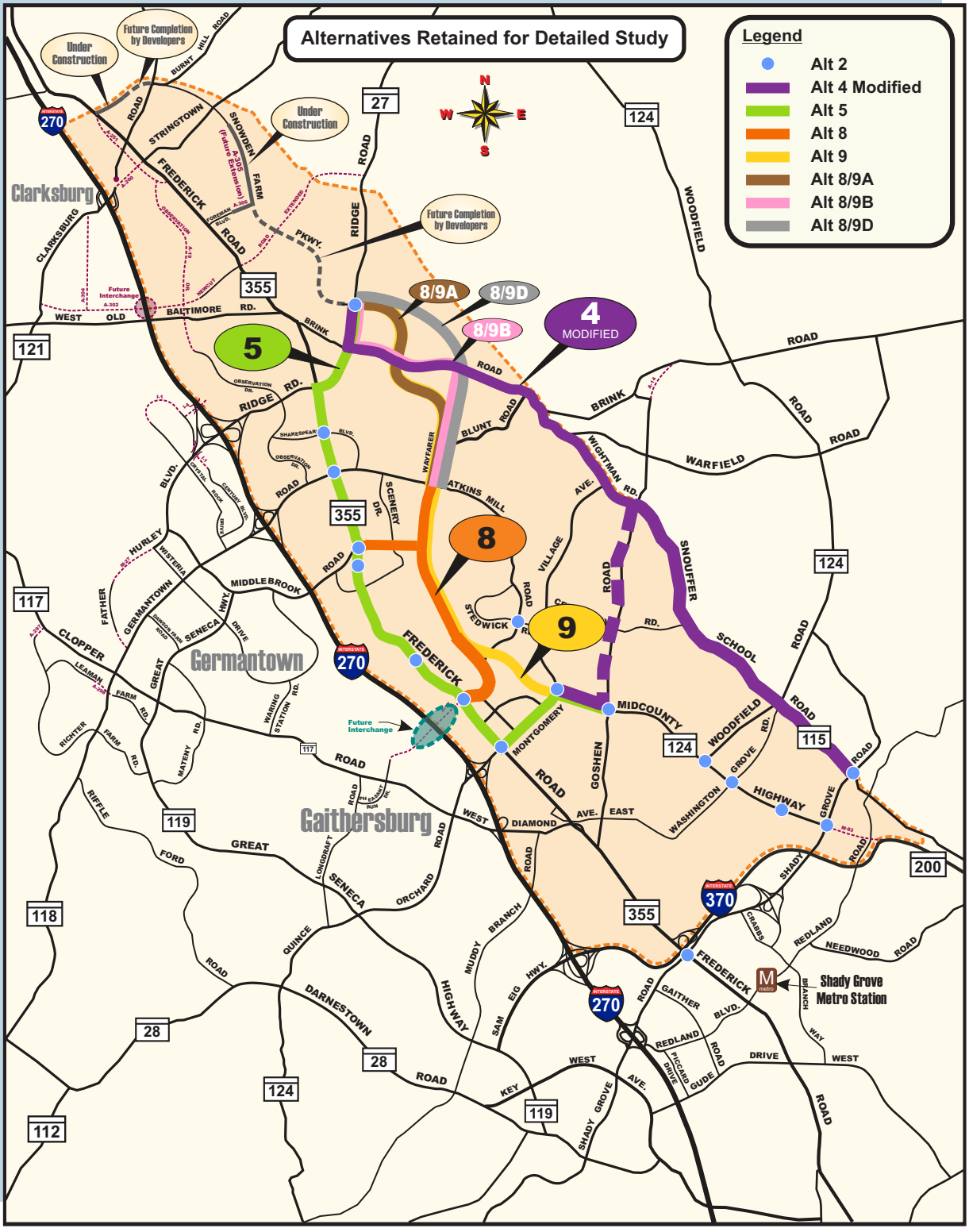
Montgomery County Department of Transportation

MidCounty Corridor Study

APPENDIX E

PARKS/FIDS/FOREST MITGATION



NATURAL RESOURCE INVENTORY
BETHEL CHURCH PROPERTY

RK&K conducted a Natural Resource Inventory on the Bethel Church property in Germantown, Maryland, during April through June 2013. The Bethel Church property is a 119.4-acre site bounded on the north by Wilson Farm and residents of 22001 and 22005 Wildcat Road; on the south by Brink Road; on the east by residences on Davis Mill Road; and on the west by residences on Treva Court (see NRI Plan in **Appendix D**).

The Bethel Church property is a candidate site for forest and park mitigation, stream restoration, and/or wetland creation for the Midcounty Corridor Study (MCS) or another Montgomery County project that requires mitigation. The Bethel Church property is near the North Germantown Greenway and if purchased and reforested, would provide an additional 119.4 acres to the Greenway and additional FIDS habitat once the planted trees mature. Bethel Church contains two unnamed Use I-P tributaries to Great Seneca Creek whose water quality would be improved by the conversion of agricultural land to forest. Much of the current forest has a high priority for retention due to the presence of streams, wetlands, the high number of specimen trees (dbh ≥ 24"), steep slopes, and high quality forest. Forest retention value rating characteristics are discussed below.

Surrounding land use consists of large-tract rural residential development and agriculture. There is no Maryland Agricultural Land Preservation Easement (MALP) on this property. Natural Resource Inventory (NRI) plans are attached. See **Appendix A** for project photos.

Summary
The 119.4 acre Bethel Church property contains three forest stands, two streams, eight wetlands, 397 specimen trees, and an occupied home. FS-1 is a 23.36 acre early successional Tulip Poplar Association in the center of the site where one wetland system and the two perennial streams are located. FS-2 is an 18.70-acre mid-successional Chestnut Oak forest located in the northeast and northwest ends of the property. FS-3 is a 24.36 acre mid-successional Tulip Poplar Association located in the north-central, southern, and eastern sections of the property. Two unnamed tributaries to Great Seneca Creek, both originating from numerous seeps on the property, flow north to south in the center of the property. Both streams contain numerous, abutting forested wetlands. The occupied farmhouse is located along Brink Road in the southern part of the property.

BACKGROUND INFORMATION

Background environmental information was obtained from the USGS 7.5 minute Gaithersburg quadrangle, FEMA FIRM maps, the Montgomery County Soil Survey, U.S. Fish and Wildlife National Wetland Inventory, and a recent survey of topography and property boundaries.

Topography

The project area topography is characterized by gently to somewhat steeply sloping upland hillsides and two streams with slightly incised banks that join together before exiting the property. Elevations within the property range from 626 NGVD 88 in the west to 472 NGVD 88 in the east. The NRI plans in Appendix D show slopes greater than 25% and slopes greater than 15% with highly erobible soils. Highly erodible soils are defined as those having a K- (erodibility) factor greater than 0.35.

Geology and Soils

The property is located in the Piedmont physiographic province characterized by broadly undulating to rolling topography underlain by metamorphic rocks with relief increased locally by low knobs or ridges and valleys. The Maryland Physiographic Map (2008) indicates the Bethel Church property is located in the Mt. Airy Upland District, characterized as a rolling upland due to the interaction of thick siltstones and quartzites with

stream reaches sometimes incised and within bedrock. The Maryland Geological Survey's Geologic Map of Maryland (1968) indicates that the project area is underlain by a Precambrian tuffaceous and non-tuffaceous phyllite, slate, and quartzite. The NRCS web soils data indicates that soils at the Bethel Church property include Eliot silt loam, 3-8% and 8-15%; Baile silt loam, 0-3% slopes (all hydric); Brinklow-Blocktown channery silt loam, 3-8% and 8-15% slopes; Occoquan loam, 3-8% slopes; Hatboro silt loam, 0-3% slopes (all hydric); and Blocktown-channery silt loam, 8-15% and 15-25% slopes, as indicated in **Table 1** below.

Table 1. Characteristics of Soils in Study Area

Map Unit Symbol	Map Unit Name	K-Factor (Whole Soil)	Hydric Rating	Hydrologic Soil Group
4B, 4C	Eliot Silt Loam, 3-8%, 8-15%	0.32	Not Hydric	C
6A	Baile silt loam, 0-3%	< 0.35	Hydric	D
16B, 16C	Brinklow-Blocktown channery silt loam, 3-8%, 8-15%,	> 0.35	Not Hydric	B/C/D
17B	Occoquan loam, 3-8%	0.37	Not Hydric	B
54A	Hatboro silt loam, 0-3%	< 0.35	Hydric	D
116C, 116D	Blocktown-channery silt loam, 8-15%, 15-25%	< 0.35	Not Hydric	C/D

Waters of the United States

Two unnamed tributaries to Great Seneca Creek (W1 and W2) join together on the property before exiting the site. Both perennial streams derive their hydrology from headwater wetlands and springs onsite. Stream Waders collected benthic macro-invertebrate samples at a downstream site (860-3-2001) in 2001. The site had a total of 14 macro-invertebrate families with 10 EPT taxa and 3 dipterans, resulting in an IBI score of 3.00 and a rating of "Fair." Ephemeropterans made up 43% of the macro-invertebrates in the sample, indicating healthy stream conditions. National Wetland Inventory mapping indicates non-tidal wetlands located in the northern portion of the project area surrounding the perennial streams (See **Appendix A**).

Floodplains

The FEMA FIRM map for Montgomery County, Maryland, panel 24031C0180D, indicates that the study area is not in a mapped FEMA floodplain (See **Appendix A**).

Rare, Threatened, and Endangered Species

Letters requesting information about the presence of rare, threatened or endangered species (RTE's) were sent to the MDNR-Wildlife and Heritage Services (MDNR-WHS), and MDNR-Environmental Review Unit (MDNR-ERU) on June 12, 2013. The U.S. Fish and Wildlife Service Chesapeake Bay Field Office (USFWS) website was visited on May 28, 2013, and it was determined that the Gaithersburg quadrangle is included on the USFWS list of USGS topographic maps where no federally proposed or listed endangered or threatened species are known to occur in Maryland. As a result, the online list request certification resource was used to generate an online certification letter.

A response dated June 25, 2013 was received from MDNR-Wildlife and Heritage Services (MDNR-WHS) indicating that no rare, threatened, or endangered species exist on the Bethel Church property. A response is pending from MDNR-Environmental Review Unit (MDNR-ERU). See **Appendix B** for agency correspondence.

Cultural Resources

The Bethel Church property was evaluated to determine eligibility for the National Register of Historic Places (NRHP). The Maryland Historical Trust (MHT) concurred that the property is not individually eligible; however, the property could potentially be a contributing element of a much larger Wildcat Road/Davis Mill Road Rural Historic District. By letter addressed to MHT and dated July 8, 2013, MCDOT requested comments and concurrence for the NRHP eligibility of the Wildcat Road/Davis Mill Road Rural Historic District. A response is forthcoming.

Forest Characterization – Methods

The investigation method employed for this forest stand delineation were based on the *State Forest Conservation Technical Manual, Third Edition, 1997* for a Simplified Forest Stand Delineation (FSD). The State 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 nor cleared." Forest stands were characterized by their community type, successional stage, and overall forest condition. A walk-through level forest stand delineation was conducted and no plot points were recorded. Forest association designations are derived from *Maryland Forest Associations Species List* (Brush et al., 1977). Forest stand locations are shown on the NRI plans (See **Appendix D**).

The Bethel Church property forest characterization included an inventory of specimen trees. Montgomery County defines specimen trees as, "trees having a diameter at breast height of 24 inches or more; trees having 75 percent or more of the diameter at breast height of the current champion of that species; or a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species." The location of all specimen trees within the Bethel Church property were recorded with an iPad and this information was transposed to the NRI plans, and the dbh, species, and health status of the tree was recorded. The health status of specimen trees was assessed by an ocular estimation of growth form, visible signs of decay, live crown ratio, and indications of disease or insect infestation.

Forest condition ratings are based on the following general factors. An "excellent" forest condition rating includes forest with numerous specimen trees, trees in good health, varied tree species diversity including climax forest tree species, excellent representation for all forest layers (overstory and understory trees, shrubs, and herbaceous perennials), rare or unusual plants, very minimal invasive plant cover, and ample wildlife habitat including food and cover. A "good" forest condition rating would include forest with some specimen trees, trees in good health, some tree species diversity, good representation of forest layers, very few invasive plants, and good wildlife habitat. A "fair" forest condition rating would include a forest with few or no specimen trees, trees health questionable, little tree species diversity, likely absence of one forest layers, moderate presence of invasive plants, and limited wildlife habitat. A "poor" forest condition rating would include a forest with no specimen trees, many trees in poor health, little tree species diversity, absence of one or more forest layers, heavy invasive plant presence, and little to no wildlife habitat.

The forest inventory included dominant canopy and understory species, dominant canopy size class, specimen tree identification, percent canopy closure, stand successional stage, stand condition, invasive cover, downed woody debris, and forest retention value. Table 2 lists characteristics for determining forest retention value ratings.

Table 2. Forest Retention Value Rating Characteristics

High Retention Value	Intermittent and perennial streams and their forest buffers
	Slopes > 25%
	Nontidal wetlands and buffers
	Erodible soils on slopes > 25%
	100-year floodplains
	Habitat for rare, threatened and endangered (RTE) species or County Watchlist Species
	Large contiguous forest tracts especially those w/ FIDS habitat
	Forest stands w/ multiple specimen trees
	Forest with County Green infrastructure
Moderate Retention Value	Stands with good structural diversity
	Corridor +300' foot wide
	Forest stream buffers
	Tree buffers between incompatible land uses
	>24" dbh trees
Low Retention Value	Stands with poor structural diversity
	Stands with moderate to high exotic/ invasive plant cover

Forest Characterization - Results

Three forest stands and three hundred and ninety seven specimen tees were identified during the investigation. An early successional Tulip Poplar Association is designated as FS-1 on the plans, a mid-successional Chestnut Oak Association is designated as FS-2, and a mid-successional Tulip Poplar Association is designated as FS-3. Specimen trees locations are shown on the NRI plan and a specimen tree table (**Appendix C**) provides the tree species, the dbh measurement of each tree, and its health status. Results of the investigation follow.

FS1: Early-successional Tulip Poplar Association

This 23.36-acre early-successional forest stand is located in the center of the Bethel Church property. The dominant canopy tree species are *Liriodendron tulipifera* (tulip poplar) and *Acer rubrum* (red maple). Other canopy tree species include *Prunus serotina* (black cherry), *Nyssa sylvatica* (black gum), *Ailanthus altimissa* (tree of heaven), *Sassafras albidum* (common sassafras), *Juglans nigra* (black walnut), *Quercus alba* (white oak), *Quercus rubra* (red oak) and *Diospyros virginiana* (persimmon). The understory is dominated by *Juniperus virginiana* (red cedar), *Cornus florida* (flowering dogwood), *Smilax rotundifolia* (greenbrier), *Rosa multiflora* (multiflora rose), and red maple and white oak saplings from overstory species. Trees between 6" and 12" dbh comprise the dominant canopy size class in this forest stand with only one specimen tree. The vine and herbaceous layers are dominated by *Toxicodendron radicans* (eastern poison ivy), *Celastris orbiculatus (*Oriental bittersweet), and *Lonicera japonica* (Japanese honeysuckle).

Canopy closure is estimated at 70-80% and downed woody debris was moderate. FS1 has a fair forest condition rating and a low Forest Retention Value since it contains only one specimen tree and is used as a wildlife corridor with moderate wildlife habitat value, and contains moderate invasive plant cover.

FS2: Mid-successional Chestnut Oak Association

This 18.70-acre mid-successional forest stand is located along upland slopes in the northeastern and northwestern corners of the site. The dominant canopy tree species is chestnut oak. Other canopy tree species include *Carya glabra* (pignut hickory), white oak, black cherry, northern red oak), black gum and red maple. The understory is dominated by black cherry, red maple, *Morus alba* (white mulberry), multiflora rose, *Rubus alleghiensis* (blackberry), *Kalmia latifolia* (mountain laurel) and many saplings from overstory species (especially chestnut oak). Trees between 12" and 24" dbh comprise the dominant canopy size class in this forest stand with many specimen trees. Overall there is little to no vine or herbaceous plant cover and mountain laurel cover is dense in the eastern portion of FS2. Canopy closure is estimated at approximately 80% and downed woody debris is moderate. FS2 has a good forest condition rating and high Forest Retention Value due to the presence of many specimen trees, use as a wildlife corridor, presence of large, dense areas of mountain laurel, and only minor invasive plant cover.

FS3: Mid-successional Tulip Poplar Association

This 24.36-acre mid-successional forest stand is located along the two unnamed tributaries to Great Seneca Creek and in the northeast corner of the site. The most common canopy tree species are tulip poplar and red maple. Other canopy tree species include red oak, white oak, *Carya glabra* (pignut hickory), black cherry, black gum, sassafras, and *Pinus virginiana* (Virginia pine). The understory is dominated by flowering dogwood, black gum, *Lindera benzoin* (spicebush), *Vaccinium corybosum* (highbush blueberry), *Smilax rotundifolia* (greenbrier), and *Rhododendron viscosum* (swamp azalea). Trees between 12" and 20" dbh comprise the dominant canopy size class in this forest stand with many specimen trees. The vine and herbaceous layers are dominated by *Impatiens capensis* (jewel weed), *Dennstaedtia punctilobula* (eastern hayscented fern), *Symplocarpus foetidus* (skunk cabbage), and *Microstegium vimineum* (Japanese stiltgrass). Canopy closure is estimated at approximately 80% and downed woody debris was moderate to high. FS3 has a good forest condition rating and a high Forest Retention Value due to its many specimen trees, perennial streams, wetlands and floodplain, its use as a wildlife corridor with high wildlife habitat value, its functioning as a stream buffer, and low invasive plant cover.

Specimen Trees

Three hundred and ninety-seven specimen trees, T1-T397, were located within the Bethel Church property. Specimen trees are abundant throughout FS2 and FS3. Retention of mature forest with specimen trees is important because specimen trees account for a larger proportion, per tree, of the forest canopy, seed and mast production, water and nutrient absorption, and biomass. Specimen tree information is summarized in a table found in **Appendix C**, and the locations of specimen trees are indicated on the NRI plans in **Appendix D**.

WETLAND DELINEATION- FIELD INVESTIGATION

Two jurisdictional waters of the U.S. and eight wetlands were identified during the wetland delineation. Wetland quality evaluations are based on the condition of the resource, diversity of plant species, presence of invasive species,

and best professional judgment. Stream quality evaluations are based on existing DNR and Montgomery County data collected for benthic macro-invertebrates and fish and an index of Biological Integrity (IBI) that rates stream health.

WETLAND DELINEATION-Methods

All waters of the U.S., including wetlands, in the study area were delineated by a team of environmental scientists. The applicable data form (Routine Wetland Determination for wetlands and/or the RK&K-derived Waters of the U.S. form) was completed for each delineated feature. Each delineated feature was named, the boundary points marked with pink flagging numbered consecutively and photographed. Boundary point positions were located using traditional survey methods or GPS.

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.

