vicksburg, MS: US Army Engineer Research and Development Center. Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

Waters of the U.S., other than wetlands, were delineated using the limits defined in 33 C.F.R. § 328. The boundaries of non-tidal waters of the U.S. other than wetlands were set at the ordinary high-water mark (OHW). The OHW was determined in the field using physical characteristics established by the fluctuations of water (e.g., change in plant community, changes in the soil character, shelving) in accordance with U.S. Army Corps of Engineers Regulatory Guidance Letter No. 05-05.

Clean Water Act jurisdiction of delineated features was determined in accordance with the June 5, 2007 joint guidance issued by U.S. Environmental Protection Agency and U.S. Army Corps of Engineers following the U.S. Supreme Court's decision in the consolidated cases Rapanos v. United States and Carabell v. United States (Rapanos); and the January 19, 2001 joint guidance issued by U.S. Environmental Protection Agency and U.S. Army Corps of Engineers following U.S. Supreme Court's decision in Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers (SWANCC).

WETLAND DELINEATION- Results
Rummel Klepper & Kahl environmental scientists conducted routine wetland delineation within the study area from April to July 2017. Nineteen wetland features and 27 Waters of the US features were

identified. The Waters of the US features include ten perennial Relatively Permanent Waters (RPW), nine intermittent RPW, and eight ephemeral non-RPW.

Delineation results follow and are listed alphabetically. The locations of the delineated features are displayed on the NRI Plan in **Appendix G**. Data sheets for the delineated features can be found in **Appendix C** and photos of all features can be found in **Appendix B**.

Wetland A (Map 1)
Wetland A is a palustrine emergent wetland located southeast of the ramp from northbound MD 152 to northbound I-95. Wetland A originates from a pipe that runs under the on ramp and drains to Waters B. Dominant species include an unidentified fescue species (*Festuca* sp.), with inclusions of broad-leaf cattail (*Typha latifolia*, OBL). Although the fescue species could not be identified, the hummock morphology and hydrologic conditions of the wetland indicate it is likely a wetland species. Hydrologic indicators include the presence of surface water, high water table, saturation, drainage patterns, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters B (Maps 1-2)
Waters B is a perennial RPW located south of the ramp from MD-152 to northbound I-95. Waters B flows east from outside of the study area, through Wetland C and into a stormwater inlet, where flow is directed north under I-95 to Waters G. Waters B receives contributing hydrology from Wetland A and Waters D. Side slopes are 2:1 to 3:1, with stable banks. Channel substrates consist of silts, cobbles, sands, gravel, concrete and muck. The channel ranges from 1-5 feet wide, with a depth of 2-6 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, leaf litter disturbed, water staining, presence of flood litter/debris, presence of wrack line, and observed/predicted flow events. The right bank is forested and the left bank cover types include forest, mowed grass and highway. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland C (Map 2)
Wetland C is a palustrine emergent wetland located south of the ramp from northbound MD-152 to northbound I-95. Wetland C is a stormwater management basin that is in line with Waters B. Dominant species include broad-leaf cattail. Hydrologic indicators include the presence of surface water, high water table and saturation. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters D (Map 2)
Waters D is an intermittent RPW located south of the ramp from MD-152 to northbound I-95. Waters B flows north from outside of the study area and drains to Waters B. Side slopes are 2:1 to 3:1, with moderately eroded banks. Channel substrates consist of silts, sands, and riprap. The channel ranges from 2-5 feet wide, with an average depth of 2 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, leaf litter disturbed, water staining, and observed/predicted flow events. Both the right and left banks are forested. This

feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters E (Map 3)
Waters E is an intermittent RPW located east of the I-95 and MD-152 interchange. Waters E flows north from outside of the study area and is directed under I-95 through a culvert. Waters E receives contributing hydrology from Wetland PP north of I-95 and drains into Waters G north of the study area. Side slopes are 1:1 to 3:1, with moderately stable banks. Channel substrates consist of silts, sands, and concrete. The channel ranges from 2-5 feet wide, with an average depth of 3 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, leaf litter disturbed, sediment deposition, presence of flood litter/debris, presence of wrack line, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters F (Map 4)
Waters F is a perennial RPW located south of I-95 northbound, and west of the Clayton Road overpass. Waters F flows east from outside of the study area and drains to Waters G. Side slopes are 2:1 and 4:1, with mostly stable banks. Channel substrates consist of silts, sands, and muck. The channel ranges from 1-4 feet wide, with an average depth of 6 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, leaf litter disturbed, water staining, presence of flood litter/debris, presence of wrack line, scour, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters G (Maps 1-4)
Waters G is a perennial RPW located along I-95 between the I-95 and MD-152 interchange and the Clayton Road overpass. Waters G flows east from outside of the study area through several culverts and eventually drains to Waters U outside the study area. Waters G receives contributing hydrology from Waters B, E, F, J, NN, QQ, RR, and TT, and Wetlands SS, UU and VV within the study area. Side slopes are 2:1 to 3:1, with minor erosion. Channel substrates consist of silts, cobbles, sands, gravel, concrete, muck and riprap. The channel ranges from 4-15 feet wide, with a depth of 4-24 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, shelving, vegetation matted down, bent, or absent, presence of flood litter/debris, presence of wrack line, scour, and observed/predicted flow events. Both the right and left banks are forested. This feature is shown on DNR GIS mapping, and is considered jurisdictional under Rapanos guidance as an RPW.

Wetland H (Map 4)
Wetland H is a palustrine forested/emergent wetland located south of I-95 northbound and west of the Clayton Road overpass. Wetland H extends south beyond the study area and drains to Waters G. Dominant species include a common reed (*Phragmites australis*, FACW) and an unidentified sedge species (*Carex* sp.*)*. Hydrologic indicators include the presence of surface water, high water table, saturation, hydrogen sulfide odor, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters I (Map 4)
Waters I is an intermittent RPW located south of northbound I-95 and west of the Clayton Road overpass. Waters I flows from a stormwater outfall under I-95 east to Waters J. Side slopes are 3:1 with stable banks and channel substrate consists of silt. The channel has an average width of 1 foot, with an average depth of 4 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, leaf litter disturbed, water staining, and observed/predicted flow events. The right bank is forested and the left bank is mowed grass. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters J (Map 4)
Waters J is a perennial RPW located west of the Clayton Road overpass. Waters J flows south from outside of the study area, under I-95 through a culvert, and drains to Waters G beyond the study area. Waters J receives contributing hydrology from Wetland LL and Waters I, II and JJ. Side slopes are 1:1, with moderate erosion. Channel substrates consist of silts, cobbles, sands, and gravel. The channel has an average width of 2 feet, with a depth of 2-6 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, leaf litter disturbed, water staining, presence of wrack line, scour, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters K (Maps 4-5)
Waters K is an intermittent RPW located south of northbound I-95, and east of the Clayton Road overpass. Waters K originates from a stormwater outfall under I-95, flowing south and draining into Waters G outside of the study area. Side slopes are 1:1 to 2:1, with moderate erosion. Channel substrates consist of silts, sands and gravel. The channel ranges from 1-3 feet wide, with an average depth of 3 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, water staining, presence of flood litter/debris, and observed/predicted flow events. Both the right and left banks include forest and mowed grass. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland L (Map 5)
Wetland L is a palustrine forested wetland located south of northbound I-95, and east of the Clayton Road overpass. Wetland L is an isolated, depressional wetland located beyond the I-95 roadway embankment. Dominant species include red maple (*Acer rubrum*, FAC), sweet gum (*Liquidambar styraciflua*, FAC), soft rush (*Juncus effuses*, FACW) and round-leaf greenbrier (*Smilax rotundifolia*, FAC). Hydrologic indicators include the presence of surface water, high water table, saturation, water-stained leaves, oxidized rhizospheres on living roots, sparsely vegetated concave surface and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters M (Map 6)
Waters M is a perennial RPW located east of the Clayton Road overpass. Waters M flows south from outside of the study area, under I-95 through a culvert, and drains to Waters G beyond the study area. Waters M receives contributing hydrology from Waters HH. Side slopes are 1:1 to 2:1, with stable

banks. Channel substrates consist of silts, cobbles, sands, gravel, and concrete. The channel ranges from 3-8 feet wide, with an average depth of 2 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, presence of wrack line, and observed/predicted flow events. Both the right and left banks are forested. This feature is shown on NWI GIS mapping and is considered jurisdictional under Rapanos guidance as an RPW.

Waters N (Map 6)
Waters N is an intermittent RPW located south of northbound I-95, and east of the Clayton Road overpass. Waters N flows south from a culvert under I-95 and drains to Waters G beyond the study area. Side slopes are 2:1 to 3:1, with minor erosion. Channel substrates consist of sands, gravel, and riprap. The channel has an average width of 3 feet, with a depth of 2-6 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, leaf litter disturbed, water staining, presence of flood litter/debris, presence of wrack line, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland P (Map 10)
Wetland P is a palustrine forested wetland located north of the ramp from northbound I-95 to MD-24. Wetland P is a closed depression that collects roadside drainage and appears to be isolated. Dominant species include swamp white oak (*Quercus bicolor*, FACW), black gum (*Nyssa sylvatica*, FAC), and round-leaf greenbrier. Hydrologic indicators include the presence of surface water, water marks, water-stained leaves, oxidized rhizospheres on living roots, sparsely vegetated concave surface, and geomorphic position. The soils in this area met the hydric soil indicator F8: Redox Depressions. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland S (Maps 8-9)
Wetland S is a palustrine forested wetland located south of northbound I-95, and east of Winter's Run. Wetland S is a small wetland at the toe of the roadway embankment that collects roadside drainage. Dominant species include pin oak (*Quercus palustris*, FACW), red maple and broad-leaf cattail. Hydrologic indicators include the presence of water-stained leaves, drainage patterns, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland T (Map 10)
Wetland T is a palustrine emergent wetland located south of northbound I-95, and west of the MD-24 overpass. Wetland T originates from a pipe that runs under MD-24, but does not connect to any upstream waters. Dominant species include narrow-leaf cattail (*Typha angustifolia*, OBL) and eastern baccharis. Hydrologic indicators include high water table, saturation, and FAC-neutral test. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters U (Maps 7-8)
Waters U is a perennial RPW (Winters Run) located along Fashion Way. Waters U flows south under I-95 and continues beyond the study area. Waters U receives contributing hydrology from Waters V, W and FF within the study area. Side slopes are 2:1, with stable banks. Channel substrates consist of silts, cobbles, sands, and gravel. The channel has an average width of 30 feet, with a depth of 6 inches to 3 feet, and indicators of Ordinary High Water include clear, natural line impressed on the bank, sediment deposition, presence of flood litter/debris, presence of wrack line, and observed/predicted flow events. The left bank is forested and the right bank consists of forest and road. This feature is shown on NWI or DNR GIS mapping, and is considered jurisdictional under Rapanos guidance as an RPW.