Wetlands were delineated in accordance with the U.S. Army Corps of Engineers 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain 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: U.S. Army Engineer Research and Development Center and supplemental guidance issued by the United States Army Corps of Engineers (USACE). Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

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

W1 – Waters of the U.S. (unnamed tributary to Great Seneca Creek)

W1 is a perennial, unnamed tributary to Great Seneca Creek that originates on the Bethel Church property from wetland seeps associated with wetlands W9, W10, and W11; and flows to the east until it joins W2. W1 is a relatively permanent water (RPW) with a natural channel shape, width of 2 to 5 feet, bank depth of 2 to 4 feet, water depth of 2-8", and banks with slopes varying from 1:1 to 3:1. Channel substrate consists of silts, cobbles, sands, and gravel. The feature has well defined bed and banks and observed indicators of the ordinary high water mark include sediment deposition, presence of litter and debris, and sediment sorting. The forest surrounding W1 is dominated by red maple, black cherry, red cedar, greenbrier, jewelweed, *Polystichum acrostichoides* (Christmas fern), *Vitis riparia* (grape vine), and *Sphagnum* spp. (sphagnum moss). Maryland DNR's Stream Waders collected benthic macro-invertebrate samples at a site (860-3-2001) downstream of

Feature W1 in 2001. The site had a total of 14 macroinvertebrate families, with 10 EPT taxa and 3 Dipterans, resulting in a "Fair" IBI score of 3.00. Ephemeropterans made up 43% of the macroinvertebrates in the sample, indicating healthy stream conditions. The feature provides adequate habitat for fish and benthic macro-invertebrates due to its stable conditions, variety of substrates, and presence of riffle-pool sequences. Feature W1 was flowing during the April 2011 and May and June 2013 field reviews, and is jurisdictional under Rapanos guidance.

W2 – Waters of the U.S. (unnamed tributary to Great Seneca Creek)
W2 is a perennial, unnamed tributary to Great Seneca Creek that originates on the Bethel Church property from wetland seeps associated with headwater wetland W8. W2 flows in a southerly direction and wetlands W3 through W7 are abutting wetlands. W2 is a RPW with a natural channel shape, a width of 3 to 6 feet, bank depth of 1 to 2 feet, water depth of 2-6", and banks with varying slopes from 2:1 to 3:1. Channel substrate consists of silts, sands, gravel, and bedrock. The feature has well defined bed and banks and observed indicators of the ordinary high water mark include clear natural line impressed on the bank, shelving, leaf litter disturbed, presence of litter and debris, sediment sorting, and observed/predicted flow event. The forest surrounding W1 is dominated by red maple, red cedar, blackgum, tulip poplar, multiflora rose, spice bush, Japanese honeysuckle, *Persicaria perfoliata* (mile-a-minute), and skunk cabbage. Maryland DNR's Stream Waders collected benthic macro-invertebrate samples at a site (860-3-2001) downstream of Feature W2 in 2001. The site had a total of 14 macroinvertebrate families, with 10 EPT taxa and 3 Dipterans, resulting in a "Fair" IBI score of 3.00. Ephemeropterans made up 43% of the macroinvertebrates in the sample, indicating healthy stream conditions. The feature provides adequate habitat for fish and benthic macro-invertebrates due to its stable conditions, variety of substrates, and presence of riffle-pool sequences. Feature W2 was flowing during the April 2011 and May and June 2013 field reviews, and is jurisdictional under Rapanos guidance.

W3 – Emergent Wetland
W3 is a very small emergent wetland abutting W2. Dominant vegetation includes skunk cabbage, sphagnum moss, and an unknown grass species. Primary indicators of hydrology include A1: Surface water; A2: High Water Table; A3: Saturation; B9: Water-Stained Leaves with secondary indicators including B10: Drainage Patterns and B16: Moss Trim Lines. The soils in W3 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W3 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W2, an RPW flowing year round. W3 resource quality is good based on the undisturbed condition of the resource and lack of invasive species.

W4 – Forested Wetland
W4 is a very small forested wetland abutting W2. Dominant vegetation includes red maple, spice bush, skunk cabbage, and jewel weed. Primary indicators of hydrology include A1: Surface water; A3: Saturation with secondary indicators including B10: Drainage Patterns and B16: Moss Trim Lines. The soils in W4 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W4 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W2, an RPW flowing year round. W4 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W5 – Emergent Wetland
W5 is a very small emergent wetland abutting W2. Dominant vegetation includes skunk cabbage and jewel weed. Primary indicators of hydrology include A1: Surface water; A3: Saturation; B1: Water marks; B9: Water-stained leaves with secondary indicators including B10: Drainage Patterns and B16: Moss Trim Lines. The soils in W5 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W5 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W2, an RPW flowing year round. W5 resource quality is good based on the undisturbed condition of the resource and lack of invasive species.

W6 – Shrub Scrub Wetland
W6 is a very small shrub scrub wetland abutting W2. Dominant vegetation includes spice bush, greenbrier, skunk cabbage, and jewel weed. Primary indicators of hydrology include A1: Surface water; A3: Saturation; B1: Water marks; B9: Water-stained leaves with a secondary indicator including B16: Moss Trim Lines. The soils in W6 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W6 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W2, an RPW flowing year round. W6 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

There is no W7 feature.

W8 – Forested Wetland
W8 is an approximately ½ acre forested wetland serving as the hydrology source for W2. Dominant vegetation includes red maple, spice bush, skunk cabbage, jewelweed, and Oriental bittersweet. Numerous specimen trees are located in the wetland buffer of W8. Primary indicators of hydrology include B9: Water-stained leaves and a secondary indicator includes D5: FAC-Neutral Test. Numerous seeps from the slopes in the northern portion of W8 supply hydrology to this wetland. The soils in W8 meet the requirements of Hydric Soil Indicator F2: Loamy Gleyed Matrix. Feature W8 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and abuts Features W2, an RPW flowing year round. W8 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, specimen trees in the buffer, the numerous seeps present, and low number of invasive plants present.

W9 – Forested Wetland
W9 is a small forested wetland abutting W1. Dominant vegetation includes red maple, *Carex lurida* (lurid sedge), *Agrostis alba* (redtop), and *Microstegium vimineum* (Japanese stilt grass). Primary indicators of hydrology include A1: Surface water; A3: Saturation; and B9: Water-stained leaves. The soils in W9 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Seeps from the slopes in the western portion of W9 supply hydrology to this wetland. Feature W9 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W1, an RPW flowing year round. W9 resource quality is good based on the undisturbed condition of the resource and lack of invasive species.

W10 – Emergent Wetland
W10 is a very small emergent wetland abutting W1. Dominant vegetation includes jewelweed, redtop and Oriental bittersweet. A primary indicator of hydrology includes A3: Saturation. T Seeps from the western portion of W10 supply hydrology to this wetland. The soils in W10 meet the requirements of Hydric Soil Indicator F3: Depleted

Matrix. Feature W10 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W1, an RPW flowing year round. W10 resource quality is good based on the undisturbed condition of the resource and the low number of invasive plants present.

W11 – Forested Wetland

W11 is a small forested wetland abutting W1. Dominant vegetation includes red maple, *Berberis thunbergii* (Japanese barberry), jewelweed, redtop, and Oriental Bittersweet. Primary indicators of hydrology include A1: Surface water and B9: Water-stained leaves. Seeps from the slopes in the northwestern portion of W11 supply hydrology to this wetland. The soils in W11 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W11 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W1, an RPW flowing year round. W11 resource quality is good based on the undisturbed condition of the resource and lack of invasive species.

MITIGATION POTENTIAL OF THE BETHEL CHURCH PROPERTY

The Bethel Church property would complement and enhance the existing park system. Following is a discussion of the benefits of this addition to the park system.

Forest and Parkland Mitigation

Table 2 summarizes the acreage of impact to all parks (first row) and to the subset of Montgomery County/ M-NCPPC owned parkland (second row).

Table 2: Park Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Park Impact (acres)	0	19.4	0.2	45.2	30.6	29.6	48.1	33.5	32.5
County & M-NCPPC owned Park (acres)	0	15.4	0.2	43.3	28.7	27.7	45.5	30.9	29.9

Table 3 presents the acreage of impact to all forests (first row) and to the subset of forest that is on Montgomery County/M-NCPPC owned parkland (second row).

Table 3: Forest Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Forest Impact (acres)	0	31.0	2.0	57.6	52.5	61.4	72.9	67.7	76.7
Impact to Forest on County Parklands (acres)	0	8.35	2.0	41.0	26.5	25.5	43.3	28.7	27.7

Approximately 66.4 acres of the 119.4-acre Bethel Church property is already forested. Another 2.1 acres of the property is occupied by small clusters of trees, the residence, and surrounding yard. Therefore, approximately 51 acres of farm fields would be available to reforest (except under Alternative 8D and Alternative 9D which would

traverse the Bethel Church property and leave only 47 acres for reforestation). MCDOT would propose to reforest all farm fields and convey the entire property to M-NCPPC, with the exception of the 10 acres of highway right-of-way that would be required if Option D were constructed. The conveyance would include the 43 acres of mid-successional forest and 23 acres of early-successional forest that already exist on the property (42 acres of mid-successional forest and 18 acres of early-successional forest if Option D were constructed). MCDOT would appreciate M-NCPPC's consideration of mitigation credit for the preservation of existing forest. MCDOT would expect this property to satisfy the following:

- The entire parkland mitigation obligation for impacts to Montgomery County/M-NCPPC parkland, including the replacement of the approximately 5 acres of non-forested parkland that will be sought for wetland mitigation,
- The entire mitigation obligation for impacts to the forest on Montgomery County/M-NCPPC parkland, and
- A portion of the required forest mitigation for non-park forest impacts.

It is noted that Section 22A-12 (h) of the Montgomery County Forest Conservation Law requires legal instruments *such as* conservation easements, deed restrictions, covenants, and *other agreements, as necessary* to protect forest conservation areas. Unless notified otherwise by M-NCPPC, MCDOT assumes that the conveyance of the property to M-NCPPC would satisfy the requirement for protecting the forest, and would not require a forest conservation easement.

FIDS Habitat

When the reforestation of the Bethel Church property is mature, new FIDS habitat would be created. The construction of Option D with Alternative 8 or Alternative 9 would result in the least amount of FIDS habitat creation on the Bethel Church property because the highway would divide the property. If Option D were created, two areas of interior habitat would be created; a 25-acre interior habitat on the north side of Option D and a 12-acre interior habitat on the south side of Option D (see **Interior Forest** figure). If any other alternative were constructed, approximately 55 acres of new FIDS habitat would be created because the Bethel Church property would not be divided by the highway.

Connectivity to Existing Parkland

Montgomery County currently owns large holdings of contiguous parklands south of Brink Road, including Seneca Crossing Local Park (28.14 acres), North Germantown Greenway Stream Valley Park (380.81 acres), and Great Seneca Stream Valley Park (2012.85 acres). Approximately 0.8 miles north of Brink Road is the location of the 250.9-acre Goshen Recreational Park. Montgomery GIS mapping indicates a planned acquisition of land from the Wilson property and others, which would provide a greenway along Wildcat Branch connecting the Goshen Recreational Park to Wildcat Road. The incorporation of the Bethel Church property into the park system would almost connect North Germantown Greenway Stream Valley Park to Goshen Recreational Park. This acquisition would substantially enhance the planned greenway, and reduce the amount of future park acquisition required to complete the connection to Goshen Recreational Park.

In the event that Option D is identified as the Preferred Alternative, M-NCPPC Parks Department asked MCDOT to consider hiker passage across the new highway. MCDOT evaluated several options for providing hiker passage across Option D.

- Hikers could use the shared use path along Option D to traverse the Lawland Court neighborhood, cross Brink Road at the signalized intersection, and immediately enter the Bethel Church property.
- It would be possible to provide an underpass of Option D in the vicinity of Station 367, where a culvert is already proposed to carry a perennial, unnamed tributary to Seneca Creek (WUS 1) under the highway.
- A pedestrian bridge is also feasible, since the highway would be depressed as it traverses the Bethel Church property.

Water Quality Benefits

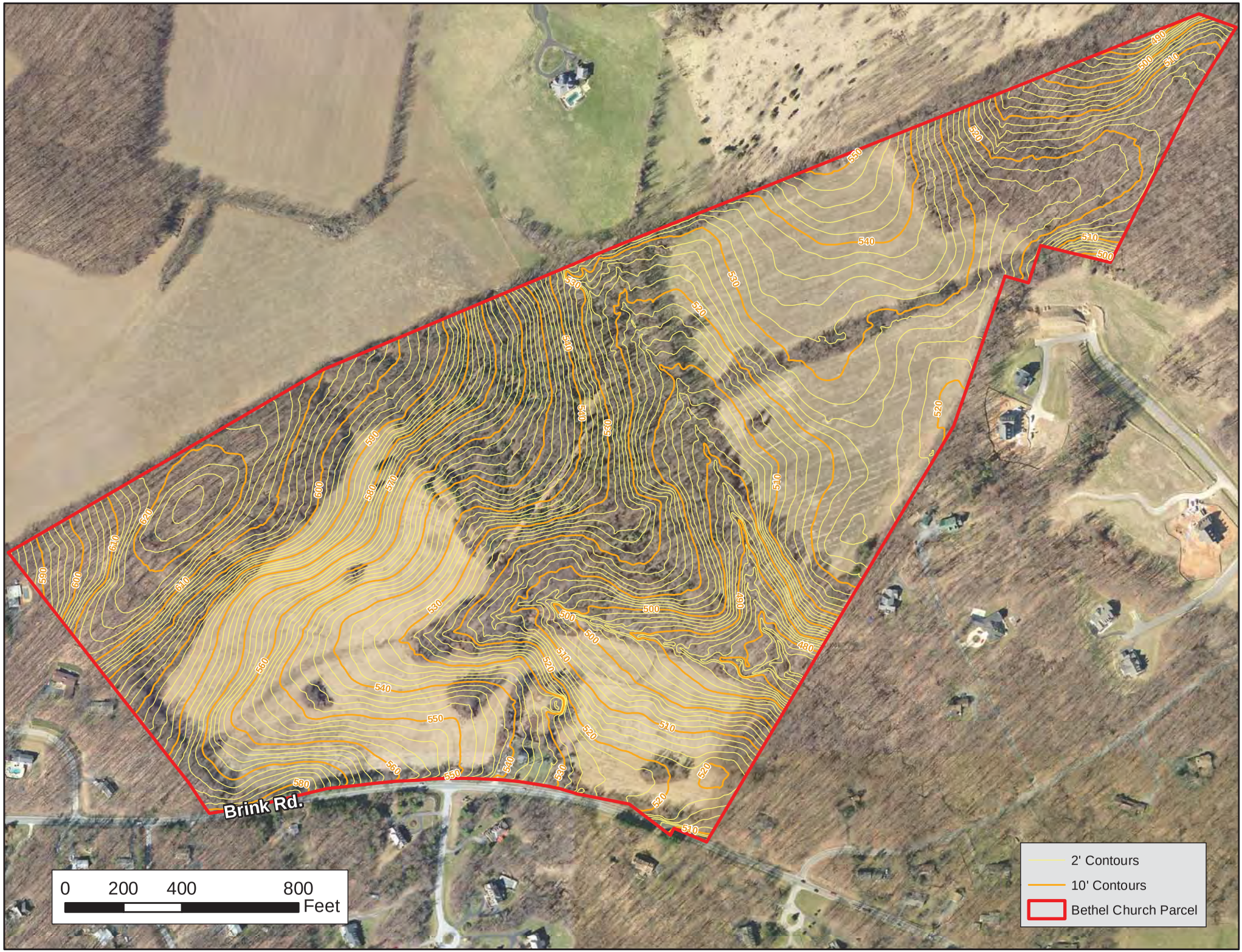
The Bethel Church property drains to unnamed tributaries to Great Seneca Creek, a Use I-P stream. The property is not currently farmed, therefore, nutrient inputs have largely subsided. However, the reforestation would enhance the water quality of the unnamed tributary to Great Seneca Creek by infiltrating and reducing runoff volumes; and by reducing erosion and sedimentation.

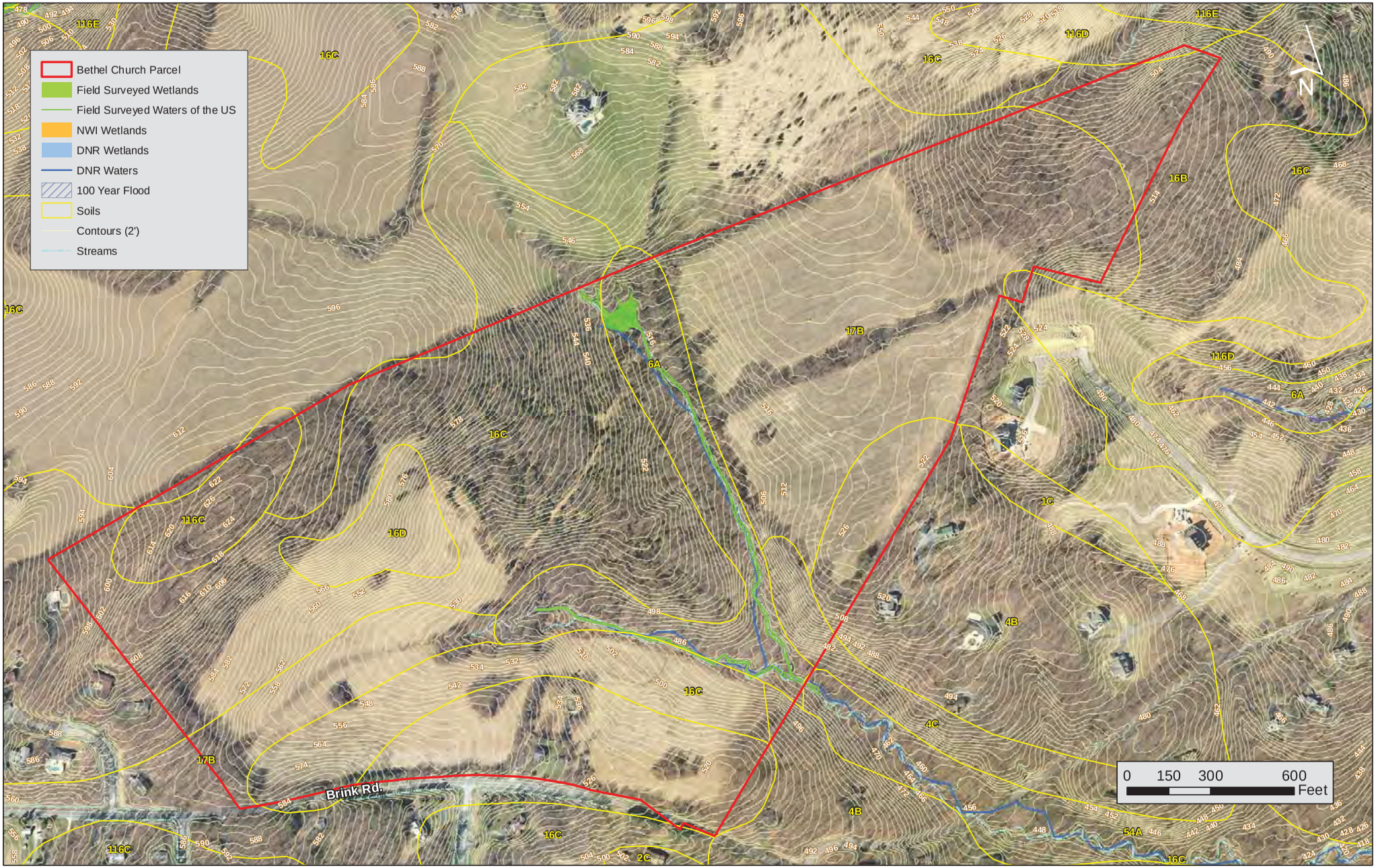
APPENDIX A

Project Map/NWI Map

Project Photos

FIRM Map


Brink Rd.
0 200 400 800
Feet
2' Contours
10' Contours
Bethel Church Parcel


Bethel Church Parcel
Field Surveyed Wetlands
Field Surveyed Waters of the US
NWI Wetlands
DNR Wetlands
DNR Waters
100 Year Flood
Soils
Contours (2')
Streams
N
0 150 300 600
Feet
Brink Rd.
16C
16B
16D
17B
116E
116D
116C
6A
4B
4C
1C
2C
54A