Waters V (Map 8-9)
Waters V is an intermittent RPW located south of northbound I-95, and east of Winters Run. Waters V flows west from outside of the study area to Waters U, and receives contributing hydrology from Wetlands Q, R, S, and X. Side slopes are 2:1, with stable banks. Channel substrates consist of silts, sands, and gravel. The channel ranges from 2-5 feet wide, with an average depth of 6 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, leaf litter disturbed, presence of flood litter/debris, presence of wrack line, and observed/predicted flow events. The right bank is forested and mowed grass, and the left bank is forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters W (Map 8)
Waters W is a perennial RPW located north of southbound I-95, and west of Winters Run. Waters W flows southeast from outside of the study area and drains to Waters U. Side slopes are 2:1, with stable banks. Channel substrates consist of silts and sands. The channel ranges from 1-4 feet wide, with a depth of 2-4 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland X (Map 9)
Wetland X is a palustrine forested wetland located south of northbound I-95, and west of the ramp from I-95 northbound to MD-24. Wetland X is located at the toe of the I-95 roadway slope. Dominant species include green ash, multiflora rose, redtop (*Agrostis gigantea*, FACW), fox-tail sedge (*Carex alopecoidea*, FACW), and poison ivy. Hydrologic indicators include the presence of water-stained leaves, oxidized rhizospheres on living roots, drainage patterns, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters Y (Maps 8-11)
Waters Y is a perennial RPW located north of southbound I-95, and west of MD-24. Waters Y flows east from outside of the study area and drains to Waters U beyond the study area. Waters Y receives contributing hydrology from Wetlands Z, AA, and BB, and Waters CC, DD, EE, and OO. Side slopes are 1:1 to 2:1, with moderate erosion. Channel substrates consist of silts, cobbles, sands, gravel, and riprap. The channel ranges from 3-8 feet wide, with a depth of 6-24 inches, and indicators of Ordinary

High Water include clear, natural line impressed on the bank, vegetation matted down, bent, or absent, leaf litter disturbed, sediment deposition, water staining, presence of flood litter/debris, presence of wrack line, scour, and observed/predicted flow events. Both the right and left banks are forested. This feature is shown on DNR GIS mapping, and is considered jurisdictional under Rapanos guidance as an RPW.

Wetland Z (Map 11)
Wetland Z is a palustrine forested wetland located within the cloverleaf of the ramp from southbound I-95 to MD-24. Wetland Z is a small floodplain depression that drains to Waters Y. Dominant species include skunk cabbage (*Symplocarpus foetidus*, OBL), with inclusions of cinnamon fern (*Osmundastrum cinnamomeum*, FACW). Hydrologic indicators include the presence of high water table, saturation, water-stained leaves, hydrogen sulfide odor, oxidized rhizospheres on living roots, and presence of reduced iron. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland AA (Map 11)
Wetland AA is a palustrine forested wetland located within the cloverleaf of the ramp from southbound I-95 to MD-24. Wetland AA emerges as a seep and drains to Waters Y. Dominant species include Japanese stiltgrass (*Microstegium viminieum*, FAC), quill sedge (*Carex tenera*, FAC), and multiflora rose. Hydrologic indicators include high water table, saturation, hydrogen sulfide odor, presence of reduced iron, and drainage patterns. The soils in this area met the hydric soil indicators A4: Hydrogen Sulfide and F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland BB (Map 10)
Wetland BB is a palustrine forested wetland located within the gore area of the ramp from southbound MD-24 to southbound I-95. Wetland BB is a small, sparsely vegetated wetland depression that drains to Waters CC. Dominant species include red maple and round-leaf greenbrier. Hydrologic indicators include water-stained leaves, sparsely vegetated concave, surface and saturation visible on aerial imagery. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters CC (Map 10)
Waters CC is an ephemeral non-RPW with an adjacent wetland located within the gore area of the ramp from southbound MD-24 to southbound I-95. Waters CC receives contributing hydrology from Wetland BB and flows southwest to Waters Y. Side slopes are 2:1, with minor erosion. Channel substrates consist of sands and gravel. The channel ranges from 1-2 feet wide, with an average depth 6 inches, and indicators of Ordinary High Water include destruction of terrestrial vegetation and scour. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Waters DD (Map 10)
Waters DD is an intermittent RPW located within the gore area of the ramp from southbound MD-24 to southbound I-95. Waters DD intercepts groundwater near the toe of the I-95 road embankment and flows west to Waters Y. Side slopes are 3:1, with stable banks. Channel substrates consist of silts, sands, and gravel. The channel ranges from 1-2 feet wide, with an average depth of 6 inches, and indicators of Ordinary High Water include destruction of terrestrial vegetation and scour. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters EE (Map 9)
Waters EE is a perennial RPW located north of the ramp from southbound MD-24 to southbound I-95. Waters EE flows south from outside of the study area and drains to Waters Y. Side slopes are 2:1, with moderate erosion. Channel substrates consist of silts, cobbles, sands, and gravel. The channel has an average width of 6 feet, with an average depth of 12 inches, and indicators of Ordinary High Water include clear, natural line impressed, on the bank, leaf litter disturbed, water staining, presence of wrack line and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters FF (Map 8)
Waters FF is an intermittent RPW located north of southbound I-95, and west of Winters Run. Waters FF flows southeast from outside of the study area, continues through a culvert under Fashion Way, and drains to Waters U. Side slopes are 2:1 to 3:1, with stable banks. Channel substrates consist of silts, concrete, and muck. The channel has an average width of 2 feet, with a depth of 2-10 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent and water staining. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland GG (Map 5)
Wetland GG is a palustrine forested wetland located north of southbound I-95, and east of the Clayton Road overpass. Wetland GG originates as a depression, and continues as a linear feature before draining to Waters HH. Dominant species include black gum, poison ivy, broom sedge (*Carex scoparia*, FACW), and round-leaf greenbrier. Hydrologic indicators include the presence of surface water, high water table, saturation, water marks, water-stained leaves, hydrogen sulfide odor, oxidized rhizospheres on living roots, sparsely vegetated concave surface, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters HH (Maps 5-6)
Waters HH is an ephemeral non-RPW with an abutting wetland located north of southbound I-95, and east of the Clayton Road overpass. Waters HH receives contributing hydrology from Wetland GG, flows northeast and drains to Waters M. Side slopes are 1:1 to 3:1, with stable banks in the upper reach and incision in the lower reach. Channel substrates consist of silts, bedrock, and gravel. The channel ranges from 1-6 feet wide, with an average depth of 3 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, leaf litter disturbed, water staining, and scour. Both

the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Waters II (Map 4)
Waters II is an ephemeral non-RPW and an erosional feature located north of southbound I-95, and west of the Clayton Road overpass. Waters II flows southeast from outside of the study area and drains to Waters J. Side slopes are ≥1:1, with highly unstable banks. Channel substrates consist of silts, cobbles, sands, and gravel. The channel has an average width of 12 feet, with an average depth of 6 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, presence of flood litter/debris, destruction of terrestrial vegetation, presence of wrack line, and scour. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Waters JJ (Map 4)
Waters JJ is an ephemeral non-RPW with an abutting wetland located north of southbound I-95, and west of the Clayton Road overpass. Waters JJ receives contributing hydrology from Wetland KK and flows west to Waters J. Side slopes are ≥1:1, with highly unstable banks. Channel substrates consist of silts, sands, and gravel. The channel has an average width of 12 feet, with an average depth of 6 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, presence of flood litter/debris, destruction of terrestrial vegetation, presence of wrack line, and scour. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Wetland KK (Map 4)
Wetland KK is a palustrine forested wetland located north of southbound I-95, and west of the Clayton Road overpass. Wetland KK is a depressional wetland that drains to Waters JJ. Dominant species include green ash (*Fraxinus pennsylvanica*, FAC), red maple, sweet gum, pin oak, fox-tail sedge, path rush (*Juncus tenuis*, FAC), and Japanese honeysuckle. Hydrologic indicators include water-stained leaves, and drainage patterns. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland LL (Map 4)
Wetland LL is a palustrine emergent wetland located north of southbound I-95, and west of the Clayton Road overpass. Wetland LL is a linear wetland at the toe of the I-95 roadway embankment that drains to Waters J. Dominant species include broad-leaf cattail and fox-tail sedge. Hydrologic indicators include high water table, water-stained leaves, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland MM (Map 4)
Wetland MM is a palustrine forested wetland located north of northbound I-95, and west of the Clayton Road overpass. Dominant species include red maple, pin oak, sweet gum, winterberry (*Ilex verticillata*, FACW), and round-leaf greenbrier. Hydrologic indicators include water-stained leaves, sparsely vegetated concave surface, saturation visible on aerial imagery, and geomorphic position. The

soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters NN (Maps 3-4)
Waters NN is an ephemeral non-RPW and an erosional feature located north of southbound I-95, west of the Clayton Road overpass. Waters NN flows east to Waters G. Side slopes are 2:1, with stable banks. Channel substrates consist of silts and gravel. The channel ranges from 1-3 feet wide, with an average depth of 3 inches, and indicators of Ordinary High Water include vegetation matted down, bent, or absent, and presence of flood litter/debris. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Waters OO (Map 11)
Waters OO is an intermittent RPW located within the cloverleaf of the ramp from southbound I-95 to MD-24. Waters OO receives contributing hydrology from a stormwater management pond and flows south to Waters Y. Side slopes are 3:1, with stable banks. Channel substrates consist of silts, cobbles, concrete, and riprap. The channel ranges from 2-6 feet wide, with a depth of 2-8 inches, and indicators of Ordinary High Water include clear, natural line impressed on the bank, water staining, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Wetland PP (Map 3)
Wetland PP is a palustrine emergent wetland located north of southbound I-95, and east of the I-95/MD-152 intersection. Wetland PP drains to an inlet that ultimately flows to Waters E. Dominant species include broad-leaf cattail and narrow-leaf cattail. Hydrologic indicators include the presence of surface water, high water table, saturation, water-stained leaves, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters QQ (Map 1)
Waters QQ is an intermittent RPW located within the gore area of the ramp from southbound I-95 to MD-152. Waters QQ originates at a pipe outfall and flows southeast to Waters G. Side slopes are 3:1, with stable banks. Channel substrates consist of silts, sands, and riprap. The channel ranges from 2-4 feet wide, with an average depth of 6 inches, and indicators of Ordinary High Water include vegetation matted down, bent or absent, water staining, and observed/predicted flow events. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is considered jurisdictional under Rapanos guidance as an RPW.

Waters RR (Map 1)
Waters RR is an ephemeral non-RPW draining uplands located north of Jaycee Drive. Waters RR originates outside of the study area and flows southeast to Waters G. Side slopes are 3:1, with stable banks. Channel substrates consist of silts and concrete. The channel has an average width of 2 feet, with an average depth 2 inches, and indicators of Ordinary High Water include changes in the character of soil, vegetation matted down, bent or absent, leaf litter disturbed, presence of flood

litter/debris, and presence of wrack line. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Wetland SS (Map 2)
Wetland SS is a palustrine forested wetland located north of southbound I-95 and east of the I-95/MD-152 intersection. Wetland SS is adjacent to Waters G, but no visible hydrologic connectivity was observed. The dominant species is red maple, but vegetation is sparse. Hydrologic indicators include high water table, saturation, water-stained leaves, sparsely vegetated concave surface, and geomorphic position. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Waters TT (Maps 2-3)
Waters TT is an ephemeral non-RPW draining uplands located north of southbound I-95, and east of the I-95/MD-152 intersection. Waters TT originates as roadside drainage and flows north to Waters G outside of the study area. Side slopes are 3:1, with moderately stable banks. Channel substrates consist of silts, muck, and leaves. The channel has a width of 1-6 feet, with an average depth 3 inches, and indicators of Ordinary High Water include vegetation matted down, bent or absent, leaf litter disturbed, water staining, and scour. Both the right and left banks are forested. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Wetland UU (Maps 2-3)
Wetland UU is a palustrine forested wetland located north of southbound I-95, and east of the I-95/MD-152 intersection. Wetland UU is a floodplain depression that drains to Waters G outside of the study area. Dominant species include red maple, arrowwood, highbush blueberry (*Vaccinium corymbosum*, FACW), American beech (*Fagus grandifolia*, FACU), and skunk cabbage. Hydrologic indicators include the presence of surface water, high water table, saturation, water-stained leaves, drainage patterns, crayfish burrows, geomorphic position, and microtopographic relief. The soils in this area met the hydric soil indicator F3: Depleted Matrix. This wetland feature is not shown on NWI or DNR GIS mapping, however this area is considered jurisdictional, since all three wetland parameters were met during field investigations.

Wetland VV (Map 3)
Wetland VV is a palustrine forested wetland located north of southbound I-95, and east of the I-95/MD-152 intersection. Wetland VV is a disturbed wetland adjacent to Waters G. Dominant species include red maple and sweet gum. Hydrologic indicators include the presence of surface water, high water table, saturation, drift deposits, water-stained leaves, presence of reduced iron and sparsely vegetated concave surface. The soils in this area are significantly disturbed and contain fill material throughout the profile. The soil did not exhibit the chroma requirements to meet a hydric soil indicator, but alpha alpha-dipyridyl strips tested positive for reducing conditions in the upper four inches, and the upper 2-14 inches contained abundant redoximorphic features. This wetland feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending MDE and USACE review**.**

Waters WW (Map 6)

Waters WW is an ephemeral non-RPW draining uplands located north of southbound I-95, and east of the Clayton Road overpass. Waters WW originates outside of the study and flows south under I-95 through a culvert to Waters N. Side slopes are ≥1:1, with moderate erosion. Channel substrates consist of silts, cobbles, sands and gravels. The channel has a width of 4-6 feet, with an average depth 3 inches, and indicators of Ordinary High Water include vegetation matted down, bent or absent, leaf litter disturbed, sediment deposition, presence of flood litter/debris, destruction of terrestrial vegetation, presence of wrack line, sediment sorting, and scour. Both the right and left banks are volunteer hedgerow. This feature is not shown on NWI or DNR GIS mapping, but is potentially considered jurisdictional pending USACE review.

Appendix A – Figures

Study Area

Maryland Transportation Authority

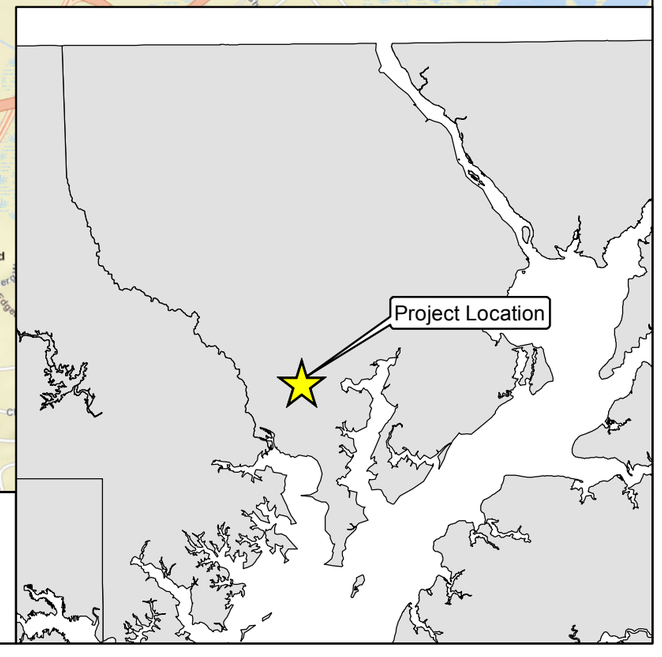
I-95 5th LANE WIDENING FROM MD 152 TO MD 24
FIGURE 1. VICINITY MAP
NOVEMBER 2017

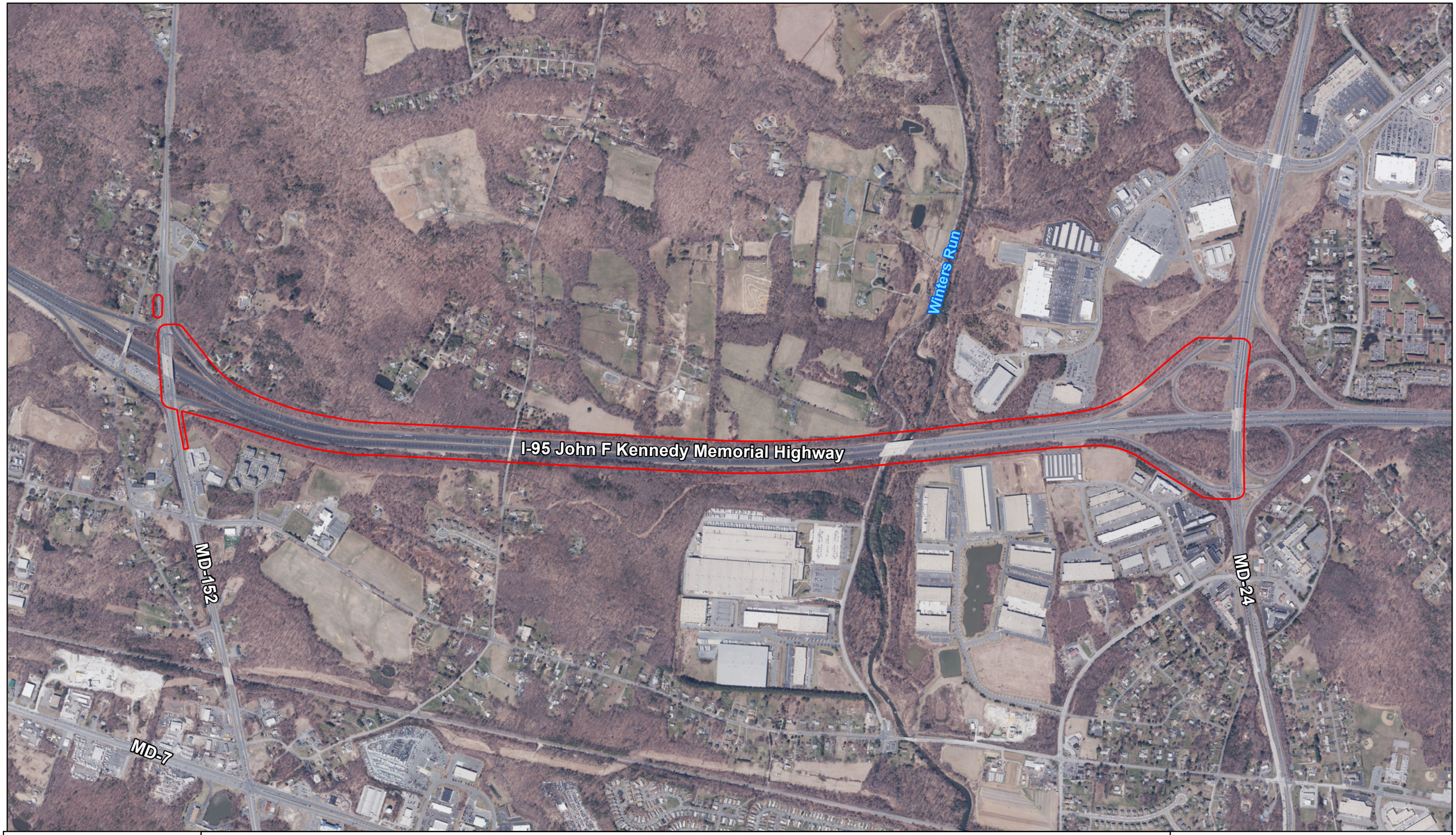
RK&K
Responsive People | Creative Solutions

0 1,000 2,000 Feet

1 in = 2,000 ft

N





Study Area

Maryland Transportation Authority

I-95 5th LANE WIDENING
FROM MD 152 TO MD 24
FIGURE 2. PROJECT STUDY AREA MAP
NOVEMBER 2017

RK&K
Responsive People | Creative Solutions

Scale (ft.)
0 500 1,000
1" = 1,000'

N

CLAYTON ROAD
CONSERVATION AREA

Winters Run

I-95 John F Kennedy Memorial Highway

WINTER'S RUN
GREENWAY

MD-152

MD-7

MD-24

DNR Wetlands
NWI Wetlands
100 Year Floodplain
Study Area
DNR Waters
NWI Waters
County Lands