N
25
acres
12
acres
Brink Rd.
LEGEND
Bethel Church Parcel
FIDS Habitat
Alt 9 Option D
NWI Wetlands
DNR Wetlands
DNR Waters
Streams
0 150 300 600
Feet
Bethel Church
Interior Forest with Option D
July 2013

NRI – Bethel Church

Project Photos

W1

W2

W3

W4

NRI – Bethel Church

Project Photos

W5

W6

W7

W8

NRI – Bethel Church

Project Photos

W9

W10

W11

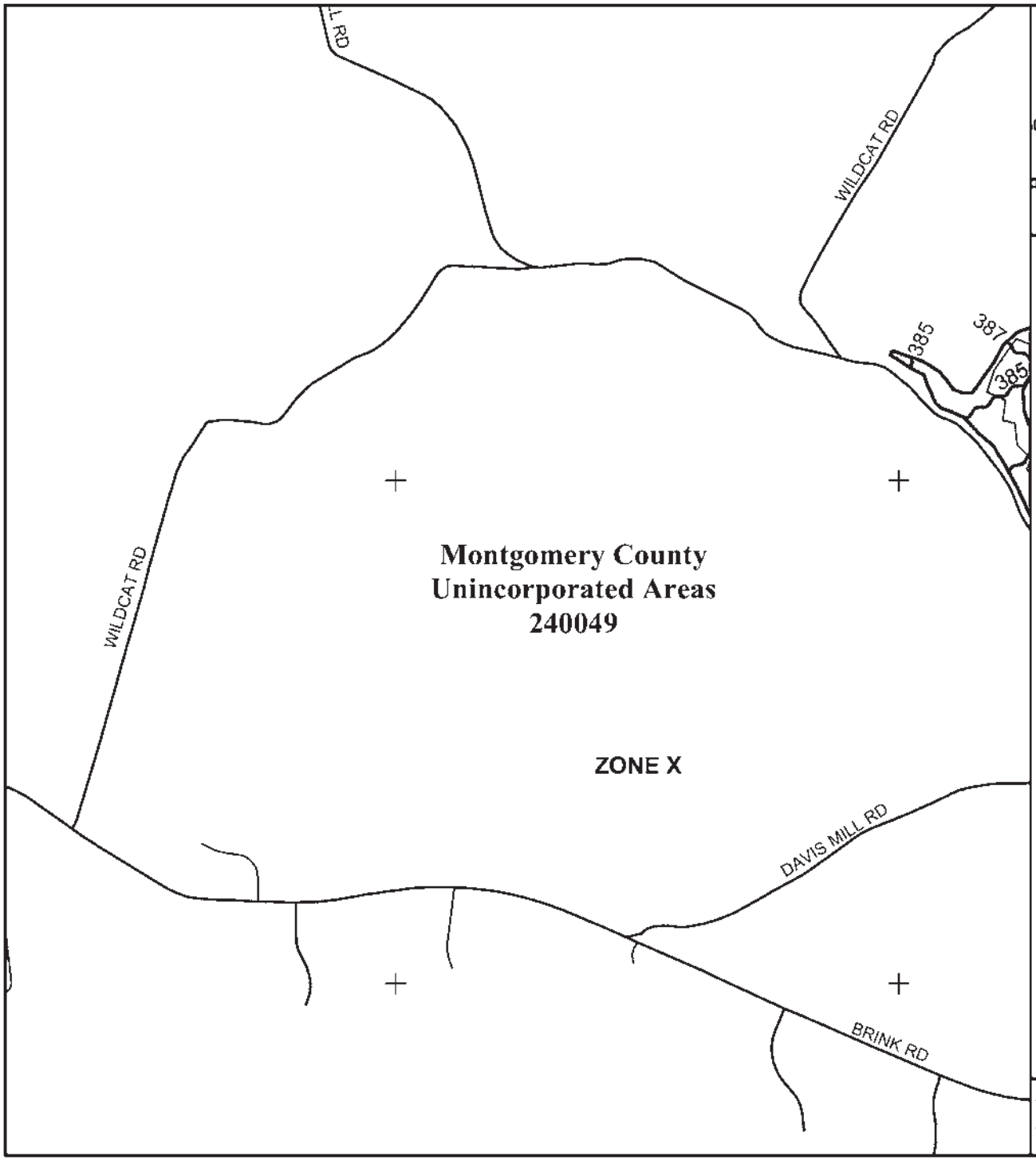
NRI – Bethel Church

Project Photos

FS1

FS2

FS3



MAP SCALE 1" = 1000'

00 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0180D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, MARYLAND

AND INCORPORATED AREAS

PANEL 180 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTGOMERY COUNTY	240049	0180	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
24031C0180D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

APPENDIX B

Agency Correspondence

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: **May 30, 2013**

PROJECT NAME AND LOCATION: **Site Evaluation-Wilson Farm and Bethel Church**
Germantown, Montgomery County Maryland (maps enclosed)

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA:
Two unnamed tributaries to Wildcat Branch, Use III-P (Wilson Farm)
Two unnamed tributaries to Great Seneca Creek, Use I-P (Bethel Church)

SUB-BASIN (6 digit watershed): **02-14-02**

DNR RESPONSE (sections below to be completed by MD DNR):

____Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

____Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I and Certain Use II waters during the period of February 15 through June 15, inclusive, during any year.

____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

---

xxxxx

DATE: ----------
PHONE: 410-260-8334

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

June 12, 2013

Mr. Roland Limpert
Maryland Department of Natural Resources
Environmental Review
Tawes State Office Building, E-1
580 Taylor Avenue
Annapolis, Maryland 21401

Project: Site Evaluation -- Wilson Farm and Bethel Church

Subject: Request for Project Area Fisheries Resources Information

Dear Mr. Limpert:

We are providing site evaluation planning services to the Montgomery County Department of Transportation, Transportation and Design Section for the Wilson Farm and Bethel Church properties. These sites abut each other and are being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study project in Germantown, Montgomery County, MD. The 105 acre Wilson Farm and the 120 acre Bethel Church property are located north of Brink Road, east of Wildcat Road, and west of Davis Mill Road. The Midcounty Corridor Study project may result in minor impacts to nontidal Waters of the U.S. and may require both state and federal permit authorizations (Section 404/401).

We are requesting information regarding the potential presence of state fisheries resources within or near the project area. Project location maps are enclosed for each site to aid your review.

If you have any questions concerning this project, please contact me at wmorgante@rkk.com (410) 462-9174. Thank you for your assistance.

Sincerely,
Rummel, Klepper & Kahl, LLP

William Morgante
Project Scientist

Enclosure

cc: Rick Adams (RK&K)
Paul Wettlaufer (RK&K)

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

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____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

---

xxxxx

DATE: ----------
PHONE: 410-260-8334

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: May 28, 2013

Project: Site Evaluation - Wilson Farm & Bethel Church

Dear Applicant for online certification:

Thank you for choosing to use the U.S. Fish and Wildlife Service Chesapeake Bay Field Office online list request certification resource. This letter confirms that you have reviewed the conditions in which this online service can be used. On our website (http://www.fws.gov/chesapeakebay/EndSppWeb/ELEMENTS/listreq.html) are the USGS topographic map areas where no federally proposed or listed endangered or threatened species are known to occur in Maryland, Washington, D.C. and Delaware.

You have indicated that your project is located on the following USGS topographic map(s)

Gaithersburg

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8540. For information in Delaware you should contact the Delaware Natural Heritage and Endangered Species Program, at (302) 653-2880. For information in the District of Columbia, you should contact the National Park Service at (202) 535-1739.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize

loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay)

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

Sincerely,

Genevieve LaRouche
Field Supervisor

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Joseph P. Gill, Secretary
Frank W. Dawson III, Deputy Secretary

June 25, 2013

William Morgante
Rummel, Klepper, and Kahl, LLP
81 Mosher St.
Baltimore, MD 21217

RE: Environmental Review for Wilson Farm and Bethel Church, Germantown, possible mitigation sites for Mid Country Corridor Study project, north of Brink Road east of Wildcat Rd. and west of Davis Mill Rd., Montgomery County, MD.

Dear Mr. Morgante:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

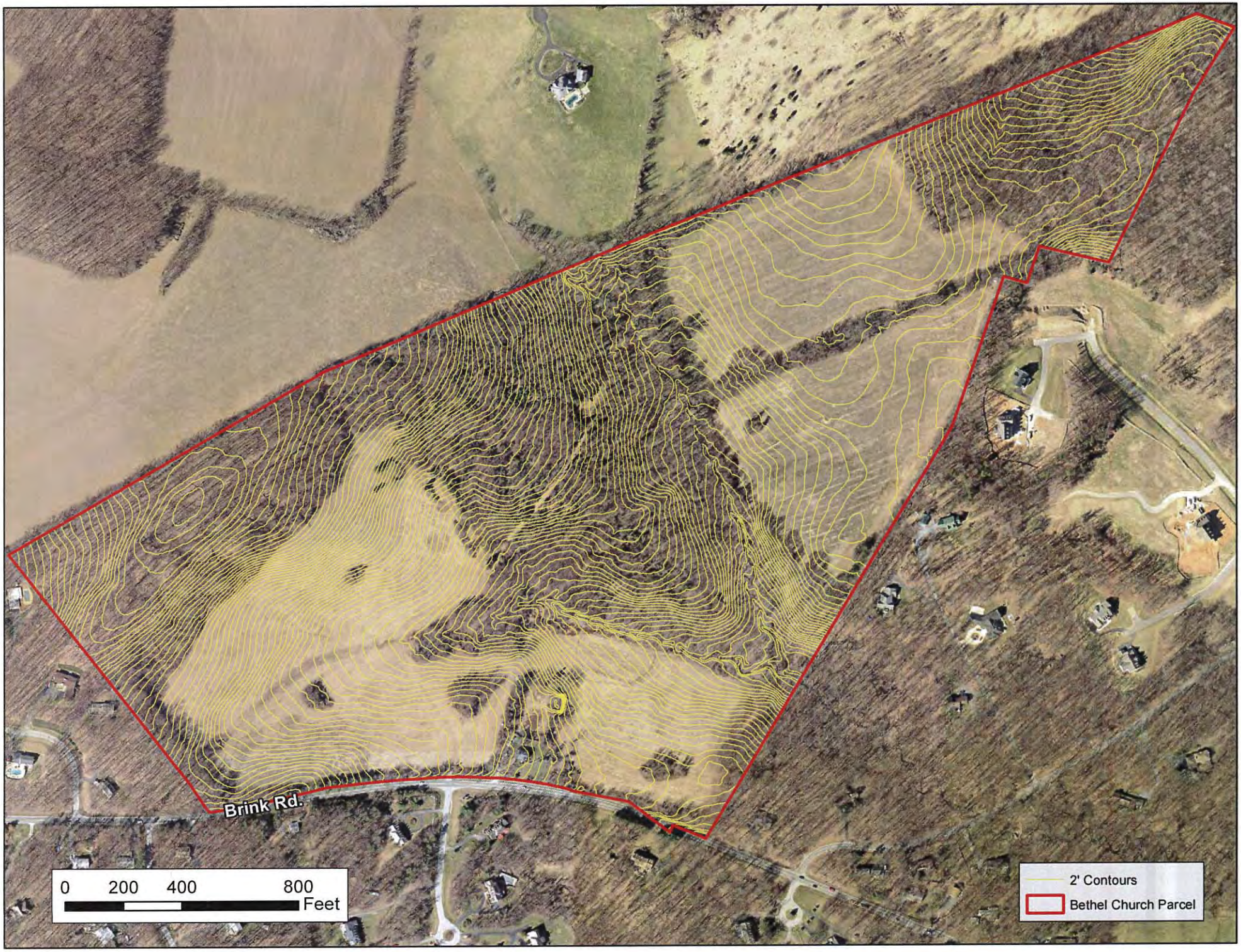
Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2013.0908.mo

RECEIVED
JUL 0 1 2013
BY:_____


Brink Rd.
0 200 400 800
Feet
2' Contours
Bethel Church Parcel

APPENDIX C

Forest Stand Summary Sheets

Specimen Tree Table

Waters of the U.S. Data Sheets

Wetland Data Sheets

FOREST STAND ANALYSIS BETHEL CHURCH - A
TULIP POPLAR ASSOC. (FS-1)

Date: 5/20/13 Crew: ET, WMM

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			CHERRY 25 TULIP POPLAR 30 TREE OF HEAVEN 5 SASSAFRAS 5 RED MAPLE 20	6-12"	FAIR HEAVY INVASIVE BITTERSWEET, JAPAN HS. VINES IN all trees NO SHRUB LAYER	LOW RETENTION VALUE
			POCSIMMON 5 WALNUT 5		ALMOST NO TREES 24"+ OVER Lowl MED Qual forest	
			UNDERSTORY BITTERSWEET DOG WOOD VA CREEPER GREEN BRIER MF ROSE			
			POISON IVY			

- Area measured to the nearest 1/10 acre.

PHOTOS #1-3

FOREST STAND ANALYSIS BETHEL CHURCH B
CHESTNUT OAK ASSOC. (FS-2)

Date: 5/20/13 Crew: EI, WMM

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			WHITE OAK — 40 CHESTNUT OAK - 40 BLACK CHERRY - 5 HICKORY — 5 RED OAK — 5 RED MAPLE — 5	18-24"	GOOD/FAIR MATURE OAK FOREST ROCKS	PHOTOS 4-6
			UNDERSTORY RED MAPLE CHERRY MOUNTAIN		LOTS OF 24" AND LARGER TREES	MODERATE REGENERATION VALUE

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BETHEL CHURCH C. CHESTNUT OAK ASSOC. (FS-2)

Date: 5/20/13 Crew: ET, WMH

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			CHESTNUT OAK - 50 HICKORY ——— 35 BLACK CHERRY - 10 RED MAPLE - 5	6-12" SCATTERED/LOTS OF +24"	GOOD/FAIR	PHOTOS 7-9
			UPDATE STONE BLACK CHERRY MT ROSE RUBUS PLENTIFUL			MODERATE RETENTION VALUE

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BETHEL CHURCH D
TULIP POPLAR ASSOC (FS-3)

Date: 5/20/13 Crew: ET, WHM

Project.: ____________

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	MID SUCCESSIONAL		TULIP POPLAR — 35 RED MAPLE — 20 BLACK CHERRY — 15 HICKORY — 20 WHITE OAK — 15	12-18 60% >24" Some	VERY GOOD NO INVASIVES	PHOTOS 11-13
			RED OAK — 10	scattered		HIGH RETENTION VALUE
			UNDERSTORY SPICE BUSH PINXTER AZALEA GREENBRIER HIGH BUSH BLUEBERRY			
			HAY SCENTED FERN			

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BEACH / CHURCH E TULIP POPLAR ASSOC. (FS-1)

Date: 5/20/13 Crew: ET, WMM

Project.: ___

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	EARLY SUCCESSIONAL		BLACK GUM — 10 TULIP POPLAR — 20 RED MAPLE — 45 WHITE OAK — 5 RED OAK — 5	2-12 NO >24"	FAIR JAPAN H.S., BITTERSWEET LOW GROUND PLAIN	PHOTOS 14-16
			CHERRY — 15		FORMERLY RED CEDAR OPEN FIELD - BEFORE FOREST?	MODERATE RETENTION VALUE
			UNDERSTORY RED MAPLE WHITE OAK BITTERSWEET RED CEDAR - MOSTLY DEAD			

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BETHEL CHURCH F TULIP POPLAR ASSOC. (FS-4)

Date: 5/20/13 Crew: ET, WMH

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	EARLY - MID SUCCESSIONAL		RED MAPLE — 40 TULIP POPLAR 40 CHERRY — 10	17-18" MANY trees >24"	VERY GOOD DIVERSE wetland SEEP forest NO INVASIVES	PHOTOS 17-19
			UPLAND STAND SPICE BUSH SKUNK CABBAGE JEWEL WEED		NO VINES MANY >24" dbh trees IN AND AT EDGE OF F	HIGH RETENTION VALUE

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BETHEL CHURCH G (FS-3)
TULIP POPLAR

Date: 5/20/13 Crew: ET, TWMM

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	MHS SOUTHERN		RED OAK — 20 HICKORY — 20 BLACK GUM — 10 SASSAFRAS — 5 TULIP POPLAR — 30	6-18" MANY TREES >24" dbh	GOOD HIGH CWD LOTS OF STUMPAGE NO OTHER INVASIVES	ROAD THRU STAND PHOTOS # 24-26 HEALTHY DOGWOOD!
			VA PINE — 5 UNDERSTORY DOGWOOD BLACK GUM SOME SAPLI		NO VINES	MODERATE RETENTION VALUE

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS BETHEL CHURCH - H (FS 2)
CHESTNUT OAK ASSOC.

Date: 5/20/13 Crew: ET, WMH

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	MD SUCCESSIONAL		CHESTNUT OAK - 70 WHITE OAK - 5 RED MAPLE - 5 BLACK GUM - 20	12-24" MANY >24" dbh	V. GOOD lots SEEDLINGS OF CHESTNUT OAK	PHOTOS 27-29
						HIGH/MODERATE RETENTION VALUE
			UNDERSTORY MTN LAUREL - HEAVY			

- Area measured to the nearest 1/10 acre.