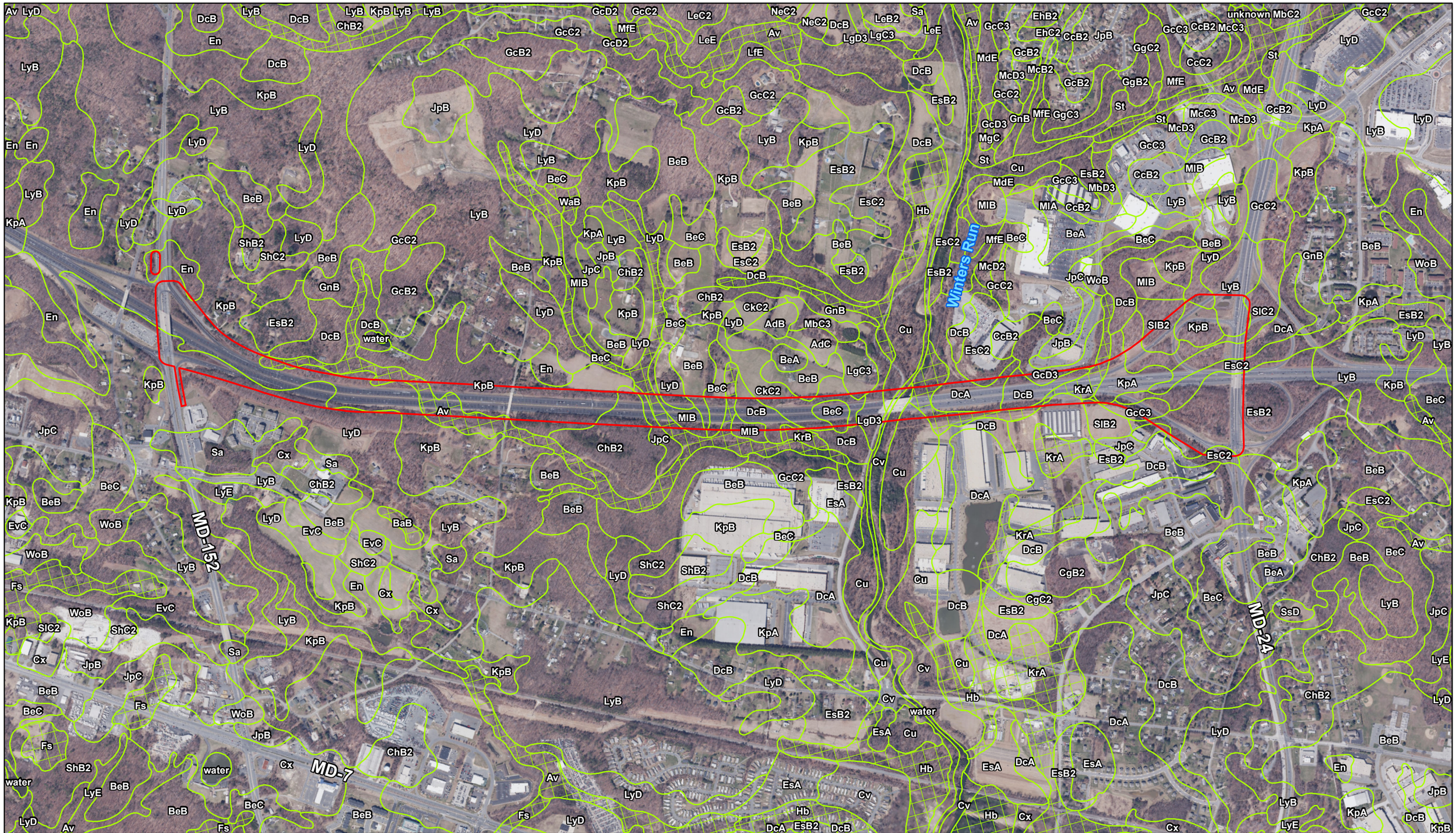
Maryland
Transportation
Authority

I-95 5th LANE WIDENING
FROM MD 152 TO MD 24
FIGURE 3. ENVIRONMENTAL RESOURCES MAP
NOVEMBER 2017

RK&K
Responsive People | Creative Solutions

Scale (ft.)
0 500 1,000
1" = 1,000'

N



Study Area

Non-Hydric Soils

Hydric Soils

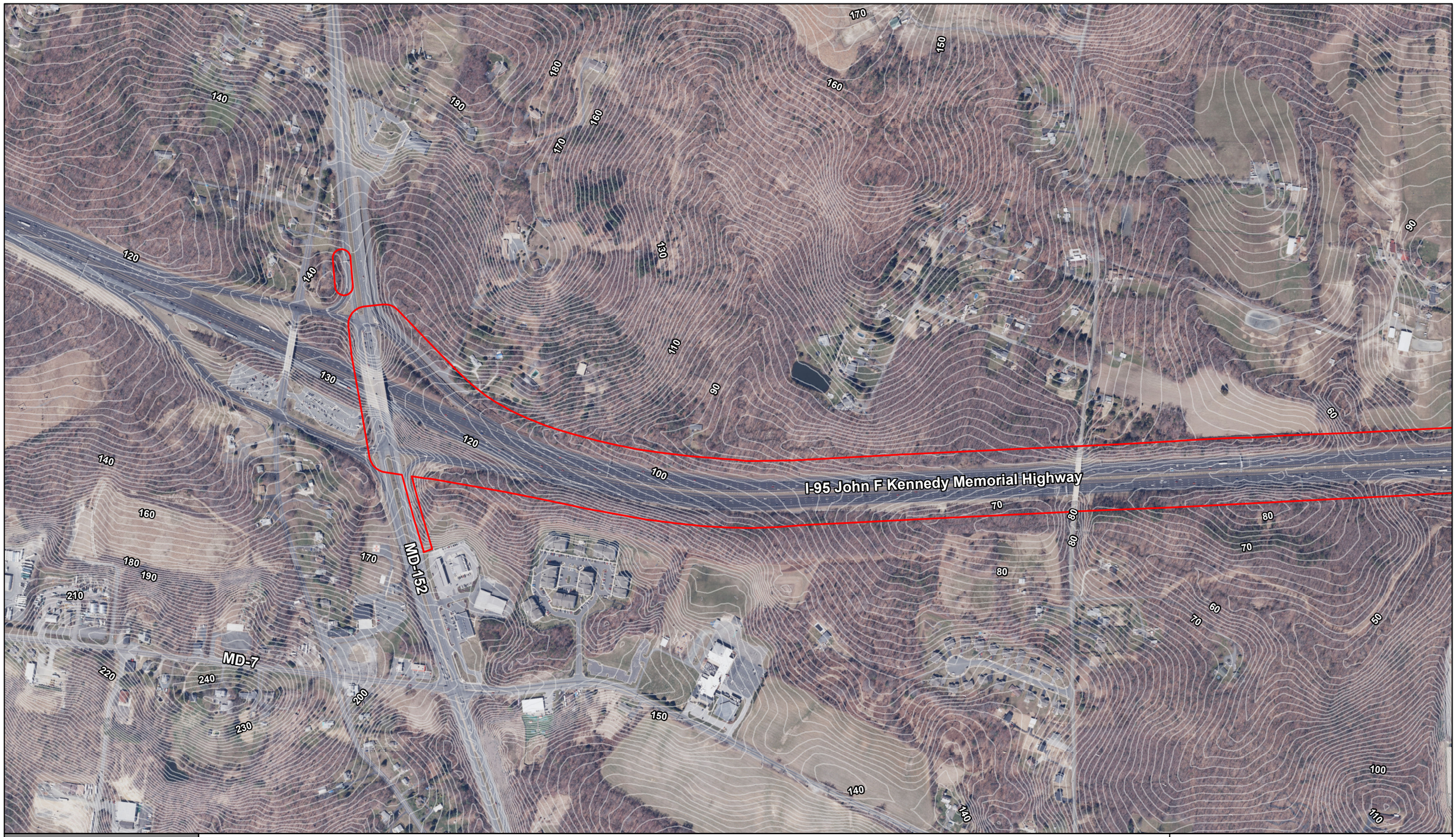
Maryland Transportation Authority

I-95 5th LANE WIDENING
FROM MD 152 TO MD 24
FIGURE 4. SOILS MAP
NOVEMBER 2017

RK&K
Responsive People | Creative Solutions

Scale (ft.)
0 500 1,000
1" = 1,000'

N



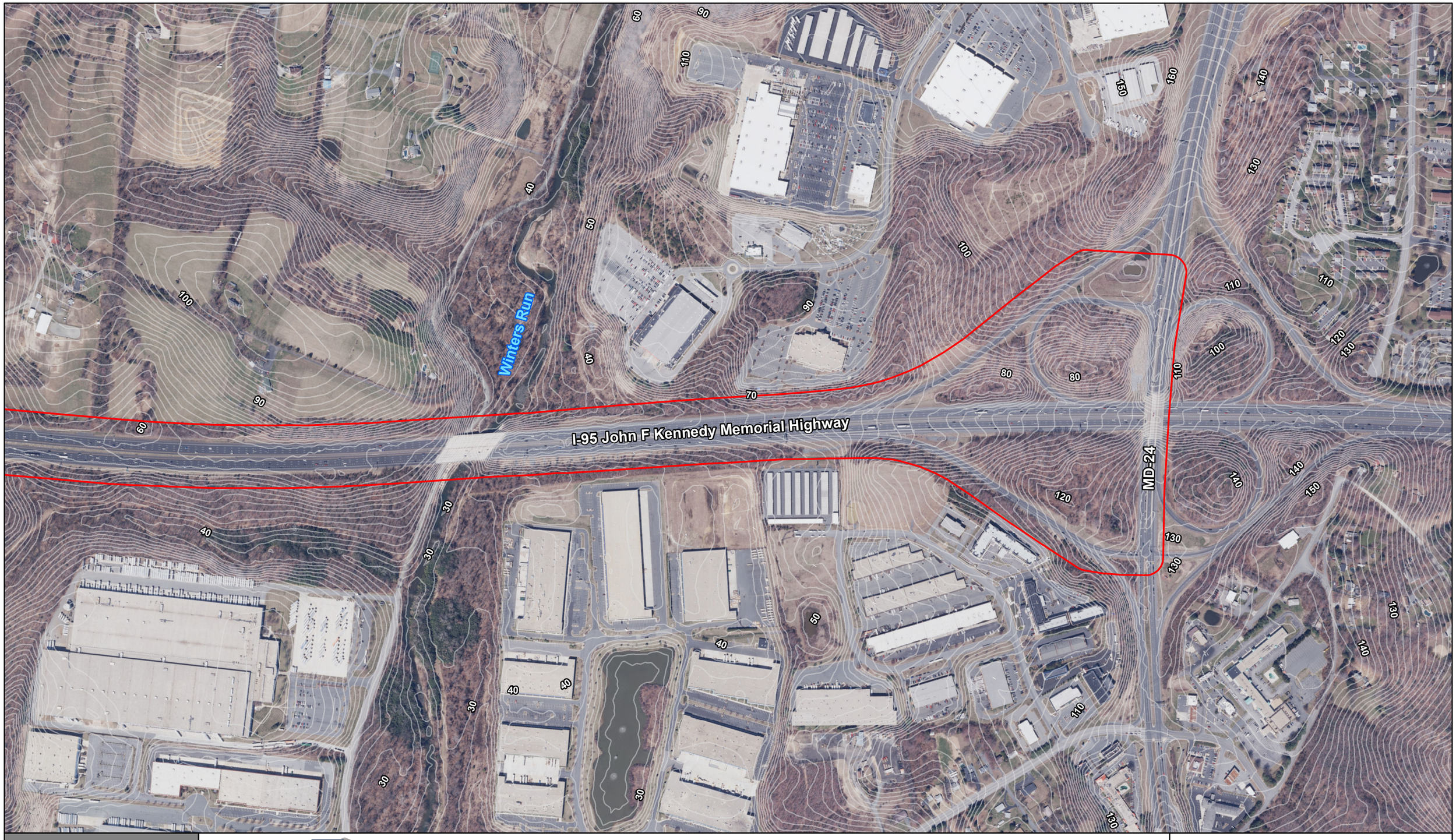
Maryland Transportation Authority

I-95 5th LANE WIDENING
FROM MD 152 TO MD 24
FIGURE 5a. TOPOGRAPHY MAP
NOVEMBER 2017

RK&K
Responsive People | Creative Solutions

Scale (ft.)
0 250 500
1" = 500'