Specimen Tree Inventory					
Tree Number	**Species - Common Name**	**Species - Scientific Name**	**DBH**	**Condition**	**Comments**
T1	White oak	Quercus alba	46	Fair	vines in crown, deadwood
T2	White oak	Quercus alba	37	Good/fair	deadwood
T3	Tulip poplar	Liriodendron tulipifera	24	Good	
T4	Red maple	Acer rubrum	29	Fair	trunk cavity, deadwood, irregular growth form
T5	Tulip poplar	Liriodendron tulipifera	25	Good	
T6	Tulip poplar	Liriodendron tulipifera	26	Good	
T7	Tulip poplar	Liriodendron tulipifera	25	Good	
T8	Red maple	Acer rubrum	36	Fair	deadwood, girdling root, included bark, irregular growth form
T9	Tulip poplar	Liriodendron tulipifera	28	Good/fair	deadwood
T10	Tulip poplar	Liriodendron tulipifera	29	Good	
T11	Tulip poplar	Liriodendron tulipifera	32	Poor	trunk wound, highly irregular growth form, included bark, fungus, suckering
T12	Tulip poplar	Liriodendron tulipifera	36	Fair	twin, included bark
T13	Tulip poplar	Liriodendron tulipifera	33	Poor	vines in crown, trunk cavity, broken leader
T14	Red maple	Acer rubrum	41	Fair/poor	deadwood, suckering, crown dieback, included bark
T15	Tulip poplar	Liriodendron tulipifera	36	Poor	irregular growth form, broken main leader, trunk
T16	Tulip poplar	Liriodendron tulipifera	43	Fair/poor	trunk decay, deadwood, crown dieback
T17	Red maple	Acer rubrum	29	Fair	twin, included bark, trunk cavity, lean
T18	Tulip poplar	Liriodendron tulipifera	30	Poor	broken leader, included bark, trunk cavity
T19	Red maple	Acer rubrum	28	Fair/poor	twin, irregular growth form, suckering, trunk decay
T20	Black cherry	Prunus serotina	27	Poor	deadwood, trunk decay, broken leader, sparse crown
T21	Black cherry	Prunus serotina	26	Poor	lean, almost dead
T22	Red maple	Acer rubrum	47	Fair	included bark, trunk decay, multistem
T23	American elm	Ulmus americana	43	Fair/poor	trunk cavity, twin, trunk decay, suckering
T24	Chestnut oak	Quercus prinus	26	Good	slight lean
T25	Red maple	Acer rubrum	24	Good	lean
T26	Black cherry	Prunus serotina	24	Fair	deadwood, sparse crown, split
T27	Red maple	Acer rubrum	36	Fair/poor	split, included bark, trunk decay
T28	Black cherry	Prunus serotina	24	Poor	multistem, trunk decay, trunk cavity, dead leader, severe lean, deadwood
T29	Black cherry	Prunus serotina	26	Fair/poor	deadwood, dead leader, split above dbh, sparse crown
T30	Red maple	Acer rubrum	32	Fair	deadwood, crown dieback
T31	Pignut hickory	Carya glabra	24	Good/fair	included bark, split above dbh
T32	Tulip poplar	Liriodendron tulipifera	29	Good	
T33	Northern red oak	Quercus rubra	28	Good	
T34	Northern red oak	Quercus rubra	33	Fair	deadwood, split, crown dieback
T35	Northern red oak	Quercus rubra	28	Fair	crown dieback, flared base
T36	Northern red oak	Quercus rubra	54	Fair	multistem, dead leader, trunk decay, included bark
T37	Chestnut oak	Quercus prinus	27	Good	
T38	White oak	Quercus alba	26	Fair/poor	lean, deadwood, included bark, fungus, trunk cavity
T39	Red maple	Acer rubrum	43	Poor	extreme trunk decay, suckering, dead leader, lean, deadwood
T40	Red maple	Acer rubrum	25	Good/fair	split above dbh, minor deadwood
T41	Red maple	Acer rubrum	35	Fair	split, included bark
T42	Chestnut oak	Quercus prinus	33	Fair	severe lean, included bark, crown dieback
T43	White oak	Quercus alba	36	Fair/poor	lean, trunk decay, dead leader, irregular growth form, deadwood, crown dieback
T44	White oak	Quercus alba	27	Fair/poor	severe lean, vines, deadwood, sparse crown
T45	White oak	Quercus alba	27	Fair	split above dbh, deadwood,
T46	Northern red oak	Quercus rubra	25	Fair	trunk decay, dead leader, twin
T47	White oak	Quercus alba	24	Good/fair	slight lean, trunk decay, deadwood
T48	Tulip poplar	Liriodendron tulipifera	34	Fair	3x, irregular growth form, included bark, trunk decay
T49	Tulip poplar	Liriodendron tulipifera	27	Good/fair	trunk decay, sparse crown
T50	Northern red oak	Quercus rubra	24	Poor	dead crown, flared base, major deadwood
T51	Pin oak	Quercus palustris	28	Fair	severe lean, deadwood
T52	Chestnut oak	Quercus prinus	28	Fair	lean, irregular growth form, sparse crown
T53	Northern red oak	Quercus rubra	46	Fair/poor	deadwood

T54	Chestnut oak	Quercus prinus	31	Good	slight lean
T55	Chestnut oak	Quercus prinus	29	Fair	crown dieback

T56	Chestnut oak	Quercus prinus	28	Fair	split below dbh, twin, 28x20, sparse crown
T57	Chestnut oak	Quercus prinus	30	Good/fair	deadwood
T58	Chestnut oak	Quercus prinus	31	Fair	split above and below dbh, deadwood, 3x
T59	Chestnut oak	Quercus prinus	27	Fair	twin, 27x22, split below dbh, included bark
T60	Chestnut oak	Quercus prinus	44	Fair	split above, dbh, cavity, deadwood
T61	Chestnut oak	Quercus prinus	33	Fair	split above dbh, included bark, deadwood
T62	Chestnut oak	Quercus prinus	25	Fair	twin, 25x18, split below dbh
T63	Chestnut oak	Quercus prinus	24	Fair	irregular growth form, lean
T64	Chestnut oak	Quercus prinus	27	Fair	lean, irregular growth form, sparse crown
T65	Chestnut oak	Quercus prinus	31	Fair	deadwood, dead leader, trunk decay
T66	Chestnut oak	Quercus prinus	29	Good/fair	deadwood
T67	White oak	Quercus alba	31	Good	
T68	Chestnut oak	Quercus prinus	28	Poor	crown dieback, lean, mostly dead
T69	Chestnut oak	Quercus prinus	24	Fair	lean, deadwood
T70	Chestnut oak	Quercus prinus	25	Good	
T71	Chestnut oak	Quercus prinus	29	Fair/poor	sparse crown, deadwood, trunk decay
T72	Chestnut oak	Quercus prinus	28	Fair	lean, trunk decay
T73	Chestnut oak	Quercus prinus	32	Poor	dead leader, sparse crown, lean
T74	Chestnut oak	Quercus prinus	25	Good/fair	deadwood
T75	Chestnut oak	Quercus prinus	25	Good/fair	minor deadwood, trunk decay
T76	Chestnut oak	Quercus prinus	30	Good	
T77	Chestnut oak	Quercus prinus	32	Poor	split above dbh, cavity, included bark, dead leader
T78	Chestnut oak	Quercus prinus	25	Good/fair	trunk decay, sparse crown
T79	Chestnut oak	Quercus prinus	29	Poor	trunk decay, flared base, irregular growth form
T80	Chestnut oak	Quercus prinus	32	Poor	included bark, trunk decay, deadwood, crown dieback, insects
T81	Chestnut oak	Quercus prinus	44	Fair	split above dbh, included bark, sparse crown
T82	Chestnut oak	Quercus prinus	26	Fair	irregular growth form
T83	Chestnut oak	Quercus prinus	24	Fair	twin, split below dbh, slightly flared base, trunk decay, 11" twin
T84	Chestnut oak	Quercus prinus	25	Fair	twin, 25x21, split below dbh, included bark, deadwood
T85	Chestnut oak	Quercus prinus	26	Fair	major trunk decay
T86	Chestnut oak	Quercus prinus	34	Good/fair	splits above dbh, included bark, minor deadwood
T87	Chestnut oak	Quercus prinus	26	Fair	lean, deadwood, trunk decay, flared base
T88	Chestnut oak	Quercus prinus	25	Poor	major trunk decay, deadwood
T89	Chestnut oak	Quercus prinus	31	Fair	3x, splits above and below dbh, included bark, 24" and 22" stems
T90	Chestnut oak	Quercus prinus	30	Poor	trunk decay, deadwood, dead leader, sparse crown
T91	Chestnut oak	Quercus prinus	30	Fair	slight lean, irregular growth form
T92	Chestnut oak	Quercus prinus	25	Fair	3x, 22" and 23" stems, fair, included bark, irregular growth form
T93	Chestnut oak	Quercus prinus	28	Fair	sparse crown, deadwood, slight lean
T94	Chestnut oak	Quercus prinus	26	Fair/poor	sparse crown, deadwood, vines in crown, trunk decay
T95	Chestnut oak	Quercus prinus	30	Fair	deadwood
T96	Northern red oak	Quercus rubra	44	Fair/poor	crown dieback, deadwood, slight lean
T97	Chestnut oak	Quercus prinus	29	Fair	deadwood, flared base
T98	Chestnut oak	Quercus prinus	26	Good/fair	sparse crown
T99	Chestnut oak	Quercus prinus	28	Poor	severe lean, major deadwood
T100	Chestnut oak	Quercus prinus	28	Poor	dead leaders, trunk decay, deadwood
T101	Chestnut oak	Quercus prinus	37	Fair	split above dbh, major deadwood
T102	Chestnut oak	Quercus prinus	27	Good	
T103	Chestnut oak	Quercus prinus	25	Good/fair	minor deadwood
T104	Chestnut oak	Quercus prinus	26	Good	
T105	Chestnut oak	Quercus prinus	26	Fair/poor	dead crown, suckering
T106	Chestnut oak	Quercus prinus	29	Fair	lean, deadwood
T107	Chestnut oak	Quercus prinus	35	Good	
T108	Chestnut oak	Quercus prinus	28	Poor	twin, 28x27, mostly dead crown
T109	Chestnut oak	Quercus prinus	27	Poor	crown dieback, deadwood
T110	Chestnut oak	Quercus prinus	26	Fair	crown sparse, lean, deadwood

T111	Chestnut oak	Quercus prinus	29	Fair	sparse crown, trunk decay
T112	Chestnut oak	Quercus prinus	27	Fair	deadwood, slight lean
T113	Chestnut oak	Quercus prinus	28	Good/fair	sparse crown
T114	White oak	Quercus alba	26	Good/fair	split above dbh, deadwood
T115	Chestnut oak	Quercus prinus	24	Poor	dead crown
T116	Chestnut oak	Quercus prinus	24	Fair	irreg growth form
T117	Chestnut oak	Quercus prinus	31	Poor	sparse crown, included bark
T118	Northern red oak	Quercus rubra	27	Fair/poor	deadwood, irreg. growth form
T119	Northern red oak	Quercus rubra	28	Fair	deadwood, barbed wire in trunk
T120	Chestnut oak	Quercus prinus	26	Fair	deadwood, irreg growth form, trunk decay
T121	Northern red oak	Quercus rubra	29	Fair	split above dbh, deadwood
T122	Northern red oak	Quercus rubra	27	Good	
T123	Chestnut oak	Quercus prinus	26	Fair	twin, 26x25, included bark, deadwood
T124	Chestnut oak	Quercus prinus	26	Fair	sparse crown, deadwood
T125	Chestnut oak	Quercus prinus	27	Fair	split below dbh, twin, 27x22, included bark
T126	Chestnut oak	Quercus prinus	38	Good/fair	split above dbh, included bark
T127	Chestnut oak	Quercus prinus	35	Poor	3x, trunk cavity, split below dbh and above
T128	Chestnut oak	Quercus prinus	30	Good/fair	lean, sparse crown
T129	Chestnut oak	Quercus prinus	24	Fair/poor	irreg growth form, sparse crown, deadwood
T130	Chestnut oak	Quercus prinus	34	Fair	split above dbh, included bark
T131	Chestnut oak	Quercus prinus	24	Fair/poor	included bark, trunk cavity
T132	Chestnut oak	Quercus prinus	28	Fair	split at dbh, included bark
T133	Chestnut oak	Quercus prinus	28	Fair	irreg growth form, cavity at base, crown dieback
T134	Chestnut oak	Quercus prinus	32	Fair	split above dbh, irreg growth form, included bark
T135	Northern red oak	Quercus rubra	27	Fair/poor	deadwood, split above dbh
T136	Chestnut oak	Quercus prinus	28	Good/fair	deadwood in crown
T137	Chestnut oak	Quercus prinus	25	Fair	deadwood, sparse crown
T138	Chestnut oak	Quercus prinus	40	Fair	split at and above dbh, included bark, flared base
T139	Chestnut oak	Quercus prinus	25	Good/fair	twin, 25x20, split below dbh, included bark
T140	Chestnut oak	Quercus prinus	26	Poor	dead twin, trunk cavity, included bark
T141	Northern red oak	Quercus rubra	26	Good	
T142	Chestnut oak	Quercus prinus	38	Fair	split above and below a dbh, deadwood, sparse crown
T143	Chestnut oak	Quercus prinus	29	Fair	lean, sparse crown
T144	Chestnut oak	Quercus prinus	26	Good/fair	irreg growth form,
T145	Chestnut oak	Quercus prinus	24	Fair	flared base, lean, deadwood
T146	Chestnut oak	Quercus prinus	28	Good	
T147	Chestnut oak	Quercus prinus	36	Fair	split above dbh, deadwood, included bark
T148	Chestnut oak	Quercus prinus	26	Fair/poor	vines in crown, deadwood
T149	Northern red oak	Quercus rubra	25	Good	
T150	Chestnut oak	Quercus prinus	31	Fair/poor	huge trunk cavity
T151	Chestnut oak	Quercus prinus	42	Good/fair	vines in crown, lean
T152	Northern red oak	Quercus rubra	30	Good	
T153	Northern red oak	Quercus rubra	34	Good/fair	vines in crown
T154	Pignut hickory	Carya glabra	30	Good	
T155	Chestnut oak	Quercus prinus	33	Fair	canker on trunk
T156	Chestnut oak	Quercus prinus	34	Fair	lean, vines in crown, deadwood
T157	Chestnut oak	Quercus prinus	27	Good/fair	trunk decay
T158	Chestnut oak	Quercus prinus	27	Good/fair	minor lean
T159	Chestnut oak	Quercus prinus	31	Good	
T160	Chestnut oak	Quercus prinus	33	Good	
T161	Chestnut oak	Quercus prinus	36	Fair/poor	slight lean, large trunk cavity
T162	Northern red oak	Quercus rubra	27	Fair	deadwood, vines in crown
T163	Chestnut oak	Quercus prinus	24	Fair	vines in crown, slight lean, sparse crown
T164	Chestnut oak	Quercus prinus	24	Fair/poor	vines in crown, sparse crown
T165	Chestnut oak	Quercus prinus	31	Fair	deadwood

T166	Chestnut oak	Quercus prinus	25	Good/fair	irregular growth form, deadwood
T167	Chestnut oak	Quercus prinus	32	Fair	trunk flare, trunk decay
T168	Chestnut oak	Quercus prinus	28	Fair	irregular growth form, deadwood
T169	Chestnut oak	Quercus prinus	25	Fair	irregular growth form
T170	Chestnut oak	Quercus prinus	25	Good	
T171	Chestnut oak	Quercus prinus	26	Fair	lots of deadwood
T172	Chestnut oak	Quercus prinus	24	Poor	dead leader, trunk decay
T173	Chestnut oak	Quercus prinus	32	Fair	deadwood, lean
T174	Chestnut oak	Quercus prinus	29	Fair	trunk decay, deadwood
T175	Chestnut oak	Quercus prinus	24	Good/fair	twin 24x23, split, deadwood
T176	Chestnut oak	Quercus prinus	25	Fair	twin, 25x15, trunk decay, deadwood
T177	Chestnut oak	Quercus prinus	25	Fair	included bark, deadwood, irregular growth form
T178	Chestnut oak	Quercus prinus	26	Good/fair	irregular growth form, deadwood
T179	Chestnut oak	Quercus prinus	26	Fair	deadwood, lean
T180	Northern red oak	Quercus rubra	27	Fair	dead twin, included bark, deadwood
T181	Northern red oak	Quercus rubra	25	Fair	lean
T182	White oak	Quercus alba	24	Fair	lots of deadwood, sparse crown
T183	Chestnut oak	Quercus prinus	24	Good	
T184	Northern red oak	Quercus rubra	24	Fair	included bark, sparse crown
T185	Chestnut oak	Quercus prinus	25	Good	
T186	Northern red oak	Quercus rubra	24	Fair/poor	twin, included bark, trunk decay, vines in crown
T187	Chestnut oak	Quercus prinus	25	Fair	twin, 25x18, splits above dbh, included bark
T188	Black oak	Quercus velutina	27	Fair	twin, 27x22, deadwood, included bark
T189	White oak	Quercus alba	25	Good/fair	included bark, deadwood
T190	Northern red oak	Quercus rubra	24	Poor	severe lean, base decay, trunk cavity
T191	Chestnut oak	Quercus prinus	25	Fair	twin, 25x16, included bark, deadwood
T192	Tulip poplar	Liriodendron tulipifera	24	Good	
T193	Tulip poplar	Liriodendron tulipifera	25	Good	
T194	Red maple	Acer rubrum	26	Poor	severe trunk decay, lean, deadwood, twin, 26x13
T195	Black gum	Nyssa sylvatica	26	Fair	trunk decay, deadwood
T196	Red maple	Acer rubrum	30	Poor	trunk decay, sparse crown, fungus, suckering, included bark, twin
T197	Chestnut oak	Quercus prinus	35	Good/fair	deadwood, sparse crown
T198	White oak	Quercus alba	27	Good	
T199	Tulip poplar	Liriodendron tulipifera	29	Good/fair	deadwood
T200	White oak	Quercus alba	40	Good	
T201	White oak	Quercus alba	35	Good/fair	deadwood
T202	Tulip poplar	Liriodendron tulipifera	25	Good	
T203	Tulip poplar	Liriodendron tulipifera	31	Fair	twin, 31x22, included bark, irregular growth form
T204	Red maple	Acer rubrum	24	Fair/poor	twin, broken leader, trunk decay, suckering,
T205	Tulip poplar	Liriodendron tulipifera	43	Good/fair	trunk decay
T206	White oak	Quercus alba	36	Fair	trunk decay, deadwood
T207	White oak	Quercus alba	28	Good/fair	slight lean, deadwood
T208	Black walnut	Juglans nigra	35	Fair	twin, splits above dbh, included bark
T209	Tulip poplar	Liriodendron tulipifera	46	Fair	trunk decay, cavities, deadwood, vines
T210	Tulip poplar	Liriodendron tulipifera	33	Good/fair	vines in crown
T211	Tulip poplar	Liriodendron tulipifera	30	Good/fair	trunk decay
T212	Tulip poplar	Liriodendron tulipifera	45	Fair	twin, trunk decay, deadwood
T213	Tulip poplar	Liriodendron tulipifera	26	Fair	lean, broken leader
T214	Tulip poplar	Liriodendron tulipifera	27	Good	
T215	Red maple	Acer rubrum	27	Fair/poor	twin, 27x25, included bark, suckering, vines in crown
T216	Tulip poplar	Liriodendron tulipifera	30	Poor	twin, dead leader, trunk decay, vines in crown
T217	Red maple	Acer rubrum	26	Fair/poor	trunk decay & cavity, dead leader, deadwood
T218	Red maple	Acer rubrum	33	Poor	trunk decay, deadwood, lean
T219	Black cherry	Prunus serotina	28	Poor	trunk decay, vines in crown, deadwood, sparse crown
T220	Tulip poplar	Liriodendron tulipifera	24	Fair	irregular growth form

T221	Tulip poplar	Liriodendron tulipifera	28	Good/fair	vines in crown
T222	Tulip poplar	Liriodendron tulipifera	25	Fair	included bark, split above dbh
T223	Tulip poplar	Liriodendron tulipifera	24	Good	
T224	Tulip poplar	Liriodendron tulipifera	35	Fair	trunk decay
T225	Tulip poplar	Liriodendron tulipifera	36	Good/fair	minor trunk decay
T226	Tulip poplar	Liriodendron tulipifera	24	Fair	twin 24x23, included bark, deadwood
T227	Tulip poplar	Liriodendron tulipifera	35	Poor	extensive trunk decay, broken leader
T228	Chestnut oak	Quercus prinus	51	Fair	twin, included bark, split above dbh
T229	White oak	Quercus alba	27	Good	minor deadwood
T230	Red maple	Acer rubrum	24	Fair	deadwood
T231	Red maple	Acer rubrum	30	Fair/poor	twin, 30x30, lean, included bark, deadwood, suckering
T232	Tulip poplar	Liriodendron tulipifera	37	Good/fair	trunk decay
T233	Tulip poplar	Liriodendron tulipifera	30	Poor	broken leader, trunk decay, trunk cavity, almost dead
T234	Red maple	Acer rubrum	34	Fair	twin, 34x14, suckering, deadwood
T235	Red maple	Acer rubrum	29	Good/fair	deadwood, trunk decay
T236	Tulip poplar	Liriodendron tulipifera	31	Good/fair	irregular growth form
T237	White oak	Quercus alba	27	Good	
T238	Tulip poplar	Liriodendron tulipifera	29	Good/fair	trunk decay
T239	Tulip poplar	Liriodendron tulipifera	37	Fair	trunk decay, deadwood, broken branches
T240	Tulip poplar	Liriodendron tulipifera	25	Good	
T241	Black oak	Quercus velutina	28	Fair/poor	twin, dead leader, crown dieback, included bark
T242	Northern red oak	Quercus rubra	28	Fair	trunk cavity, deadwood
T243	Tulip poplar	Liriodendron tulipifera	31	Fair	decay
T244	Tulip poplar	Liriodendron tulipifera	33	Good/fair	twin, 33x13, included bark
T245	Tulip poplar	Liriodendron tulipifera	30	Good/fair	trunk decay
T246	Tulip poplar	Liriodendron tulipifera	46	Good/fair	trunk decay
T247	Black oak	Quercus velutina	26	Good/fair	flared trunk, deadwood
T248	Tulip poplar	Liriodendron tulipifera	26	Good	
T249	Red maple	Acer rubrum	33	Fair	lean, deadwood, trunk decay
T250	Northern red oak	Quercus rubra	29	Fair	trunk decay, sparse crown
T251	Northern red oak	Quercus rubra	26	Fair	irregular growth form, deadwood
T252	Northern red oak	Quercus rubra	33	Poor	twin, splits above dbh, deadwood, trunk cavities
T253	Black gum	Nyssa sylvatica	39	Good	deadwood
T254	Black oak	Quercus velutina	24	Fair	deadwood, included bark
T255	Black oak	Quercus velutina	30	Fair	deadwood, sparse crown
T256	Black oak	Quercus velutina	34	Fair/poor	lots of deadwood, trunk cavities
T257	Chestnut oak	Quercus prinus	38	Fair	deadwood
T258	Northern red oak	Quercus rubra	29	Fair	deadwood, irregular growth form
T259	Chestnut oak	Quercus prinus	31	Good	
T260	White oak	Quercus alba	25	Fair	broken leader
T261	Northern red oak	Quercus rubra	34	Good/fair	deadwood, minor trunk decay
T262	White oak	Quercus alba	30	Fair	split above dbh, included bark
T263	Red maple	Acer rubrum	33	Fair	included bark, deadwood, trunk cavities
T264	Red maple	Acer rubrum	27	Good/fair	trunk decay
T265	Tulip poplar	Liriodendron tulipifera	27	Good	
T266	Red maple	Acer rubrum	30	Poor	trunk decay, broken leader, vines
T267	Red maple	Acer rubrum	27	Poor	dead leader, trunk decay, cavities, irregular growth form, included bark
T268	Tulip poplar	Liriodendron tulipifera	24	Good/fair	trunk cavity
T269	Tulip poplar	Liriodendron tulipifera	24	Good	
T270	Red maple	Acer rubrum	28	Fair	twin, 28x13, deadwood, trunk decay
T271	Red maple	Acer rubrum	24	Fair	deadwood, suckering, lean
T272	Red maple	Acer rubrum	24	Good	
T273	Red maple	Acer rubrum	29	Fair	trunk decay, suckering, split
T274	Tulip poplar	Liriodendron tulipifera	28	Good	
T275	Red maple	Acer rubrum	38	Fair	4x, deadwood, lean

T276	Red maple	Acer rubrum	24	Fair	irregular growth form
T277	Red maple	Acer rubrum	27	Fair	3x, trunk cavity, included bark
T278	Red maple	Acer rubrum	28	Fair	twin, irregular growth form
T279	Black cherry	Prunus serotina	24	Fair/poor	deadwood, irregular growth form
T280	Red maple	Acer rubrum	26	Good/fair	deadwood, exposed roots
T281	Red maple	Acer rubrum	25	Fair	irregular growth form
T282	Red maple	Acer rubrum	24	Fair	deadwood, suckering
T283	Tulip poplar	Liriodendron tulipifera	24	Poor	broken trunk, vines in crown
T284	Black gum	Nyssa sylvatica	26	Fair	deadwood
T285	White oak	Quercus alba	25	Good/fair	vines in crown
T286	White oak	Quercus alba	27	Good/fair	vines, deadwood
T287	Northern red oak	Quercus rubra	28	Fair	deadwood, crown dieback
T288	Northern red oak	Quercus rubra	36	Fair	slight lean, deadwood, sparse crown
T289	Tulip poplar	Liriodendron tulipifera	27	Good/fair	dead twin
T290	Northern red oak	Quercus rubra	30	Good/fair	deadwood
T291	Northern red oak	Quercus rubra	33	Fair	slight lean, sparse crown
T292	Black gum	Nyssa sylvatica	26	Fair	broken leader
T293	Black oak	Quercus velutina	31	Good	
T294	Black gum	Nyssa sylvatica	32	Fair	included bark, split above dbh
T295	Northern red oak	Quercus rubra	31	Fair	vines in crown, trunk cavity
T296	Northern red oak	Quercus rubra	27	Good	
T297	Northern red oak	Quercus rubra	31	Fair	deadwood, trunk decay
T298	Northern red oak	Quercus rubra	28	Fair	lean, irregular growth form, trunk decay
T299	Northern red oak	Quercus rubra	27	Good/fair	trunk decay, minor deadwood
T300	Northern red oak	Quercus rubra	25	Fair/poor	sparse crown
T301	Tulip poplar	Liriodendron tulipifera	30	Good	
T302	Northern red oak	Quercus rubra	32	Good	
T303	Northern red oak	Quercus rubra	27	Good/fair	slight lean, included bark, split, trunk decay
T304	Northern red oak	Quercus rubra	29	Good	
T305	Black oak	Quercus velutina	32	Good/fair	deadwood, sparse crown
T306	Black oak	Quercus velutina	44	Good/fair	slight lean, cankers
T307	Black oak	Quercus velutina	41	Fair	twin, split above dbh, included bark
T308	Black oak	Quercus velutina	29	Good	
T309	Black oak	Quercus velutina	30	Good/fair	split above dbh, included bark
T310	Black oak	Quercus velutina	34	Fair	split above dbh, dead leader
T311	Black oak	Quercus velutina	33	Fair	deadwood
T312	Tulip poplar	Liriodendron tulipifera	30	Good	
T313	Tulip poplar	Liriodendron tulipifera	35	Fair/poor	split above dbh, included bark, trunk decay
T314	Northern red oak	Quercus rubra	29	Good	minor deadwood
T315	Tulip poplar	Liriodendron tulipifera	28	Fair	trunk cavity
T316	Northern red oak	Quercus rubra	33	Good/fair	trunk decay
T317	Northern red oak	Quercus rubra	29	Good	
T318	Tulip poplar	Liriodendron tulipifera	24	Good	
T319	Tulip poplar	Liriodendron tulipifera	24	Good	
T320	Tulip poplar	Liriodendron tulipifera	25	Good	
T321	Tulip poplar	Liriodendron tulipifera	24	Fair/poor	damaged crown
T322	Chestnut oak	Quercus prinus	31	Good	minor deadwood
T323	Chestnut oak	Quercus prinus	31	Good/fair	irregular growth form
T324	Chestnut oak	Quercus prinus	37	Fair/poor	severe trunk wound, deadwood
T325	Red maple	Acer rubrum	28	Fair	deadwood
T326	Northern red oak	Quercus rubra	25	Fair/poor	twin, 25x25, major deadwood
T327	Northern red oak	Quercus rubra	26	Fair	twin, 26x22, splits below dbh, included bark
T328	Tulip poplar	Liriodendron tulipifera	26	Good	
T329	Tulip poplar	Liriodendron tulipifera	25	Good	
T330	Tulip poplar	Liriodendron tulipifera	24	Good	minor trunk decay

T331	Tulip poplar	Liriodendron tulipifera	25	Good	
T332	Tulip poplar	Liriodendron tulipifera	45	Good/fair	split above dbh, included bark
T333	Northern red oak	Quercus rubra	31	Fair	deadwood, included bark
T334	Black oak	Quercus velutina	25	Good/fair	crown dieback
T335	Tulip poplar	Liriodendron tulipifera	25	Good	
T336	Northern red oak	Quercus rubra	29	Poor	severe trunk wound & deadwood
T337	Red maple	Acer rubrum	25	Fair	multistem, 2 dead leaders, irregular growth form
T338	Tulip poplar	Liriodendron tulipifera	37	Fair/poor	large trunk cavity, major trunk decay
T339	Red maple	Acer rubrum	29	Good/fair	multistem, included bark
T340	White oak	Quercus alba	29	Good	minor deadwood
T341	Tulip poplar	Liriodendron tulipifera	29	Good	
T342	Black oak	Quercus velutina	28	Good	minor deadwood
T343	Black gum	Nyssa sylvatica	24	Good	
T344	Tulip poplar	Liriodendron tulipifera	27	Good	
T345	Black oak	Quercus velutina	26	Fair	severe lean
T346	Tulip poplar	Liriodendron tulipifera	26	Good	
T347	Northern red oak	Quercus rubra	26	Fair	deadwood, sparse crown
T348	Tulip poplar	Liriodendron tulipifera	28	Good	
T349	Tulip poplar	Liriodendron tulipifera	24	Fair	broken leader, included bark
T350	Tulip poplar	Liriodendron tulipifera	25	Fair	irregular growth form, vines
T351	Tulip poplar	Liriodendron tulipifera	27	Good/fair	irregular growth form
T352	Tulip poplar	Liriodendron tulipifera	29	Fair/poor	dead leader
T353	Red maple	Acer rubrum	24	Fair	twin, 24x12, irregular growth form, suckering
T354	Tulip poplar	Liriodendron tulipifera	26	Fair	irregular growth form
T355	Tulip poplar	Liriodendron tulipifera	31	Good	
T356	Tulip poplar	Liriodendron tulipifera	29	Good	
T357	Black oak	Quercus velutina	28	Poor	dead leader, severe trunk decay, deadwood
T358	Chestnut oak	Quercus prinus	33	Fair	deadwood, sparse crown
T359	Chestnut oak	Quercus prinus	24	Good	
T360	Chestnut oak	Quercus prinus	25	Good	
T361	Chestnut oak	Quercus prinus	25	Fair	split above dbh, included bark, deadwood
T362	Chestnut oak	Quercus prinus	32	Fair	split above dbh, included bark, lean, trunk decay
T363	Chestnut oak	Quercus prinus	24	Fair	deadwood
T364	Chestnut oak	Quercus prinus	27	Good/fair	lean, deadwood
T365	Chestnut oak	Quercus prinus	32	Good	
T366	Chestnut oak	Quercus prinus	25	Poor	trunk decay, irregular growth form, deadwood, sparse crown
T367	White oak	Quercus alba	29	Good/fair	lean, deadwood
T368	Tulip poplar	Liriodendron tulipifera	33	Good	
T369	Tulip poplar	Liriodendron tulipifera	31	Good/fair	irregular growth form
T370	Tulip poplar	Liriodendron tulipifera	29	Good	
T371	Tulip poplar	Liriodendron tulipifera	28	Good/fair	deadwood, irregular growth form
T372	Tulip poplar	Liriodendron tulipifera	28	Good	
T373	Chestnut oak	Quercus prinus	26	Fair	irregular growth form, deadwood
T374	Chestnut oak	Quercus prinus	29	Good	
T375	Chestnut oak	Quercus prinus	27	Good	
T376	Chestnut oak	Quercus prinus	26	Fair	twin, 26x21, included bark, irregular growth form, deadwood
T377	Chestnut oak	Quercus prinus	25	Good/fair	lean, deadwood
T378	Chestnut oak	Quercus prinus	28	Fair	severe lean, deadwood
T379	Chestnut oak	Quercus prinus	24	Good	minor deadwood
T380	Chestnut oak	Quercus prinus	24	Good	
T381	Chestnut oak	Quercus prinus	32	Fair	3x, 32x14, split above dbh, included bark
T382	Northern red oak	Quercus rubra	26	Fair	sparse crown
T383	Chestnut oak	Quercus prinus	34	Fair	3x, 34x16, included bark, deadwood, split above dbh
T384	Chestnut oak	Quercus prinus	25	Fair	deadwood, irregular growth form, trunk decay
T385	Chestnut oak	Quercus prinus	27	Good/fair	slight lean, deadwood

T386	Chestnut oak	Quercus prinus	33	Good/fair	split above dbh, included bark
T387	Chestnut oak	Quercus prinus	24	Good	
T388	Slippery elm	Ulmus rubra	57	Fair/poor	5x, 57x19, included bark, trunk decay, cavity,
T389	Sycamore	Platanus occidentalis	26	Good/fair	vines in crown
T390	Black cherry	Prunus serotina	34	Poor	deadwood, crown dieback, dead leader
T391	Black oak	Quercus velutina	24	Fair	sparse crown, deadwood, lean
T392	Pignut hickory	Carya glabra	25	Good	
T393	Black cherry	Prunus serotina	28	Fair/poor	deadwood, trunk decay
T394	Black walnut	Juglans nigra	24	Good/fair	irregular growth form
T395	Black walnut	Juglans nigra	30	Fair/poor	lean, deadwood
T396	Tulip poplar	Liriodendron tulipifera	24	Fair/poor	one sided crown, deadwood, irregular growth form
T397	Chestnut oak	Quercus prinus	29	Fair	irregular growth form

Waters of the U.S. Data Sheet

Project: Miclantyo		**Feature ID:** W2	**Stream Order:**
Date: 4/4/2011	**State:** MD	**Photos:** 26-27	
Crew: ERB, WMM	**County:** Montgomery	**Last Flag Number:**	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
☐ 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 (*not jurisdictional*)
	☒ RPW – Perennial (Flowing year round)		☐ Non-RPW erosional feature (*not jurisdictional*)
			☐ Non-RPW with abutting wetland
			☐ Non-RPW with adjacent wetland
Describe rational for hydrologic class: SIGNIFICANT FLOW DURING DRY WEATHER			☐ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)		Substrate			Vegetation
☒ Natural Channel Shape	Width: 3-10' Depth: CD-1'-2'	☒ Silts	☒ Sands	☐ Muck	RB: Skunk cabbage, Honeysuckle, Farm field & Forest cedar, mile-a-minute, red maple, field
☐ Artificial (man-made)	Bank Erosion/stability: Fairly stable	☒ Cobbles	☒ Gravel	☐ Other:	LB: Blackgum, skunk cabbage, Tuliptree, Multiflora rose, spicebush
☐ Manipulated (man-altered)		☒ Bedrock	☐ Concrete		
☐ Other:	Side slope (*circle*): 1:1 (to *vertical*) 2:1 3:1 4:1 (*or less*)				

Notes:

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
☐ Discrete	☒ Yes	☒ Riparian corridor Type: RB: Field LB: Forest Width: 0-50' 100'+	*Habitat for:* 2.
☒ Confined	☐ No	☒ Wetland fringe Headwaters	☐ Federally listed species
☐ Discrete and confined	☒ Unknown		☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas

Notes:

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 litter and 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:

Photo # 28

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MIDCOUNTY ALT. 4 MOD. City/County: Montgomery Co. Sampling Date: 4/4/11

Applicant/Owner: MONT. CO. DPW State: MD Sampling Point: W3

Investigator(s): WMM, ERB Section, Township, Range: _____

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): Concave/gully Slope (%): 0

Subregion (LRR or MLRA): LRR-S; MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- X Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- X 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)
- X Drainage Patterns (B10)
- X 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 X No _____ Depth (inches): 1/2 in

Water Table Present? Yes X No _____ Depth (inches): 8

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 8

Wetland Hydrology Present? Yes X No _____

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

Remarks: MAYFLIES ?

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: —)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: —)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Herb Stratum (Plot size: 4ft radius) Foetidus 5%			
1. Skunk cabbage - Symplocarpus	40	D	OBL
2. Juncus effusus (soft rush)	2		FACW
3. Sphagnum moss sp.	20	D	OBL
4. Sedge sp	5		N1
5. Grass sp.	20	D	UPL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	87 = Total Cover		
	44-50		
	17-20		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	60	x 1 =	60
FACW species	2	x 2 =	2
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	20	x 5 =	100
Column Totals:	82 (A)		162 (B)

Prevalence Index = B/A = 2.0

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #28

SOIL

Sampling Point: W3

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
0-1"	10YR 3/2	100	—	—	—	—	MUCK	
2-4"	10YR 3/2	85	5YR 4/6	15	RM	M	SANDY SILT LOAM	
4-12	10YR 4/1	80	5YR 4/6	20	D	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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ____

Remarks: Small wetland is seep off slight slope abutting stream

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Mi.county City/County: Montgomery Sampling Date: 4/4/11

Applicant/Owner: State: Sampling Point: WP4

Investigator(s): WMM, ERB Section, Township, Range:

Landform (hillslope, terrace, etc.): Headwaters Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR or MLRA): LRR-S MLRA 147/149B Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- ___ High Water Table (A2)
- X 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)
- X Drainage Patterns (B10)
- X 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 X	No ____	Depth (inches): 3"-3"
Water Table Present?	Yes X	No ____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0"-8"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30ft)			
1. Red Maple - ACER RUBRUM	70	D	FAC
2. Tulip Poplar - Liriodendron tulipifera	15		
3.			
4.			
5.			
6.			
7.			
8.			
	85	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. Spice bush - Lindera Benzoin	30	D	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
		= Total Cover	
Herb Stratum (Plot size: 5ft)			
1. Skunk cabbage - SYMPLOCARPUS FOETIDUS	85	D	OBL
2. Jewelweed - IMPATIENS CAPENSIS	25	D	FACW
3. Microstegium	10		FAC
4. Boehmeria cylindrica	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	125	= Total Cover	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
		= Total Cover	

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% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	145 (A)		215 (B)

Prevalence Index = B/A = 1.48

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

SOIL

Sampling Point: WL4

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
0-4	10YR 4/1	65	5YR 5/6	35	D	M	SILT LOAM	
4-8	Gley 1 4/N	85	7.5YR 5/8	15	D	M	SILT LOAM	
8+	refusal	—	—	—	—	—	—	stone/cobble

[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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ___

Remarks:

PHOTO #52

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS OPTION D City/County: MDOT. Sampling Date: 4/4/11

Applicant/Owner: MC DOT State: MD Sampling Point: W5-1-5

Investigator(s): EPB, WHM Section, Township, Range:

Landform (hillslope, terrace, etc.): Local relief (concave, convex, none): Slope (%): 0

Subregion (LRR or MLRA): LRR-S MLRA 147/148 Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X 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: SEEP ABUTTING PERENNIAL STREAM, W-2