N



Study Area

Contours

Maryland Transportation Authority

I-95 5th LANE WIDENING
FROM MD 152 TO MD 24
FIGURE 5b. TOPOGRAPHY MAP
NOVEMBER 2017

RK&K
Responsive People | Creative Solutions

Scale (ft.)
0 250 500
1" = 500'

Appendix B – Photographic Documentation

Wetland A – PEM

Waters B – Perennial RPW

Wetland C – PEM

Waters D – Intermittent RPW

Waters E – Intermittent RPW

Waters F – Perennial RPW

Waters G – Perennial RPW

Wetland H – PFO/PEM

Waters I – Intermittent RPW

Waters J – Perennial RPW

Waters K – Intermittent RPW

Wetland L – PFO

Waters M – Perennial RPW

Waters N – Intermittent RPW

Wetland P – PFO

Wetland S – PFO

Wetland T – PEM

Waters U – Perennial RPW

Waters V – Intermittent RPW

Waters W – Perennial RPW

Wetland X – PFO

Waters Y – Perennial RPW

Wetland Z – PFO

Wetland AA – PFO

Wetland BB – PFO

Waters CC – Ephemeral Non-RPW

Waters DD – Intermittent RPW

Waters EE – Perennial RPW

Waters FF – Perennial RPW

Wetland GG – PFO

Waters HH – Ephemeral Non-RPW

Waters II – Ephemeral Non-RPW

Waters JJ – Ephemeral Non-RPW

Wetland KK – PFO

Wetland LL – PEM

Wetland MM – PFO

Waters NN – Ephemeral Non-RPW

Waters OO – Intermittent RPW

Wetland PP – PEM

Waters QQ – Intermittent RPW

Waters RR – Ephemeral Non-RPW

Wetland SS – PFO

Waters TT – Ephemeral Non-RPW

Wetland UU – PFO

Wetland VV – PFO

Waters WW – Ephemeral Non-RPW

Forest Stand 1

Forest Stand 2

Forest Stand 3

Forest Stand 4

Forest Stand 5

Forest Stand 6

Forest Stand 7

Forest Stand 8

Forest Stand 9

Forest Stand 10

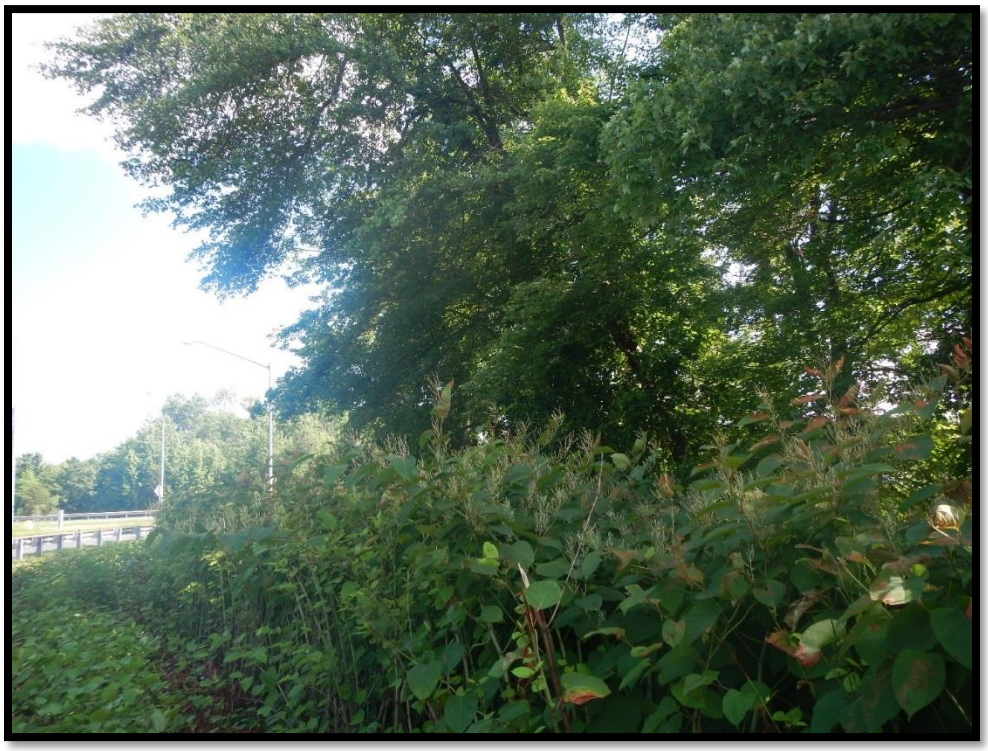
Hedgerow 1

Hedgerow 2

Hedgerow 3

Hedgerow 4

Hedgerow 5



Hedgerow 6

Reforestation Area 1

Reforestation Area 2

Appendix C – Wetland & Waters of the U.S. Data Sheets

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/5/2017

Applicant/Owner: MDTA State: MD Sampling Point: A-WET

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44122 Long: -76.34679 Datum: WGS84

Soil Map Unit Name: LyD NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ◉	No ○	
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks:

Wetland originates from pipe under I-95 northbound on ramp from MD 152. Riprap observed at pipe outfall. Wetland drains to Waters B. Wetland follows toe of roadway slope. Photos 45-46. The dominant Festuca sp. could not be identified during survey, but since the area exhibits wetland hydrology, hydric soils, and wetland geomorphology, it is presumed the species is tolerant of hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 1

Water Table Present? Yes ☑ No ☐ Depth (inches): 5

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: A-WET

Tree Stratum (Plot size: 5x20')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Sapling Stratum (Plot size: 5x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 5x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Herb Stratum (Plot size: 5x20')			
1. Typha latifolia	10	no	OBL
2. Festuca sp.	80	yes	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		

50% of total cover: 45.0 20% of total cover: 18.0

Woody Vine Stratum (Plot size: 5x20')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

The dominant Festuca sp. could not be identified during survey.

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Festuca sp. could not be identified, but hummock morphology and hydrology indicate it is a wetland species.

SOIL Sampling Point: A-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR4/3	98	5YR6/4	2	C	PL	Silt loam	
3-13	10YR4/2	93	2.5Y6/5	5	C	M	Silt loam	
			2.5YR6/4	2	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/5/2017

Applicant/Owner: MDTA State: MD Sampling Point: A-UPL

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): Concave Slope (%):

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44118 Long: -76.34690 Datum: WGS84

Soil Map Unit Name: LyD NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ( )	No (•)	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soil Present?	Yes ( )	No (•)	
Wetland Hydrology Present?	Yes ( )	No (•)	

Remarks:

Plot point located upslope of wetland. Vegetation transition observed. Festuca species appears to be different from species within the wetland. Without identifying the Festuca species the Dominance Test and Prevanlence Index could not be completed, but considering it was likely a planted roadside species and the area failed to meet hydrology and hydric soil indicators, it is assumed there is not sufficient hydrophytic vegetation to meet the criteria. Photos 48-50.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [✓] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches):
Water Table Present?	Yes [ ]	No [✓]	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✓]	Depth (inches):

Wetland Hydrology Present? Yes ( ) No (•)

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology indicators observed

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: A-UPL

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling Stratum (Plot size: 5x5)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 5x5)			
1. Liquidambar styraciflua	10	yes	FAC
2. Baccharis halimifolia	10	yes	FACW
3.			
4.			
5.			
6.			
	20 = Total Cover		
50% of total cover: 10.0	20% of total cover: 4.0		
Herb Stratum (Plot size: 5x5)			
1. Apocynum androsaemifolium	12	no	FACU
2. Festuca sp.	80	yes	
3. Rosa multiflora	10	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	102 = Total Cover		
50% of total cover: 51.0	20% of total cover: 20.4		
Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	5	yes	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: _____ (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Festuca sp. could not be identified at time of survey, but resembled the species higher in the landscape.

SOIL

Sampling Point: A-UPL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR4/3	100					Silty clay loam	
3-13	7.5YR4/4	98	2.5Y4/4	2	C	M	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** B	**Stream Order:** 1
Date: 4/5/2017	**State:** MD	**Photos:** 51-52	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** B-11A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing at time of survey			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Flows into a grate	Adjacent/Abutting: Wetlands A & C, Waters D

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 1-5'	☑ Silts	☑ Sands	☑ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2-6"	☑ Cobbles	☑ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☑ Concrete	Rip rap	LB: Forest, mowed grass, highway
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☑ 2:1 ☑ 3:1 ☑ ≤4:1			
Notes: Some areas of bank erosion					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: February	Year: 2017
◉ No rain	○ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☐ Scour
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/5/2017

Applicant/Owner: MDTA State: MD Sampling Point: C-WET

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Man-made SWM Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44163 Long: -76.34514 Datum: WGS84

Soil Map Unit Name: LyD NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

Stormwater management basin inline with Waters B. Photos 53-54

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [✓] Surface Water (A1)
- [✓] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [✓]	No [ ]	Depth (inches): 8
Water Table Present?	Yes [✓]	No [ ]	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes [✓]	No [ ]	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: C-WET

Tree Stratum (Plot size: 10x20')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Sapling Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Herb Stratum (Plot size: 10x20')			
1. Typha latifolia	60	yes	OBL
2. Ranunculus sp.	5	no	
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	65 = Total Cover		

50% of total cover: 32.5 20% of total cover: 13.0

Woody Vine Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

SOIL

Sampling Point: C-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	100					Mucky mineral	
3-8	2.5Y 4/2	100					Sandy clay loam	
8-14	2.5Y 5/2	98	5YR 4/6	2	C	M	Sandy clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** D	**Stream Order:** 1
Date: 4/5/2017	**State:** MD	**Photos:** 56	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** D-8A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Partially wet channel. Flow observed upstream portion of channel			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of Study Area	Downstream: Waters B	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate						Vegetation Cover Type (MBSS)
☑	Natural Channel Shape	Width: 2-5 ft		☑ Silts	☑ Sands		Muck		RB: Forest
☐	Artificial (man-made)	Depth: 2 inches		☐ Cobbles	☐ Gravel	☑	Other:		
☑	Manipulated (man-altered)	Bank Erosion/stability:		☐ Bedrock	☐ Concrete		Riprap		LB: Forest
☐	Other:	moderate erosion	Side slope: ☐ ≥1:1 ☑ 2:1 ☑ 3:1 ☐ ≤4:1						