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Herb Stratum (Plot size: _____)			
1. SKUNK CABBAGE (Staphylocarpus foetidus)	25	Y	OBL
2. IMPATIENS CAPENSIS	50	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	50	x 2 =	100
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	75 (A)		125 (B)

Prevalence Index = B/A = 1.67

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #52

SOIL

Sampling Point: WS

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 5/3	100	NA				SAND	
2-9"	2.5Y 5/1	80	10YR 5/6	20	D	M	Silt loam	
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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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:

REFUSAL @ 9" (STONE)

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS - OPTION D City/County: MONT. Sampling Date: 9/4/11

Applicant/Owner: MC DOT State: _____ Sampling Point: W6-1-5

Investigator(s): EBB, WMM Section, Township, Range: _____

Landform (hillslope, terrace, etc.): _____ Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR or MLRA): LLR-S MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X 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: SEEP OFF SLOPE ABUTTING PERENNIAL STREAM W2

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. LINDERA BENZOIN	10	Y	FAC
2. SMILAX ROTUNDIFOLIA	5	N	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	15 = Total Cover		
Herb Stratum (Plot size: _____)			
1. SYMPHLOCARPUS FOETIDUS	80	Y	OBL
2. IMPATIENS CAPENSIS	25	Y	FACW
3. SPHAGNUM MOSS	5	N	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	85	x 1 =	85
FACW species	25	x 2 =	50
FAC species	15	x 3 =	45
FACU species	0	x 4 =	
UPL species	0	x 5 =	
Column Totals:	125 (A)		180 (B)

Prevalence Index = B/A = 1.44

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO # 53

SOIL

Sampling Point: W6

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"	5Y 2.5/1	100	–	–	–	–	COARSE SAND w/ COBBLED ROCK	
REFUSAL @ 5"								SAMPLE FULL OF ROCK FRAGMENTS

[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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ____

Remarks:

REFUSAL @ 5" - VERY ROCKY

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MIG - BETHEL City/County: MONT Sampling Date: 6/25/13

Applicant/Owner: _____ State: MD Sampling Point: W8

Investigator(s): ET, WMH Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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)
- X 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): >8"
Water Table Present?	Yes _____	No X	Depth (inches): >8"
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): >8"

Wetland Hydrology Present? Yes X No _____

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

Remarks:

PHOTO 4568

SEEP WETLAND WITH SOURCE & 4 SEPERATE SEEPS UP SLOPE

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W8

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	30	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Sapling/Shrub Stratum (Plot size: 10' R)			
1. LINDERA BENZOIN	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	25 = Total Cover		
50% of total cover: 12.5	20% of total cover: 5		
Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	70	Y	OBL
2. IMPATIENS CAPENSIS	20	Y	FACW
3. ALLIARIA PETIOLATA	T		FACU
4. URTICA DIOICA	T		FACU
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Woody Vine Stratum (Plot size:)			
1. Bittersweet (Celastrus orbiculatus)	5	Y	FACU
2.			
3.			
4.			
5.			
	5 = Total Cover		
50% of total cover: 2.5	20% of total cover: 1		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

SOIL

Sampling Point: W8

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
0-8"	Gley 1 3/N	70	5YR 4/6	30	C	PL	Silty clay	
REFUSAL @ 8"								

[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:

REFUSAL @ 8" @ BANK

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MVS- BETHEL City/County: MONT Sampling Date: 5/22/13

Applicant/Owner: _____ State: MO Sampling Point: W9-1 thru W9-17

Investigator(s): ET, WMM Section, Township, Range: _____

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? NO (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 X 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): 1/2-1"
Water Table Present?	Yes ☐	No ☒	Depth (inches): >12"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): 7/2"

Wetland Hydrology Present? Yes ⊗ No ○

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

Remarks:

SEEP ON SIDE OF SLOPE FLOWING INTO W1

photos #S 4477, 4478

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WG

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30')			
1. ACER RUBRUM	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Herb Stratum (Plot size: 5')			
1. CAREX LURIDA	10	Y	OBL
2. AGROSTIS ALBA	20	Y	FACW
3. MICROSTEGIUM VIMINEUM	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	40 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

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% (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:	0 (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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ⊗ No ○

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

SOIL

Sampling Point: W9

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
1-4	2.5Y 5/1	85	10YR 4/6	15	C	PL	SL	
4-12	2.5Y 6/1	60	10YR 6/8	40	C	M	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)**

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)**
- ☐ Red Parent Material (TF2)
- ☐ 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

Project/Site: MCS BETHEL City/County: MONT CO Sampling Date: 5/22/13

Applicant/Owner: _____ State: MD Sampling Point: W10-1 thru

Investigator(s): ET, WMM Section, Township, Range: W10 -1D

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? NO (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): +6"
Water Table Present?	Yes ☐	No ☐	Depth (inches): > 8"
Saturation Present? (includes capillary fringe)	Yes ☒	No ☐	Depth (inches): 6"

Wetland Hydrology Present? Yes ⊗ No ○

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

Remarks: REFUSAL IN SOIL PIT @ 6"
SEEP UPSLOPE FROM W01

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W10

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. NONE			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		
Herb Stratum (Plot size:)			
1. IMPATIENS CAPENSIS	60	Y	FACW
2. ABUTILON ALBA	40	Y	FACW
3. PERSICARIA SAGITTATA	T		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
Woody Vine Stratum (Plot size:)			
1. CELASTRUS ORBICULATUS	15	Y	FACU
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 66% (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:	0 (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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ⊗ No ○

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

SOIL

Sampling Point: W10

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
0-1	10YR 2/2	100	–	–	–	–	MUCKY PEAT	
1-6	2.5Y 4/2	85	5YR 4/4	15	C	PL	SL	

[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)**

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)**
- ☐ Red Parent Material (TF2)
- ☐ 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:

REFUSAL @ 6" - GRAVEL

PHOTO 4467-4469

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS - Bethel City/County: Mont. Co. Sampling Date: 5/22/13

Applicant/Owner: _____ State: _____ Sampling Point: WH-1 thru

Investigator(s): ET, WM M Section, Township, Range: WH-28

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

Subregion (LRR or MLRA): _____ Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? No Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? No (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): 1/2"
Water Table Present?	Yes ☐	No ☒	Depth (inches): 12"
Saturation Present? (includes capillary fringe)	Yes ☐	No ☒	Depth (inches): >12"

Wetland Hydrology Present? Yes ⊗ No ○

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

Remarks: SEEP WETLAND OFF SLOPE

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1. ACER RUBRUM	60	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. BERBERIS THUNBERGII	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5 = Total Cover		
Herb Stratum (Plot size: _____)			
1. MICROSTEGIUM VIMINEUM	20	Y	FAC
2. IMPATIENS CAPENSIS	20	Y	FACW
3. AGROSTIS ALBA	15	Y	FACW
4. POLYGONUM PUNCTATUM	10		OBL
5. SPHAGNUM MOSS	B		
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	73 = Total Cover		20% = 14.6
Woody Vine Stratum (Plot size: _____)			
1. CELASTRUS ORBICULATUS	T		FACU
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (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:	0 (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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ☒ No ○

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

SOIL

Sampling Point: _____

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	—	—	—	—	clay loam	
3-6	2.5Y 5/2	80	2.5YR 4/6	20	C	PL	clay	
6-12	2.5Y 5/2	85	7.5YR 5/8	15	C	PL	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)**

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)**
- ☐ Red Parent Material (TF2)
- ☐ 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): _____

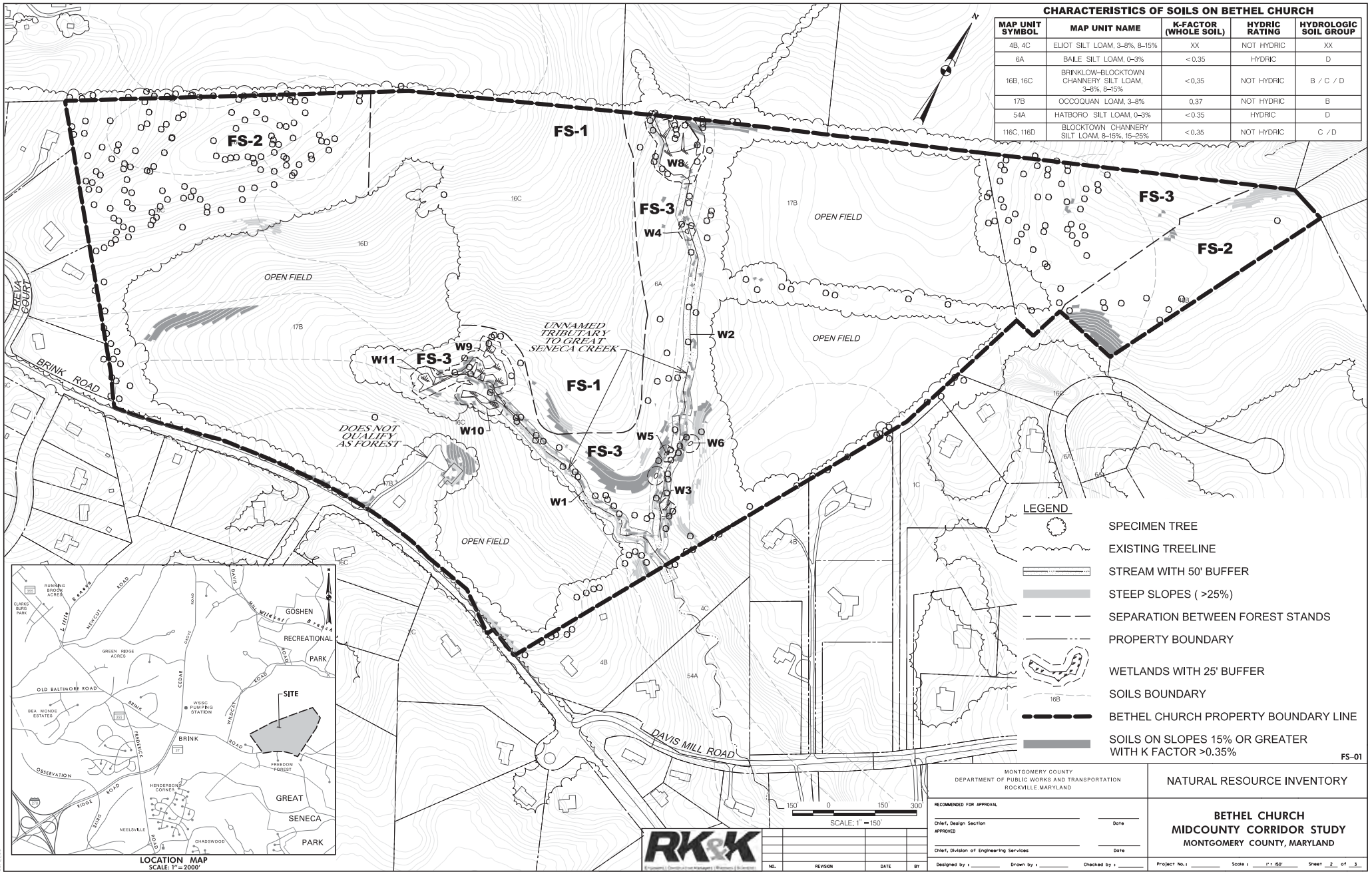
Hydric Soil Present? Yes ☒ No ☐

Remarks:

PHOTOS 4474-4476

APPENDIX D

NRI Plans



CHARACTERISTICS OF SOILS ON BETHEL CHURCH

MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP
4B, 4C	ELIOT SILT LOAM, 3–8%, 8–15%	XX	NOT HYDRIC	XX
6A	BAILE SILT LOAM, 0–3%	< 0.35	HYDRIC	D
16B, 16C	BRINKLOW–BLOCKTOWN CHANNERY SILT LOAM, 3–8%, 8–15%	< 0.35	NOT HYDRIC	B / C / D
17B	OCCOQUAN LOAM, 3–8%	0.37	NOT HYDRIC	B
54A	HATBORO SILT LOAM, 0–3%	< 0.35	HYDRIC	D
116C, 116D	BLOCKTOWN CHANNERY SILT LOAM, 8–15%, 15–25%	< 0.35	NOT HYDRIC	C / D

LOCATION MAP
SCALE: 1" = 2000'

LEGEND

- SPECIMEN TREE
- EXISTING TREELINE
- STREAM WITH 50' BUFFER
- STEEP SLOPES (>25%)
- SEPARATION BETWEEN FOREST STANDS
- PROPERTY BOUNDARY
- WETLANDS WITH 25' BUFFER
- SOILS BOUNDARY
- BETHEL CHURCH PROPERTY BOUNDARY LINE
- SOILS ON SLOPES 15% OR GREATER WITH K FACTOR >0.35%

FS–01

RK&K

NO.	REVISION	DATE	BY

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

RECOMMENDED FOR APPROVAL
Chief, Design Section — Date
APPROVED
Chief, Division of Engineering Services — Date

Designed by : _____ Drawn by : _____ Checked by : _____

NATURAL RESOURCE INVENTORY

BETHEL CHURCH
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

Project No.: _____ Scale : 1" = 150' Sheet 2 of 3

NATURAL RESOURCE INVENTORY
FOR WILSON PROPERTY

RK&K conducted a Natural Resource Inventory at the Wilson Property in Germantown, Maryland, during April through June 2013. The Wilson Property is a 105.3-acre site located northeast of the intersection of Brink Road and Wildcat Road and it is bounded on the north by an unnamed tributary to Wildcat Branch; on the south by Brink Road, residences on Treva Court, and the Bethel Church property; on the east by private residences at 22001 and 22005 Wildcat Road; and on the west by Wildcat Road (see NRI Plan in **Appendix D**).

The Wilson Property is a candidate site for forest and park mitigation, stream restoration, and/or wetland creation for the Midcounty Corridor Study (MCS) or a future Montgomery County project requiring mitigation. Wilson Property is opposite the Seneca Crossing Local Park, and the two are separated by Brink Road. If purchased and reforested, Wilson Property would provide an additional 105.3 acres to the greenway consisting of Seneca Crossing Local Park, North Germantown Greenway Stream Valley Park, and Great Seneca Park. In combination with the existing forest on this property and adjacent properties, the reforestation of existing agricultural land would create contiguous FIDS habitat once the planted trees matured. Wilson Property contains two unnamed Use III-P tributaries to Wildcat Branch, whose water quality would be improved by the conversion of agricultural land to forest. Much of the existing forest has high retention priority due to the presence of streams and/or wetlands, high numbers of specimen trees (dbh ≥ 24"), steep slopes, and high quality forest. Forest retention value rating characteristics are discussed below.

Surrounding land use consists of agriculture, large-tract rural residential development, and a cemetery. There is no Maryland Agricultural Land Preservation Easement (MALP) on this property. Natural Resource Inventory (NRI) plans are attached. See **Appendix A** for project photos.

Summary

Two forest stands, three streams, five wetlands, 298 specimen trees, and an abandoned house were observed on the Wilson Property. An 8.08 acre mid-successional Tulip Poplar Association was observed in the low lying, riparian area abutting two unnamed tributaries to Wildcat Branch, and a 25.87 acre mid-successional Chestnut Oak Association was noted on the forested, steeper upland slopes (see NRI Plan in **Appendix D**). Two unnamed tributaries to Wildcat Branch with abutting forested wetlands are located within the riparian forest located in the northern section of the property. The vacant farmhouse, sheds, a trailer home, storage trailer, and dump piles are located on a hill near the southwest corner of the site, and would require an investigation for the presence of hazardous materials.

Background Information

Background environmental information was obtained from the USGS 7.5 minute Gaithersburg quadrangle, FEMA FIRM maps, NRCS Web Soil Survey and the Montgomery County Soil Survey, U.S. Fish and Wildlife National Wetland Inventory, and recent survey of topography and property boundaries.

Topography

Wilson Property topography is characterized by gently to somewhat steeply sloping upland hillsides on the majority of the site, with slightly incised stream banks in the northern part of the site. Elevations on the property range from 450 to 608 NGVD 88. The NRI plans in Appendix D show slopes greater than 25% and slopes greater than 15% with highly erodible soils. Highly erodible soils are defined as those having a K- (erodibility) factor greater than 0.35.

Geology and Soils

The property is located in the Piedmont physiographic province characterized by broadly undulating to rolling topography underlain by metamorphic rocks with relief increased locally by low knobs or ridges and valleys.

The Maryland Physiographic Map (2008) indicates that Wilson Property is located in the Mt. Airy Upland District, characterized as a rolling upland due to the interaction of thick siltstones and quartzites with stream reaches sometimes incised and within bedrock. The Maryland Geological Survey's Geologic Map of Maryland (1968) indicates that the project area is underlain by a Precambrian tuffaceous and non-tuffaceous phyllite, slate, and quartzite. The NRCS web soils data indicates that soils at Wilson Property include Baile silt loam, 0-3% slopes (all hydric); Blocktown channery silt loam, 3-8%, 8-15% and 15-25% slopes; Brinklow-Blocktown channery silt loam, 3-8%, 8-15%, and 15-25% slopes; Glenville silt loam, 3-8% slopes; Hatboro silt loam, 0-3% slopes (all hydric); and Occoquan loam, 3-8% slopes, as indicated in **Table 1** below.

Table 1. Characteristics of Soils on Wilson Property

Map Unit Symbol	Map Unit Name	K-Factor (Whole Soil)	Hydric Rating	Hydrologic Soil Group
6A	Baile Silt loam, 0-3% slopes	< 0.35	All Hydric	D
116A, 116B, and 116C	Blocktown Channery Silt Loam, 3-8%, 8-15%, & 15-25%	< 0.35	Not All Hydric	C/D
16B, 16C, 16D	Brinklow-Blocktown channery silt loam, 3-8%, 8-15%, & 15-25%	> 0.35	Not All Hydric	B/C/D
5B	Glenville silt loam, 3-8%	< 0.35	Not All Hydric	C
54A	Hatboro silt loam, 0-3%	< 0.35	All Hydric	D
17B	Occoquan loam, 3-8%	0.37	Not All Hydric	B

Potential for Hazardous Materials

RK&K scientists performed a visual evaluation for potential hazardous materials and identified waste piles with 55-gallon drums and a fertilizer shed, both located near the abandoned farm house in the southwestern portion of the property. In addition, two large (100 gallons+) petroleum storage tanks; a large, closed, metal storage trailer; and an abandoned mobile home are possible concerns. An investigation of the property will be required to determine the extent of contamination, if any, from previous hazardous material spills, dumping, or leakage from storage tanks.

Waters of the United States

Three unnamed tributaries to Wildcat Branch (W1, W2, and W5) are located on the Wilson Property property. Wildcat Branch and its tributaries are classified as Use III-P streams. W1 and W2 are perennial streams receiving flow from outside the property and W5 originates from seeps on the property. Water quality data from Montgomery County DEP at monitoring stations along Wildcat Branch is summarized in **Table 2**, below.

The National Wetland Inventory mapping indicates the presence of non-tidal wetlands located in the northern portion of the project area surrounding the perennial streams (See **Appendix A**).

Floodplains
The FEMA FIRM map for Montgomery County, Maryland, panel 24031C0180D, indicates that the study area is not in a mapped FEMA floodplain (See **Appendix A**).