Notes: Channel appears to flow underground at old culvert crossing

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: February	Year: 2017
◉	No rain	○	0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○	Heavy Rain	◉	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks		Ordinary High Water Mark					
☑	Yes	☑	Clear, natural line impressed on the bank	☐	Sediment deposition	☐	Sediment sorting
☐	No	☐	Changes in the character of soil	☑	Water staining	☐	Scour
		☐	Shelving	☐	Presence of flood litter/debris	☑	Observed/predicted flow events
		☑	Vegetation matted down, bent, or absent	☐	Destruction of terrestrial veg.	☐	Abrupt change in plant community
		☑	Leaf litter disturbed	☐	Presence of wrack line	☐	Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
☐	Oil or scum line along shore objects	☐	Survey to available datum	☐	Water is clear
☐	Fine shell or debris deposits (foreshore)	☐	Physical markings	☐	Water is discolored
☐	Physical markings/characteristics	☐	Vegetation lines/changes in types	☐	Oily film
☐	Tidal gauges			☐	Other:

Notes:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** E	**Stream Order:** 1
Date: 4/5/2017	**State:** MD	**Photos:** 57 -58	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** E-14A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing at time of survey. Channel continues outside of study area			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of Study Area	Downstream: Outside of Study Area/Waters G	Adjacent/Abutting: Wetland PP

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate						Vegetation Cover Type (MBSS)
☑	Natural Channel Shape	Width: 2-5ft	☑	Silts	☑	Sands	☐	Muck	RB: Forest
☐	Artificial (man-made)	Depth: 3in	☐	Cobbles	☐	Gravel	☐	Other:	
☑	Manipulated (man-altered)	Bank Erosion/stability:	☐	Bedrock	☑	Concrete			LB: Forest
☐	Other:	Moderately stable	Side slope: ☑ ≥1:1 ☑ 2:1 ☑ 3:1 ☐ ≤4:1						
Notes: Concrete channel at downstream portion of channel. Flows in culvert under I-95 and beyond study area to Waters G.									

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php											Month: February	Year: 2017
◉	No rain	○	0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○	Heavy Rain	◉	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks		Ordinary High Water Mark					
☑	Yes	☑	Clear, natural line impressed on the bank	☑	Sediment deposition	☐	Sediment sorting
☐	No	☐	Changes in the character of soil	☐	Water staining	☐	Scour
		☐	Shelving	☑	Presence of flood litter/debris	☑	Observed/predicted flow events
		☐	Vegetation matted down, bent, or absent	☐	Destruction of terrestrial veg.	☐	Abrupt change in plant community
		☑	Leaf litter disturbed	☑	Presence of wrack line	☐	Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
☐	Oil or scum line along shore objects	☐	Survey to available datum	☐	Water is clear
☐	Fine shell or debris deposits (foreshore)	☐	Physical markings	☐	Water is discolored
☐	Physical markings/characteristics	☐	Vegetation lines/changes in types	☐	Oily film
☐	Tidal gauges			☐	Other:
Notes:					

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** F	**Stream Order:** 1
Date: 7/7/2017	**State:** MD	**Photos:** 726-728	
Crew: ET/KJH	**County:** Harford	**Last Flag Number:** F-12A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Fed by groundwater from wetland outside of study area. Likely dries during summer.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Waters G	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)			Substrate						Vegetation Cover Type (MBSS)
✓	Natural Channel Shape	Width: 1-4'		✓ Silts	✓ Sands	✓ Muck			RB: Forest
☐	Artificial (man-made)	Depth: 6"		☐ Cobbles	☐ Gravel	☐ Other:			
☐	Manipulated (man-altered)	Bank Erosion/stability:		☐ Bedrock	☐ Concrete				LB: Forest
☐	Other:	Mostly stable	Side slope: ☐ ≥1:1 ✓ 2:1 ☐ 3:1 ✓ ≤4:1						
Notes: Mostly stable in upper reach. Banks become eroded and channel incised at confluence with Waters G.									

Weather/Precipitation Conditions:

During Field Visit		Inches of Rain Within Last Week		Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: March	Year: 2017
◉	No rain	◉	0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○
○	Light rain	○	0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○	Heavy Rain	○	>1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks		Ordinary High Water Mark					
✓	Yes	✓	Clear, natural line impressed on the bank	☐	Sediment deposition	☐	Sediment sorting
☐	No	☐	Changes in the character of soil	✓	Water staining	✓	Scour
		☐	Shelving	✓	Presence of flood litter/debris	✓	Observed/predicted flow events
		✓	Vegetation matted down, bent, or absent	☐	Destruction of terrestrial veg.	☐	Abrupt change in plant community
		✓	Leaf litter disturbed	✓	Presence of wrack line	☐	Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line		Mean High Water Mark indicated by:		Chemical Characteristics	
☐	Oil or scum line along shore objects	☐	Survey to available datum	☐	Water is clear
☐	Fine shell or debris deposits (foreshore)	☐	Physical markings	☐	Water is discolored
☐	Physical markings/characteristics	☐	Vegetation lines/changes in types	☐	Oily film
☐	Tidal gauges			☐	Other:
Notes:					

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** G	**Stream Order:**
Date: 7/7/2017	**State:** MD	**Photos:** 715-716	
Crew: ET/KJH	**County:** Harford	**Last Flag Number:** G-310A&B; multiple numbered segments	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Heavy base flow at time of survey.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Outside of study area, Winter's Run	Adjacent/Abutting: Waters B, E, F, J, NN, QQ, RR, TT; Wetlands SS, UU, VV

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 4-15'	☑ Silts	☑ Sands	☑ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 4-24"	☑ Cobbles	☑ Gravel	☑ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☑ Concrete	Large rip rap	
☐ Other:	Minor erosion	Side slope: ☐ ≥1:1 ☑ 2:1 ☑ 3:1 ☐ ≤4:1			LB: Forest
Notes: Large rip rap at culvert outfall east of I-95. Concrete apron at head wall west of I-95. Some areas of bank erosion					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: March	Year: 2017
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☑ Scour
	☑ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/11/2017
Applicant/Owner: MDTA State: MD Sampling Point: H-WET
Investigator(s): ET/MH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44442 Long: -76.33560 Datum: WGS84
Soil Map Unit Name: KpB NWI classification: PFO/PEM
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ◉	No ○	
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks:
Emergent wetland within forest cover. Wetland extends beyond ROW. Drains to perennial Waters G beyond study area. Photo 61. The dominant Carex sp. could not be identified during survey, but since the area exhibits wetland hydrology, hydric soils, and wetland geomorphology, it is presumed the species is tolerant of hydric conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☑ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 2
Water Table Present? Yes ☑ No ☐ Depth (inches): 0
Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: H-WET

Tree Stratum (Plot size: 15x15')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Sapling Stratum (Plot size: 15x15')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 15x15')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Herb Stratum (Plot size: 15x15')			
1. Phragmites australis	50	yes	FACW
2. Carex sp.	25	yes	
3. Smilax rotundifolia	5	no	FAC
4. Juncus effusus	5	no	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	85 = Total Cover		

50% of total cover: 42.5 20% of total cover: 17.0

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- [x] 1 - Rapid Test for Hydrophytic Vegetation
- [ ] 2 - Dominance Test is >50%
- [ ] 3 - Prevalence Index is ≤3.0[1]
- [ ] 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- [x] Problematic Hydrophytic Vegetation[1] (Explain)

Carex species could not be identified

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes (●) No ( )

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

Carex species could not be identified at the time of survey, but it is likely hydrophytic based on surrounding vegetation.

SOIL

Sampling Point: H-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/1	98	10YR 3/6	2	C	M	SCL	Organic inclusions
3-12	5Y 5/1	85	10YR 3/6	15	C	M	SCL	Some pore lining concentration

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/11/2017

Applicant/Owner: MDTA State: MD Sampling Point: H-L-UPL

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Roadway slope Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44445 Long: -76.33558 Datum: WGS84

Soil Map Unit Name: KpB NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ○	No ◉	
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: H-L-UPL

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	60	yes	FAC
2. Liriodendron tulipifera	20	yes	FACU
3.			
4.			
5.			
6.			
	80	= Total Cover	

50% of total cover: 40.0 20% of total cover: 16.0

Sapling Stratum (Plot size: 10' R)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 10' R)			
1. Rosa multiflora	40	yes	FACU
2.			
3.			
4.			
5.			
6.			
		= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Herb Stratum (Plot size: 10' R)			
1. Allium vineale	5	no	FACU
2. Lonicera japonica	20	yes	FACU
3. Smilax rotundifolia	20	yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	45	= Total Cover	

50% of total cover: 22.5 20% of total cover: 9.0

Woody Vine Stratum (Plot size: 10' R)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species	80	x 3 =	240
FACU species	85	x 4 =	340
UPL species		x 5 =	0
Column Totals:	165 (A)		580 (B)

Prevalence Index = B/A = 3.52

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

SOIL

Sampling Point: H-L-UPL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	7.5YR 2.5/1	100					Organic	High organics
2-6	10YR 4/2	100					Fine sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Roots

Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** I	**Stream Order:** 1
Date: 4/11/2017	**State:** MD	**Photos:** 62-63	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** I-4A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Water in channel observed. No channel upstream. Algae indicates prolonged water presence.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: None	Downstream: Waters J	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1'	☑ Silts	☐ Sands	☐ Muck	RB: Forest
☑ Artificial (man-made)	Depth: 4"	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Mowed grass
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☐ 2:1 ☑ 3:1 ☐ ≤4:1			
Notes: Manmade stormwater conveyance at toe of slope. Flows to Waters J					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: March	Year: 2017
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○		
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☐ Scour
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** J	**Stream Order:**
Date: 4/11/2017	**State:** MD	**Photos:** 64-65	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** J-4A&B (downstream of I-95) J-10A&B (upstream of I-95)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Steadily flowing, incised channel			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Outside of study area/Waters G	Adjacent/Abutting: Waters I, II, JJ; Wetland LL

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 2'	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2-6"	☑ Cobbles	☑ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Moderate erosion	Side slope: ☑ ≥1:1 ☐ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Incised channel with steep banks. Flows to perennial Waters G outside of study area.					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: March	Year: 2017
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark					
☑ Yes	☐ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☑ Scour
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** K	**Stream Order:** 1
Date: 4/11/2017	**State:** MD	**Photos:** 66-67	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** K-3B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing during survey			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Culvert under I-95	Downstream: Outside of study area/Waters G	Adjacent/Abutting:

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 1-3'	☑ Silts	☑ Sands	☐ Muck	RB: Mowed Grass, Forest
☐ Artificial (man-made)	Depth: 3"	☐ Cobbles	☑ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Mowed Grass, Forest
☐ Other:	Moderate erosion	Side slope: ☑ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			

Notes: Flows beyond ROW fence to Waters G outside of study area

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: March	Year: 2017
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○		
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark			
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting	
☐ No	☐ Changes in the character of soil	☑ Water staining	☐ Scour	
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events	
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community	
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:	

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/11/2017
Applicant/Owner: MDTA State: MD Sampling Point: L-WET
Investigator(s): ET/MH Section, Township, Range:
Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.44505 Long: -76.33384 Datum: WGS84
Soil Map Unit Name: KpB NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)
Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]
Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:
Depressional wetland beyond roadway embankment. Splits the ROW fence. Appears isolated. Photos 68-69

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [✓] Surface Water (A1)
- [✓] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✓] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [✓] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [✓] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [✓] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [✓]	No [ ]	Depth (inches): 2
Water Table Present?	Yes [✓]	No [ ]	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes [✓]	No [ ]	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: L-WET

Tree Stratum (Plot size: 10x20')	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	30	yes	FAC
2. Liquidambar styraciflua	5	no	FAC
3.			
4.			
5.			
6.			
	35	= Total Cover	

50% of total cover: 17.5 20% of total cover: 7.0

Sapling Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 10x20')			
1. Liquidambar styraciflua	5	yes	FAC
2. Acer rubrum	2	yes	FAC
3.			
4.			
5.			
6.			
	7	= Total Cover	

50% of total cover: 3.5 20% of total cover: 1.4

Herb Stratum (Plot size: 10x20')			
1. Juncus effusus	3	yes	FACW
2. Smilax rotundifolia	3	yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	6	= Total Cover	

50% of total cover: 3.0 20% of total cover: 1.2

Woody Vine Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

SOIL Sampling Point: L-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2	98	10YR 3/6	2	C	M	Clay loam	
3-11	10YR 5/3	30	7.5YR 4/6	10	C	M	Clay loam	
	10YR 4/2	60						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** M	**Stream Order:**
Date: 4/19/2017	**State:** MD	**Photos:** 258-259	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** M-4A&B (downstream of culvert); M-9A&B (upstream)	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing at time of study			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of Study Area	Downstream: Outside of Study Area	Adjacent/Abutting: Waters HH

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 3-8 ft	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2 in	☑ Cobbles	☑ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☑ Concrete		LB: Forest
☐ Other:	Stable	Side slope: ☑ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Bank partially concrete, flows through culvert under I-95					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												
		Month: March							Year: 2017					
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** N	**Stream Order:**
Date: 4/19/2017	**State:** MD	**Photos:** 261-262	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** N-4A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Some base flow during site visit. Likely intercepts groundwater at culvert outfall.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Waters WW	Downstream: Outside of study area, Waters G	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☐ Natural Channel Shape	Width: 3'	☐ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2-6"	☐ Cobbles	☑ Gravel	☑ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete	Rip rap	
☐ Other:	Minor erosion	Side slope: ☐ ≥1:1 ☑ 2:1 ☑ 3:1 ☐ ≤4:1			LB: Forest
Notes: Emerges from culvert carrying Waters WW, channel bed lined with riprap					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php													Month: March	Year: 2017
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○		
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6		
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet				

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☐ Scour
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/19/2017
Applicant/Owner: MDTA State: MD Sampling Point: P-WET
Investigator(s): ET/MH Section, Township, Range:
Landform (hillslope, terrace, etc.): Isolated depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45521 Long: -76.3097 Datum: WGS84
Soil Map Unit Name: EsB2 NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ◉ No ○
Hydric Soil Present? Yes ◉ No ○
Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ☑ No ☐

Remarks:
Closed depression appears to be isolated. Photos 269-271

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☑ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☑ No ☐ Depth (inches): 2
Water Table Present? Yes ☑ No ☐ Depth (inches): 13
Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: P-WET

Tree Stratum (Plot size: 20x20')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus bicolor	40	yes	FACW
2. Nyssa sylvatica	20	yes	FAC
3. Acer rubrum	5	no	FAC
4.			
5.			
6.			
	65 = Total Cover		

50% of total cover: 32.5 20% of total cover: 13.0

Sapling Stratum (Plot size: 20x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 20x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Herb Stratum (Plot size: 20x20')			
1. Smilax rotundifolia	2	yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2 = Total Cover		

50% of total cover: 1.0 20% of total cover: 0.4

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Some dead standing trees

SOIL

Sampling Point: P-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/1	100					Fine sandy clay	
3-14	10YR 6/3	70	2.5YR 3/4	10	C	PL	Clay loam	Concentrations in matrix also
			10YR 5/6	20	C	PL		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☑ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/19/2017

Applicant/Owner: MDTA State: MD Sampling Point: P-UPL

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Convex Slope (%): 2

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45521 Long: -76.30976 Datum: WGS84

Soil Map Unit Name: EsB2 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ◉	No ○	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ○	No ◉	
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ☐	No ☑	Depth (inches):
Water Table Present?	Yes ☐	No ☑	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes ☐	No ☑	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: P-UPL

Tree Stratum (Plot size: 20' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. Nyssa sylvatica	30	yes	FAC
2. Fraxinus americana	10	no	FACU
3. Quercus rubra	20	yes	FACU
4. Ilex opaca	25	yes	FACU
5.			
6.			
	85	= Total Cover	

50% of total cover: 42.5 20% of total cover: 17.0

Sapling Stratum (Plot size: 20' R)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 20' R)			
1. Acer rubrum	5	yes	FAC
2.			
3.			
4.			
5.			
6.			
	5	= Total Cover	

50% of total cover: 2.5 20% of total cover: 1.0

Herb Stratum (Plot size: 20' R)			
1. Smilax rotundifolia	2	yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	2	= Total Cover	

50% of total cover: 1.0 20% of total cover: 0.4

Woody Vine Stratum (Plot size: 20' R)			
1.			
2.			
3.			
4.			
5.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

SOIL

Sampling Point: P-UPL

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	5YR 3/3	100					Organic	
2-10	5YR 2.5/1	100					Sandy clay	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 10"

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/19/2017
Applicant/Owner: MDTA State: MD Sampling Point: S-WET
Investigator(s): ET/MH Section, Township, Range:
Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45262 Long: -76.31757 Datum: WGS84
Soil Map Unit Name: DcB NWI classification: PFO
Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)
Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]
Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:
Toe of slope wetland. Drains to swale beyond row fence. Receives hydrology from small stormwater pipe. Photos 275-276

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✓] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [✓] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [✓] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes [ ] No [✓] Depth (inches): _____
Water Table Present? Yes [ ] No [✓] Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes [ ] No [✓] Depth (inches): _____

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Soil cracks observed outside of plot.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: S-WET

Tree Stratum (Plot size: 20x20')	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus palustris	20	yes	FACW
2. Acer rubrum	50	yes	FAC
3. Fraxinus americana	10	no	FACU
4.			
5.			
6.			
	80	= Total Cover	

50% of total cover: 40.0 20% of total cover: 16.0

Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size:)			
1. Typha latifolia	40	yes	OBL
2. Lysimachia nummularia	15	no	FACW
3. Broadleaf sp.	10	no	
4. Toxicodendron radicans	15	no	FAC
5.			
6.			
	80	= Total Cover	

50% of total cover: 40.0 20% of total cover: 16.0

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	0	= Total Cover	

50% of total cover: 0.0 20% of total cover: 0.0

Woody Vine Stratum (Plot size:)			
1. Toxicodendron radicans	10	yes	FAC
2.			
3.			
4.			
5.			
	10	= Total Cover	

50% of total cover: 5.0 20% of total cover: 2.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

SOIL

Sampling Point: S-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	98	10YR 5/6	2	C	M	Sandy clay	
3-13	10YR 4/1	75	10YR 5/6	20	C	M	Clay loam	
			5YR 4/4	5	C	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks: Some traces of petroleum may be present.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 5/4/2017

Applicant/Owner: MDTA State: MD Sampling Point: S-X-UPL

Investigator(s): ET/MRS Section, Township, Range:

Landform (hillslope, terrace, etc.): Roadway slope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45294 Long: -76.31716 Datum: WGS84

Soil Map Unit Name: DcB NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes [ ] No [✓]
Hydric Soil Present?	Yes ○	No ◉	
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks:

Roadway slope. Two vegetative species could not be determined, but appeared to be upland.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [ ] High Water Table (A2)
- [ ] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches):
Water Table Present?	Yes [ ]	No [✓]	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes [ ]	No [✓]	Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: S-X-UPL

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 5'r)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling Stratum (Plot size: 5'r)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 5'r)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 5'r)			
1. Festuca sp.	70	yes	
2. Rubus sp.	20	yes	
3. Lonicera japonica	5	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19.0		
Woody Vine Stratum (Plot size: 5'r)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: _____ (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

The Festuca and Rubus species could not be identified, but they resemble nearby species located high in the landscape.

SOIL

Sampling Point: S-X-UPL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	7.5YR 5/4	100					Sandy loam	Fill material
5-10	7.5YR 5/8	100					Loam	Fill material, contains mica
10-14	7.5YR 5/6	100					Loam	Some fine gravel

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/26/2017

Applicant/Owner: MDTA State: MD Sampling Point: T-WET

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Drainage swale Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45649 Long: -76.31025 Datum: WGS84

Soil Map Unit Name: EsB2 NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

Drainage swale originates from pipe outfall to the north. No observed connection to Waters. Photos 292-293

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [✓] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [ ] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [ ] Hydrogen Sulfide Odor (C1)
- [ ] Oxidized Rhizospheres on Living Roots (C3)
- [ ] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [✓] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches):
Water Table Present?	Yes [✓]	No [ ]	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes [✓]	No [ ]	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: T-WET

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 4'x15')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling Stratum (Plot size: 4'x15')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 4'x15')			
1. Baccharis halimifolia	15	yes	FACW
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 4'x15')			
1. Typha angustifolia	80	yes	OBL
2. Multiflora rose	10	no	FACU
3. Lonicera japonica	2	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	92 = Total Cover		
50% of total cover: 46.0	20% of total cover: 18.4		
Woody Vine Stratum (Plot size: 4'x15')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

SOIL Sampling Point: T-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	95	7.5YR 4/6	5	C	M	Sandy clay	
2-8	10YR 5/1	90	7.5YR 4/6	10	C	M	Clay loam	Gravel refusal

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 8

Hydric Soil Present? Yes ◉ No ○

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 4/26/2017

Applicant/Owner: MDTA State: MD Sampling Point: T-UPL

Investigator(s): ET/MH Section, Township, Range:

Landform (hillslope, terrace, etc.): Roadway slope Local relief (concave, convex, none): Convex Slope (%): 3

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45648 Long: -76.31034 Datum: WGS84

Soil Map Unit Name: EsB2 NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ○	No ◉	
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks:

Roadway slope from jersey barrier to swale

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches):

Water Table Present? Yes ☑ No ☐ Depth (inches): 6

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: T-UPL

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 10'x10')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Sapling Stratum (Plot size: 10'x10')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Shrub Stratum (Plot size: 10'x10')			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		
Herb Stratum (Plot size: 10'x10')			
1. Festuca sp.	70	yes	
2. Taraxacum officinale	5	no	FACU
3. Galium boreale	15	no	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45.0	20% of total cover: 18.0		
Woody Vine Stratum (Plot size: 10'x10')			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0.0	20% of total cover: 0.0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = 0
FACW species _____	x 2 = 0
FAC species _____	x 3 = 0
FACU species _____	x 4 = 0
UPL species _____	x 5 = 0
Column Totals: _____ (A)	0 (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ○ No ◉

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

Festuca sp. could not be identified, but it resembles the Festuca located up high in the landscape.