Table 2. Range of DEP's Water Quality Data Collected Along Wildcat Branch

Montoring Station	Dissolved O_2 (mg/l)	pH	Temperature (ºC)	Sampling Dates
Use III-P Water Quality Standards	>5 at all times, min daily avg >6	6.5 – 8.5	$\leq$ 20ºC	
GSWB 201	8.7 - 12.36	6.24 – 8.05	8.5 – 18.9	1999 - 2010
GSWB 203 B	9.4 – 11.58	5.39 – 7.29	6.6 – 15.2	1996 - 2006
GSWB 204	9.47 – 11.79	6.71 – 7.31	6.4 – 16.8	1997 - 2006

Rare, Threatened, and Endangered Species
Letters requesting information about the presence of rare, threatened or endangered species (RTE's) were sent to the MDNR-Wildlife and Heritage Services (MDNR-WHS), and MDNR-Environmental Review Unit (MDNR-ERU) on June 12, 2013. The U.S. Fish and Wildlife Service Chesapeake Bay Field Office (USFWS) website was reviewed on May 28, 2013, and it was determined that the Gaithersburg quadrangle is included on the USFWS list of USGS topographic maps where no federally proposed or listed endangered or threatened species are known to occur in Maryland. As a result, the online list request certification resource was used to generate an online certification letter.

Responses are pending from MDNR-Wildlife and Heritage Services (MDNR-WHS) and MDNR-Environmental Review Unit (MDNR-ERU). See **Appendix B** for agency correspondence.

Cultural Resources
Wilson Property was evaluated to determine eligibility for the National Register of Historic Places (NRHP). The Maryland Historical Trust (MHT) concurred that the property is not individually eligible due to the advanced deterioration of the abandoned building, however, the property could potentially be a contributing element of a much larger Wildcat Road/Davis Mill Road Rural Historic District. By letter addressed to MHT and dated July 8, 2013, MCDOT requested comments and concurrence for the NRHP eligibility of the Wildcat Road/Davis Mill Road Rural Historic District. A response is forthcoming.

Forest Characterization – Methods
The investigation method employed for this forest characterization was based on the *State Forest Conservation Technical Manual, Third Edition, 1997* for a Simplified Forest Stand Delineation (FSD). The State 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) areas that have been cut but not cleared." Forest stands were characterized by their community type, successional stage, and overall forest condition. A walk-through level forest stand delineation was conducted and no plot points were recorded. Forest association designations are derived from *Maryland Forest*

Associations Species List (Brush et al., 1977). Forest stand locations are shown on the NRI plans (See **Appendix D**).

The Wilson Property forest characterization included an inventory of specimen trees. Montgomery County defines

specimen trees as, "trees having a diameter at breast height of 24 inches or more; trees having 75 percent or more of the diameter at breast height of the current champion of that species; or a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species." The location of all specimen trees within Wilson Property were recorded with an iPad and this information was transposed on the NRI plans, and the dbh, species, and health status of the tree was recorded. The health status of specimen trees was assessed by an ocular estimation of growth form, visible signs of decay, live crown ratio, and indications of disease or insect infestation.

Forest condition ratings are based on the following general factors. An "excellent" forest condition rating includes forest with numerous specimen trees, trees in good health, varied tree species diversity including climax forest tree species, excellent representation for all forest layers (overstory and understory trees, shrubs, and herbaceous perennials), almost no invasive plants, and ample wildlife habitat including food and cover. A "good" forest condition rating would include forest with some specimen trees, trees in good health, some tree species diversity, good representation of forest layers, very few invasive plants, and good wildlife habitat. A "fair" forest condition rating would include a forest with few or no specimen trees, trees in questionable health, little tree species diversity, absence of one forest layer, moderate presence of invasive plants, and limited wildlife habitat. A "poor" forest condition rating would include a forest with no specimen trees, many trees in poor health, little tree species diversity, absence of one or more forest layers, heavy invasive plant presence, and little to no wildlife habitat.

The forest inventory included dominant canopy and understory species, dominant canopy size class, specimen tree identification, percent canopy closure, stand successional stage, stand condition, invasive cover, downed woody debris, and forest retention value. **Table 3** (below) lists characteristics for determining forest retention value ratings.

Table 3. Forest Retention Value Rating Characteristics

High Retention Value	Intermittent and perennial streams and their forest buffers
	Slopes > 25%
	Nontidal wetlands and buffers
	Erodible soils on slopes > 25%
	100-year floodplains
	Habitat for rare, threatened and endangered (RTE) species or County Watchlist Species
	Large contiguous forest tracts especially those w/ FIDS habitat
	Forest stands w/ multiple specimen trees
	Forest with County Green infrastructure
Moderate Retention Value	Stands with good structural diversity
	Corridor +300' foot wide
	Forest stream buffers

	Tree buffers between incompatible land uses
	>24" dbh trees
Low Retention Value	Stands with poor structural diversity
	Stands with moderate to high exotic/ invasive plant cover

Forest Characterization - Results

Two forest stands and two hundred and ninety eight specimen trees were identified during the investigation. The Tulip Poplar Association is designated as FS-1 on the plans and the Chestnut Oak Association is designated as FS-2. Specimen trees locations are shown on the NRI plan and a specimen tree table (**Appendix C**) provides the tree species, the dbh measurement of each tree, and its health status. Results of the investigation follow.

FS1: Mid-successional Tulip Poplar Association

This 8.08 acre mid-successional riparian forest stand is located along the two unnamed tributaries to Wildcat Branch. The most common canopy tree species is *Liriodendron tulipifera* (tulip poplar). Other canopy tree species include *Quercus prinus* (chestnut oak), *Quercus alba* (white oak), *Acer rubrum* (red maple), *Carpinus caroliniana* (ironwood), *Carya glabra* (pignut hickory), *Nyssa sylvatica* (blackgum), and *Diospyros virginiana* (persimmon). The understory is dominated by *Lindera benzoin* (spicebush), *Hamamelis virginiana* (witchhazel), *Viburnum prunifolium* (blackhaw viburnum), *Rosa multiflora* (multiflora rose) and saplings from overstory species. Trees between 12" and 20" dbh comprise the dominant canopy size class in this forest stand with many specimen trees. The vine and herbaceous layers are dominated by *Toxicodendron radicans* (eastern poison ivy), *Osmunda cinnamomea* (cinnamon fern) and *Symplocarpus foetidus* (skunk cabbage). Canopy closure is estimated at approximately 80% and downed woody debris was moderate. FS1 has a good forest condition rating and a high Forest Retention Value due to its many specimen trees, presence of perennial streams, wetlands and floodplain, high wildlife habitat value and use as a wildlife corridor, its function as a buffer for use III tributary streams, and invasive plant cover.

FS2: Mid-successional Chestnut Oak Association

This 25.87 acre mid-successional forest stand is located mainly along upland slopes. The dominant canopy tree species is chestnut oak. Other canopy tree species include tulip poplar, pignut hickory, white oak, and *Quercus rubra* (northern red oak). The understory is dominated by ironwood, pignut hickory, *Prunus serotina* (black cherry), witchhazel, blackgum, *Vaccinium angustifolium* (low bush blueberry), *Smilax rotundifolia* (greenbrier), *Celastrus orbiculatus* (Asiatic bittersweet) and saplings from overstory species. Trees between 12" and 20" dbh comprise the dominant canopy size class in this forest stand with many specimen trees. The vine and herbaceous layers are dominated by eastern poison ivy, *Vitis riparius* (eastern grape), and *Thelysteris noveboracensis* (New York fern). Canopy closure is estimated at approximately 80% and downed woody debris is moderate. The northern half of FS2 has a good forest condition rating and a high Forest Retention Value due to the presence of many specimen trees, a perennial stream, its use as a wildlife corridor, its function as a forest buffer for use III tributary streams, and low invasive plant cover. The southern half of FS2 has a good to fair forest condition rating and a moderate Forest Retention Value due to the presence of many specimen trees, use as a wildlife corridor, its function as a forest buffer for use III tributary streams, and the low to moderate invasive plant cover.

Specimen Trees

Two hundred and ninety-eight specimen trees, T1-T298, are located within the Wilson Property property. Specimen trees are abundant throughout all the forested areas of Wilson Property and are especially concentrated in the stream

and wetland areas. Retention of mature forest with specimen trees is important because specimen trees account for a larger proportion, per tree, of the forest canopy, seed and mast production, water and nutrient absorption, and biomass. Large mature specimen trees also provide exponentially greater benefit than smaller saplings or whips for air quality improvement, stormwater reduction, and wildlife habitat. Specimen tree information is summarized in a table found in **Appendix C**, and the locations of specimen trees are indicated on the NRI plans in **Appendix D**.

WETLAND DELINEATION - FIELD INVESTIGATION

Three jurisdictional waters of the U.S. and five wetlands were identified during the wetland delineation. Wetland quality evaluations are based on an evaluation of wetland functions and values, the condition of the resource, diversity of plant species, and presence of invasive plants. In addition, quality evaluations for streams are based on referencing existing DNR and Montgomery County data collected by for benthic macro-invertebrates and fish and an index of Biological Integrity (IBI) to rate stream health.

WETLAND DELINEATION-Methods

All waters of the U.S., including wetlands, in the study area were delineated by a team of environmental scientists. The applicable data form (Routine Wetland Determination for wetlands and/or the RK&K-derived Waters of the U.S. form) was completed for each delineated feature. Each delineated feature was named, the boundary points marked with pink flagging numbered consecutively and photographed. Boundary point positions were located using traditional survey methods or GPS.

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.

Wetlands were delineated in accordance with the U.S. Army Corps of Engineers 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain 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: U.S. Army Engineer Research and Development Center and supplemental guidance issued by the United States Army Corps of Engineers (USACE). Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

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

W1 – Waters of the U.S. (unnamed tributary to Wildcat Branch)

W1 is a perennial, unnamed tributary to Wildcat Branch that enters the site from the northwest via a culvert under Wildcat Road and crosses the site for approximately 200 linear feet before flowing into W2. W1 is a (relatively permanent water) RPW with a natural channel shape, with a width of 8 to 15 feet, a bank depth of 2 to 4 feet, water depth of 2-8", and banks with 1:1 and 2:1 slopes. Channel substrate consists of cobbles, sands, and gravel. The feature has well defined bed and banks, and observed indicators of the ordinary high water mark include disturbed leaf litter, vegetation matted down, bent, or absent, sediment deposition, water staining, presence of litter and debris, destruction of terrestrial vegetation, presence of a wrack line, and scour. The forest surrounding W1 is dominated by ironwood, red maple, spicebush, *Rosa multiflora* (multiflora rose), and skunk cabbage. MCDEP collected benthic macro-invertebrate and fish samples at a site (GSWB201) within W1 in 2010. The site received a "Good" benthic IBI score of 28 and a "Good" fish IBI score of 4. Feature W1 was flowing during the April 2011 and May and June 2013 field reviews, and is jurisdictional under Rapanos guidance.

W2 – Waters of the U.S. (unnamed tributary to Wildcat Branch)
W2 is a perennial, unnamed tributary to Wildcat Branch that enters the site from the northwest via a culvert under Wildcat Road, crosses the site for approximately 500 linear feet, is conveyed via a culvert again under Wildcat Road, and flows for 1,000 lf before exiting the site. W2 is a RPW (Relatively Permanent Water) with a natural channel shape, with a width of 10 to 15 feet, a bank depth of 2 to 8 feet, water depth of 2-12", and banks with a 2:1 slope. Channel substrate consists of cobbles, sands, and gravel. The feature has well defined bed and banks, and observed indicators of the ordinary high water mark include disturbed leaf litter, sediment deposition, water staining, presence of litter and debris, sediment sorting, and scour. The forest surrounding W2 is dominated by ironwood, red maple, spicebush, multiflora rose, and skunk cabbage. Feature W2 provides good to fair aquatic habitat. Maryland DNR's Stream Waders collected benthic macro-invertebrate samples at a site (865-4-2001) downstream of Feature W2 in 2001. The site had a total of 15 macroinvertebrate families, with 10 EPT taxa and 4 Dipterans, resulting in a "Fair" IBI score of 3.86. Ephemeropterans made up 30% of the macroinvertebrates in the sample, indicating healthy stream conditions. As previously mentioned MCDEP collected benthic macro-invertebrate and fish samples at a site (GSWB201) within WUS1 in 2010. The site received a "Good" benthic IBI score of 28 and a "Good" fish IBI score of 4. This feature provides adequate habitat for fish and benthic macroinvertebrates due to its instream cover, variety of substrates and the presence of riffle-pool sequences. Feature W2 was flowing during the April 2011 and May and June 2013 field reviews, and is jurisdictional under Rapanos guidance.

W3 – Forested Wetland
W3 is a large forested wetland abutting the western portion of W2 south of Wildcat Road. Dominant vegetation includes red maple, green ash (*Fraxinus pennsylvanica*), ironwood, spicebush, winterberry holly (*Ilex verticillata*), skunk cabbage, and jewelweed (*Impatiens capensis*). Primary indicators of hydrology include A1: Surface Water, A3: Saturation, B1: Water Marks, and B9: Water-Stained Leaves with secondary indicators including B10: Drainage Patterns and D2: Geomorphic Position. The soils in W3 meet the requirements of Hydric Soil Indicator F6: Redox Dark Surface. Feature W3 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Feature W2, an RPW flowing year round. W3 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W4 – Forested Wetland

W4 is a small forested wetland abutting W1 and W2. Dominant vegetation includes green ash, ironwood, spicebush, multiflora rose, and skunk cabbage. Primary indicators of hydrology include B9: Water-Stained Leaves and C3: Oxidized Rhizospheres on Living Roots with a secondary indicator of D2: Geomorphic Position. The soils in W4 meet the requirements of Hydric Soil Indicator F19: Piedmont Floodplain Soils. Feature W4 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W1 and W2, both RPWs flowing year round. W4 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and minimal invasive species.

W5 – Waters of the U.S. (unnamed tributary to Wildcat Branch)
W5 is perennial stream that originates from a hillside seep and flows approximately 400 linear feet before being conveyed under Wildcat Road through a 24" pipe and flowing into wetland W6. W5 is a RPW with a natural channel shape, with a width of 8 to 20 feet, a bank depth of 1 to 10 feet, water depth of 2-18", and banks with a 2:1 and 1:1 slope. Channel substrate consists of bedrock, cobbles, sands, and gravel. The feature has well defined bed and banks, and observed indicators of the ordinary high water mark include disturbed leaf litter, sediment deposition, water staining, presence of litter and debris, destruction of terrestrial vegetation, presence of a wrack line, and scour. The forest surrounding W5 is dominated by tulip poplar, black gum, chestnut oak, ironwood, Japanese stiltgrass, Oriental bittersweet, jewel weed, and cinnamon fern. As mentioned above MCDEP collected benthic macro-invertebrate and fish samples at a site (GSWB201) near W5 in 2010. The site received a "Good" benthic IBI score of 28 and a "Good" fish IBI score of 4. Feature W5 was flowing during the June, 2013 field review, and is jurisdictional under Rapanos guidance.

W6 – Forested Wetland
W6 is a large forested wetland located north of Wildcat Road receiving hydrologic input from W5 via the above described 24" pipe. W6 abuts perennial stream W2. Dominant vegetation includes black gum, ironwood, spicebush, and skunk cabbage. Primary indicators of hydrology include A2: High Water Table and B9: Water-Stained Leaves. The soils in W6 do not meet the requirements of a Hydric Soil Indicator though the 3-12" horizon contain 30% redox features with redox concentrations in both the pore linings and the matrix. Though Feature W6 does not meet the three-parameter definition of a wetland, it is our professional judgment that the USACE would consider this feature to be a jurisdictional wetland since it meets two of the three parameters. The soil contains abundant redox features, and it receives hydrologic input from W5, a perennial stream. W6 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and absence of invasive species.

W7 – Forested Wetland
W7 is a small forested wetland located north of Wildcat Road that receives hydrologic input from a seep in the hillside. W7 abuts perennial stream W2. Dominant vegetation includes red maple, black gum, ironwood, spicebush, and skunk cabbage. Primary indicators of hydrology include A2: High Water Table and B9: Water-Stained Leaves. Similar to the soils in W6, the soils in W7 do not meet the requirements of a Hydric Soil Indicator though the 2-12" horizon contain 20% redox features with redox concentrations in the pore lining. Though Feature W7 does not meet the three-parameter definition of a wetland, it is our professional judgment that the USACE would consider this feature to be a jurisdictional wetland since it meets two of the three parameters. The soil contains abundant redox features and it receives hydrologic input from seeps. W7 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W8 – Forested Wetland
W8 is a large forested wetland abutting the western portion of W1 west of Wildcat Road. Dominant vegetation includes red maple, black walnut (*Juglans nigra*), spicebush, and skunk cabbage. Primary indicators of hydrology include A1: Surface Water, A2: High Water Table, A3: Saturation, and C3: Oxidized Rhizospheres on Living Roots. The soils in W8 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W8 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Feature W1, an RPW flowing year round. W8 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and absence of invasive species.

MITIGATION POTENTIAL OF THE WILSON PROPERTY PROPERTY

The Wilson Property property would complement and enhance the existing Montgomery County park system. The following is a discussion of the benefits of this addition to the park system.

Forest and Parkland Mitigation

Table 4 summarizes the acreage of impact to all parks (first row) and to the subset of Montgomery County/ M-NCPPC owned parkland (second row).

Table 4: Park Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Park Impact (acres)	0	19.4	0.2	45.2	30.6	29.6	48.1	33.5	32.5
Impact to County & M-NCPPC-owned Park (acres)	0	15.4	0.2	43.3	28.7	27.7	45.5	30.9	29.9

Table 5 presents the acreage of impact to all forests (first row) and to the subset of forest that is on Montgomery County/M-NCPPC owned parkland (second row).

Table 5: Forest Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Forest Impact (acres)	0	31.0	2.0	57.6	52.5	61.4	72.9	67.7	76.7
Impact to Forest on County Parklands (acres)	0	8.35	2.0	41.0	26.5	25.5	43.3	28.7	27.7

Currently, 34 acres of the 105.3-acre Wilson Property is forest, leaving 71 acres of farm fields available to reforest, except under Alternative 8D and Alternative 9D. Option D would cross the Wilson Property, leaving approximately 64 acres of farm fields for reforestation. This is a preliminary estimate, and assumes the abandoned farmhouse would be demolished. The available acreage could be further reduced by the construction of a hiker crossing and/or additional stormwater management structures which may be required by the Special Protection Area permit -- neither of which has been designed at this time. MCDOT would propose to reforest all farm fields, and convey the entire

property to M-NCPPC, with the exception of the 12 acres of highway right-of-way that would be required if Option D were constructed. The Wilson Property conveyance would include the 34 acres of mid-successional forest that already exists on the property (28.7 acres if Option D were constructed). MCDOT would appreciate M-NCPPC's consideration of mitigation credit for the preservation of existing forest. MCDOT would anticipate that this property would be able to satisfy the following:

- The entire parkland mitigation obligation for impacts to Montgomery County/M-NCPPC parkland, including the replacement of the approximately 5 acres of non-forested parkland that will be sought for wetland mitigation,
- The entire mitigation required for impacts to forest that would be impacted on Montgomery County/ M-NCPPC parkland, and
- A portion of the mitigation required for non-park forest impacts.

Section 22A-12 (h) of the Montgomery County Forest Conservation Law requires legal instruments *such as* conservation easements, deed restrictions, covenants, and *other agreements, as necessary* to protect forest conservation areas. Unless notified otherwise by M-NCPPC, MCDOT assumes that the conveyance of the property to M-NCPPC would satisfy the requirement for protecting the forest, and would not require a forest conservation easement.

FIDS Habitat

New FIDS habitat would be created when proposed reforestation on the Wilson Property matures. The construction of Option D of Alternative 8 or Alternative 9 would result in the least amount of FIDS habitat creation on the Wilson Property because the proposed roadway would fragment the property. If Option D were constructed, one area of new FIDS habitat would be created, a 28-acre area on the south side of Option D (see **Interior Forest** figure). If any other alternative were constructed, approximately 60 acres of new FIDS habitat would be created.

Connectivity to Existing Parkland

Montgomery County currently owns large holdings of contiguous parklands south of Brink Road, including Seneca Crossing Local Park (approximately 28 acres), North Germantown Greenway Stream Valley Park (approximately 381 acres), and Great Seneca Stream Valley Park (approximately 2,013 acres). Approximately 0.8 miles north of Brink Road is the location of the 251-acre Goshen Recreational Park. Montgomery GIS mapping indicates the planned acquisition of land from the Wilson Property and properties to the north in order to create a greenway along Wildcat Branch, connecting the Goshen Recreational Park to Wildcat Road. The conveyance of the Wilson property to M-NCPPC would substantially enhance the planned greenway, and reduce the amount of future park acquisition required to complete the connection to Goshen Recreational Park.

M-NCPPC Parks Department previously advised that if Option D were constructed, hiker access across Option D would be desirable. MCDOT is evaluating three potential options:

- Overpass: It would be feasible to construct a pedestrian bridge over Option D at any location on the Wilson Property,
- Underpass: It would be feasible to construct a pedestrian underpass (e.g., a structural plate pipe arch) near the eastern boundary of the Wilson Property, and

- At-Grade: It would be feasible to construct a pedestrian crossing of Option D at the planned intersection with Wildcat Road. However, the vehicular traffic volumes do not warrant a traffic signal at this intersection. Therefore, MCDOT would evaluate a pedestrian-activated traffic signal, flashing lights, or some other means of informing motorists that pedestrians are preparing to cross the highway.

Water Quality Benefits

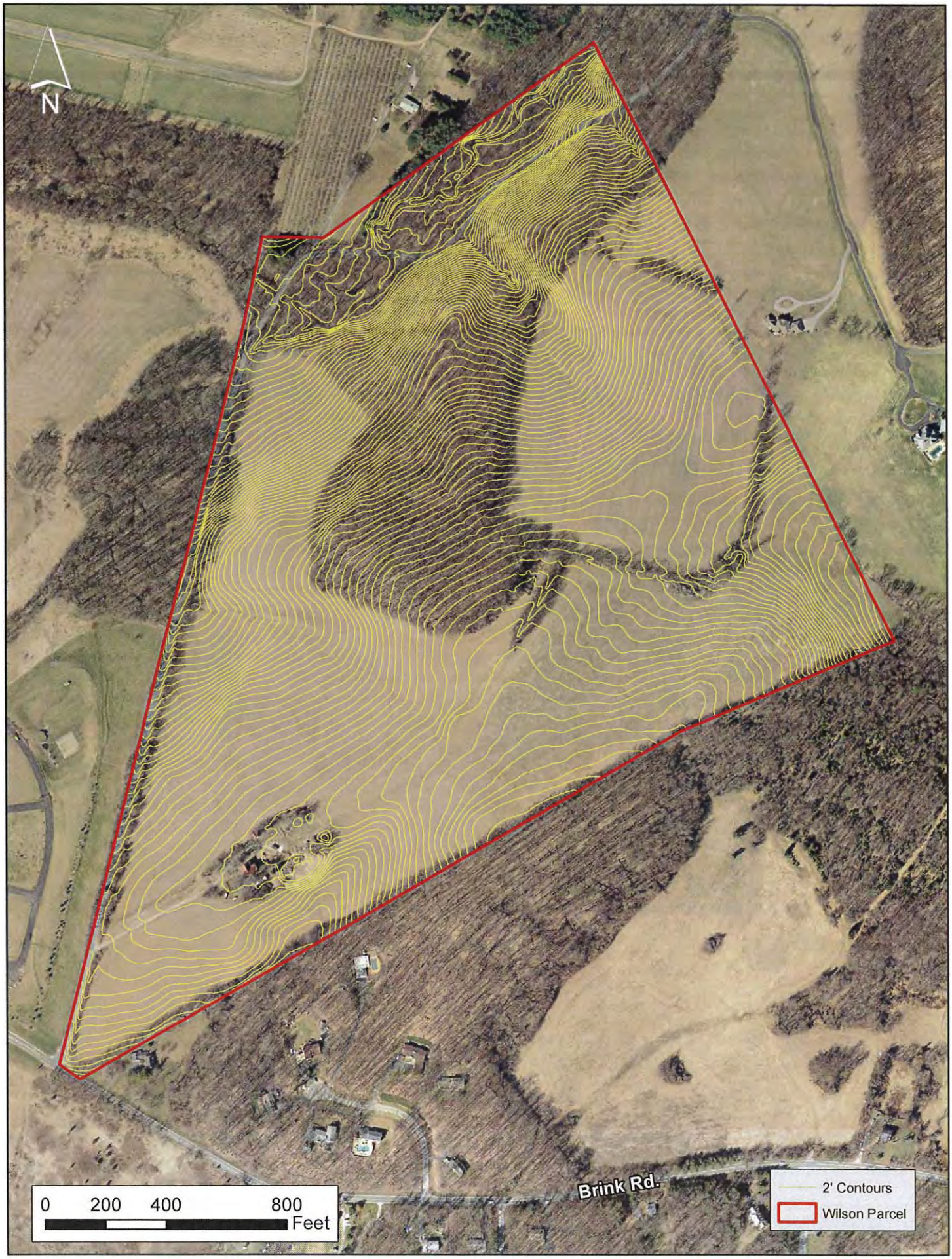
Wilson Property drainage conveys to Wildcat Branch, a Use III-P natural trout stream, and the highest rated stream within the project study area. Wildcat Branch is the only sub-watershed in the Great Seneca basin that supports a high quality, cold water fish community. This section of the sub-watershed is located just downstream of the Clarksburg Special Protection Area (SPA), which received the SPA designation because it is a geographic area with high quality or unusually sensitive water resources or other environmental features. The conversion of the Wilson Property farmland to forest would improve the water quality of Wildcat Branch by infiltrating and reducing runoff volumes; decreasing nutrient, pesticide, and herbicide runoff; and reducing erosion and sedimentation. These improvements would help maintain the high quality characteristics and biological integrity of water resources in the Wildcat Branch sub-watershed.

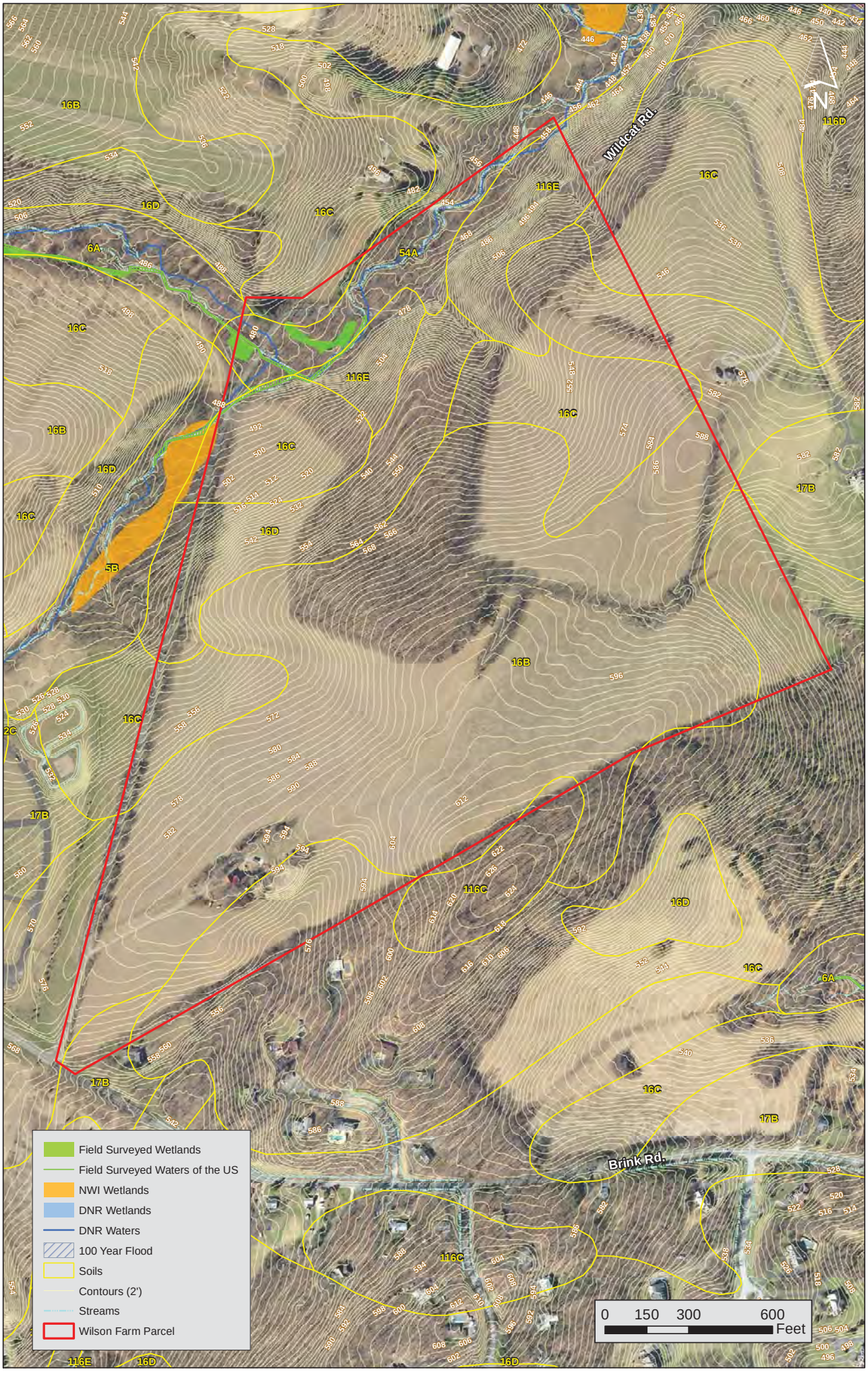
APPENDIX A

Project Map/NWI Map

Project Photos

FIRM Map


N
0 200 400 800
Feet
Brink Rd.
2' Contours
Wilson Parcel


Wildcat Rd.
Brink Rd.
N
Field Surveyed Wetlands
Field Surveyed Waters of the US
NWI Wetlands
DNR Wetlands
DNR Waters
100 Year Flood
Soils
Contours (2')
Streams
Wilson Farm Parcel
0 150 300 600
Feet

NRI – Wilson Farm

Project Photos

W1

W2

W3

W4

NRI – Wilson Farm

Project Photos

W5

W6

W7

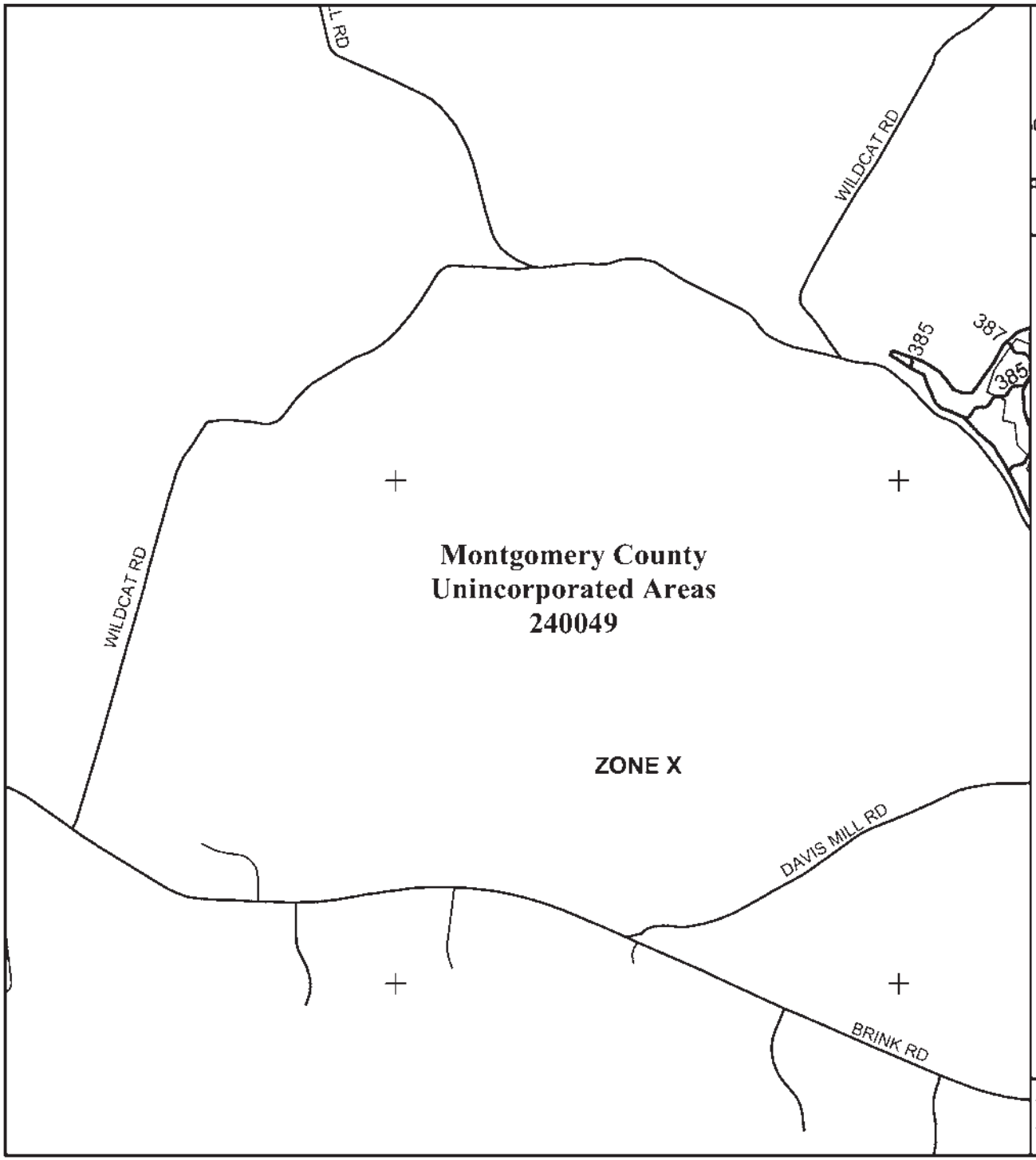
W8

NRI – Wilson Farm

Project Photos

FS 1

FS 2



MAP SCALE 1" = 1000'

00 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0180D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, MARYLAND

AND INCORPORATED AREAS

PANEL 180 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTGOMERY COUNTY	240049	0180	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
24031C0180D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

APPENDIX B

Agency Correspondence

Wilson Farm
Interior Forest with Option D

July 2013

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

June 12, 2013

Mr. Roland Limpert
Maryland Department of Natural Resources
Environmental Review
Tawes State Office Building, E-1
580 Taylor Avenue
Annapolis, Maryland 21401

Project: Site Evaluation -- Wilson Farm and Bethel Church

Subject: Request for Project Area Fisheries Resources Information

Dear Mr. Limpert:

We are providing site evaluation planning services to the Montgomery County Department of Transportation, Transportation and Design Section for the Wilson Farm and Bethel Church properties. These sites abut each other and are being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study project in Germantown, Montgomery County, MD. The 105 acre Wilson Farm and the 120 acre Bethel Church property are located north of Brink Road, east of Wildcat Road, and west of Davis Mill Road. The Midcounty Corridor Study project may result in minor impacts to nontidal Waters of the U.S. and may require both state and federal permit authorizations (Section 404/401).

We are requesting information regarding the potential presence of state fisheries resources within or near the project area. Project location maps are enclosed for each site to aid your review.

If you have any questions concerning this project, please contact me at wmorgante@rkk.com (410) 462-9174. Thank you for your assistance.

Sincerely,
Rummel, Klepper & Kahl, LLP

William Morgante
Project Scientist

Enclosure

cc: Rick Adams (RK&K)
Paul Wettlaufer (RK&K)

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: **May 30, 2013**

PROJECT NAME AND LOCATION: **Site Evaluation-Wilson Farm and Bethel Church**
Germantown, Montgomery County Maryland (maps enclosed)

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA:
Two unnamed tributaries to Wildcat Branch, Use III-P (Wilson Farm)
Two unnamed tributaries to Great Seneca Creek, Use I-P (Bethel Church)

SUB-BASIN (6 digit watershed): **02-14-02**

DNR RESPONSE (sections below to be completed by MD DNR):

____Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

____Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I and Certain Use II waters during the period of February 15 through June 15, inclusive, during any year.

____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

---

xxxxx

DATE: ----------
PHONE: 410-260-8334

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: May 28, 2013

Project: Site Evaluation - Wilson Farm & Bethel Church

Dear Applicant for online certification:

Thank you for choosing to use the U.S. Fish and Wildlife Service Chesapeake Bay Field Office online list request certification resource. This letter confirms that you have reviewed the conditions in which this online service can be used. On our website (http://www.fws.gov/chesapeakebay/EndSppWeb/ELEMENTS/listreq.html) are the USGS topographic map areas where no federally proposed or listed endangered or threatened species are known to occur in Maryland, Washington, D.C. and Delaware.

You have indicated that your project is located on the following USGS topographic map(s)

Gaithersburg

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8540. For information in Delaware you should contact the Delaware Natural Heritage and Endangered Species Program, at (302) 653-2880. For information in the District of Columbia, you should contact the National Park Service at (202) 535-1739.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize

loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay)

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

Sincerely,

Genevieve LaRouche
Field Supervisor

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Joseph P. Gill, Secretary
Frank W. Dawson III, Deputy Secretary

June 25, 2013

William Morgante
Rummel, Klepper, and Kahl, LLP
81 Mosher St.
Baltimore, MD 21217

RE: Environmental Review for Wilson Farm and Bethel Church, Germantown, possible mitigation sites for Mid Country Corridor Study project, north of Brink Road east of Wildcat Rd. and west of Davis Mill Rd., Montgomery County, MD.

Dear Mr. Morgante:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2013.0908.mo

RECEIVED
JUL 0 1 2013
BY:_____

APPENDIX C

Forest Stand Summary Sheets

Waters of the U.S. Data Sheet

Wetland Data Sheets

Specimen Tree Table

FOREST STAND ANALYSIS WILSON FOREST A - FS 1
TULIP POPLAR ASSOCIATION

Date: 4/25/13 Crew: ESG, WMM

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
	MID SUCCESSIONAL		TULIP ✓ 50% RED MAPLE ✓ 20% WHITE OAK ✓ 5% PERSIMMON - 5% BLACK GUM ✓ - 5%	12-20"	GOOD, SOME LOW INVASIVE DWB - MODERATE	FLOODPLAIN, WETLAND, LOWLAND AREA CANOPY CLOSURE - 80%
			SPICE BUSH ✓ BLACK HAW VIBURNUM