SOIL

Sampling Point: T-UPL

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 3/2	100					Sandy clay	Gravelly
2-8	10YR 5/2	30						
	10YR 6/8	68	7.5YR 4/6	2				

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Gravel

Depth (inches): 8

Hydric Soil Present? Yes ○ No ◉

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** U	**Stream Order:**
Date: 4/26/2017	**State:** MD	**Photos:** 304-305	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** U-7A, U-9B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Known as Winters Run, blue line stream			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Outside of study area	Adjacent/Abutting: Waters V, W, FF

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 30 ft	☑ Silts	☑ Sands	☐ Muck	RB: Forest, Road
☐ Artificial (man-made)	Depth: 6 in - 3 ft	☑ Cobbles	☑ Gravel	☐ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Concrete banks under bridge. Sediment and cobble accumulation present along center pier. Water appears to flow over this area during high flow events.					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												
		Month: March							Year: 2017					
◉ No rain	○ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☑ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** V	**Stream Order:** 1
Date: 4/26/2017	**State:** MD	**Photos:** 300-301	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** V-17A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	◉ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	○ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Originates outside of ROW fence. Receives hydrology from adjacent wetlands/seeps			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: None	Downstream: Waters U	Adjacent/Abutting: Wetlands S, X

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 2-5 ft	☑ Silts	☑ Sands	☐ Muck	RB: Forest, mowed grass
☐ Artificial (man-made)	Depth: 6 in	☐ Cobbles	☑ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Toe of slope drainage					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: March	Year: 2017
◉ No rain	○ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** W	**Stream Order:**
Date: 4/26/2017	**State:** MD	**Photos:** 302-303	
Crew: ET/MH	**County:** Harford	**Last Flag Number:** W-2A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Flowing during survey, visible on aerial imagery			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of Study Area	Downstream: Waters U	Adjacent/Abutting: None

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 1-4 ft	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 2-4in	☐ Cobbles	☐ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete		LB: Forest
☐ Other:	Stable	Side slope: ☐ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Exposed roots					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												Month: March	Year: 2017
◉ No rain	○ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	
○ Heavy Rain	◉ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet			

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☑ Yes	☑ Clear, natural line impressed on the bank	☐ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☐ Water staining	☐ Scour
	☐ Shelving	☐ Presence of flood litter/debris	☑ Observed/predicted flow events
	☐ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☐ Leaf litter disturbed	☐ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 5/4/2017

Applicant/Owner: MDTA State: MD Sampling Point: X-WET

Investigator(s): ET/MRS Section, Township, Range:

Landform (hillslope, terrace, etc.): Toe of roadway slope Local relief (concave, convex, none): Concave Slope (%): 0

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45299 Long: -76.31681 Datum: WGS84

Soil Map Unit Name: DcB NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes ◉ No ○

Hydric Soil Present? Yes ◉ No ○

Wetland Hydrology Present? Yes ◉ No ○

Is the Sampled Area within a Wetland? Yes ☑ No ☐

Remarks:

Small wetland area at toe of roadway embankment. May continue beyond row fence. Photos 324-325

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: X-WET

Tree Stratum (Plot size: 10x20')	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	30	yes	FACW
2.			
3.			
4.			
5.			
6.			
	30 = Total Cover		

50% of total cover: 15.0 20% of total cover: 6.0

Sapling Stratum (Plot size: 10x20')			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

50% of total cover: 0.0 20% of total cover: 0.0

Shrub Stratum (Plot size: 10x20')			
1. Rosa multiflora	5	yes	FACU
2.			
3.			
4.			
5.			
6.			
	5 = Total Cover		

50% of total cover: 2.5 20% of total cover: 1.0

Herb Stratum (Plot size: 10x20')			
1. Agrostis gigantea	30	yes	FACW
2. Phragmites australis	10	no	FACW
3. Carex alopecoidea	20	yes	FACW
4. Toxicodendron radicans	25	yes	FAC
5. Parthenocissus quinquefolia	10	no	FACU
6. Lonicera japonica	10	no	FACU
7. Dichanthelium clandestinum	10	no	FAC
8.			
9.			
10.			
11.			
	115 = Total Cover		

50% of total cover: 57.5 20% of total cover: 23.0

Woody Vine Stratum (Plot size: 10x20')			
1. Toxicodendron radicans	20	yes	FAC
2.			
3.			
4.			
5.			
	20 = Total Cover		

50% of total cover: 10.0 20% of total cover: 4.0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83.3 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: (A)	0 (B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

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

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

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

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

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ◉ No ○

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

Most trees are dead or dying within plot

SOIL Sampling Point: X-WET

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

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 4/2	90	7.5YR 4/4	10	C	PL	Loam	
3-6	10YR 4/2	70	7.5YR 4/4	30	C	M	Sandy loam	
6-10	10YR 4/1	65	7.5YR 4/3	35	C	M	Loam	Some fill inclusions
10-13	10YR 5/1	70	7.5YR 4/4	30	C	PL	Silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Waters of the U.S. Data Sheet

Project: I-95 5th Lane Widening		**Feature ID:** Y	**Stream Order:**
Date: 5/4/2017	**State:** MD	**Photos:** 331-332	
Crew: ET/MRS	**County:** Harford	**Last Flag Number:** Y-83A&B	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent	Ephemeral
○ TNW (Subject to ebb and flow)	○ TNW – Perennial (Flowing year round)	○ RPW – Seasonal (must flow at least 3 months a year)	○ Non-RPW draining uplands
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Heavy base flow during survey			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Hydrologic Connectivity –	Upstream: Outside of study area	Downstream: Outside of study area	Adjacent/Abutting: Wetlands Z, AA & BB; Waters CC, DD, EE, OO

Feature Description: ***(check all that apply)***

Shape (with respect to OHW)		Substrate			Vegetation Cover Type (MBSS)
☑ Natural Channel Shape	Width: 3-8'	☑ Silts	☑ Sands	☐ Muck	RB: Forest
☐ Artificial (man-made)	Depth: 6-24"	☑ Cobbles	☑ Gravel	☑ Other:	
☑ Manipulated (man-altered)	Bank Erosion/stability:	☐ Bedrock	☐ Concrete	Rip rap	LB: Forest
☐ Other:	Areas of erosion	Side slope: ☑ ≥1:1 ☑ 2:1 ☐ 3:1 ☐ ≤4:1			
Notes: Originates from culvert under MD 24 and flows outside of ROW. Iron flocculent present. Some eroded undercut banks.					

Weather/Precipitation Conditions:

During Field Visit	Inches of Rain Within Last Week	Monthly Drought Condition NCDC Regional PDSI http://www.ncdc.noaa.gov/temp-and-precip/climatological-rankings/index.php												
		Month: March							Year: 2017					
◉ No rain	◉ 0-0.5	○	○	○	◉	○	○	○	○	○	○	○	○	○
○ Light rain	○ 0.5-1	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6
○ Heavy Rain	○ >1	Severe Drought			Moderate Drought		Normal			Moderately Wet		Severely Wet		

Non-tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

Bed and Banks	Ordinary High Water Mark		
☐ Yes	☑ Clear, natural line impressed on the bank	☑ Sediment deposition	☐ Sediment sorting
☐ No	☐ Changes in the character of soil	☑ Water staining	☑ Scour
	☐ Shelving	☑ Presence of flood litter/debris	☑ Observed/predicted flow events
	☑ Vegetation matted down, bent, or absent	☐ Destruction of terrestrial veg.	☐ Abrupt change in plant community
	☑ Leaf litter disturbed	☑ Presence of wrack line	☐ Other:

Tidal tributary has: ***(check all that apply; include photos for each & list photo #)***

High Tide Line	Mean High Water Mark indicated by:	Chemical Characteristics
☐ Oil or scum line along shore objects	☐ Survey to available datum	☐ Water is clear
☐ Fine shell or debris deposits (foreshore)	☐ Physical markings	☐ Water is discolored
☐ Physical markings/characteristics	☐ Vegetation lines/changes in types	☐ Oily film
☐ Tidal gauges		☐ Other:
Notes:		

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: I-95 5th Lane Widening City/County: Harford County Sampling Date: 5/4/2017

Applicant/Owner: MDTA State: MD Sampling Point: Z-WET

Investigator(s): ET/MRS Section, Township, Range:

Landform (hillslope, terrace, etc.): Floodplain depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR or MLRA): LRR S; MLRA 148 Lat: 39.45699 Long: -76.31136 Datum: WGS84

Soil Map Unit Name: DcA NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes [✓] No [ ] (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes [✓] No [ ]

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes (●)	No ( )	**Is the Sampled Area within a Wetland?** Yes [✓] No [ ]
Hydric Soil Present?	Yes (●)	No ( )	
Wetland Hydrology Present?	Yes (●)	No ( )	

Remarks:

Small floodplain depressional area adjacent to Waters Y. Photos 335-336. There are no woody stems within the plot, but the wetland is considered PFO because it is located within a forest, and trees along the wetland fringe share similar soil and hydrologic conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- [ ] Surface Water (A1)
- [✓] High Water Table (A2)
- [✓] Saturation (A3)
- [ ] Water Marks (B1)
- [ ] Sediment Deposits (B2)
- [ ] Drift Deposits (B3)
- [ ] Algal Mat or Crust (B4)
- [ ] Iron Deposits (B5)
- [ ] Inundation Visible on Aerial Imagery (B7)
- [✓] Water-Stained Leaves (B9)
- [ ] Aquatic Fauna (B13)
- [ ] True Aquatic Plants (B14)
- [✓] Hydrogen Sulfide Odor (C1)
- [✓] Oxidized Rhizospheres on Living Roots (C3)
- [✓] Presence of Reduced Iron (C4)
- [ ] Recent Iron Reduction in Tilled Soils (C6)
- [ ] Thin Muck Surface (C7)
- [ ] Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- [ ] Surface Soil Cracks (B6)
- [ ] Sparsely Vegetated Concave Surface (B8)
- [ ] Drainage Patterns (B10)
- [ ] Moss Trim Lines (B16)
- [ ] Dry-Season Water Table (C2)
- [ ] Crayfish Burrows (C8)
- [ ] Saturation Visible on Aerial Imagery (C9)
- [ ] Stunted or Stressed Plants (D1)
- [ ] Geomorphic Position (D2)
- [ ] Shallow Aquitard (D3)
- [ ] Microtopographic Relief (D4)
- [ ] FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes [ ]	No [✓]	Depth (inches):
Water Table Present?	Yes [✓]	No [ ]	Depth (inches): 9
Saturation Present? (includes capillary fringe)	Yes [✓]	No [ ]	Depth (inches): 0

Wetland Hydrology Present? Yes (●) No ( )

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: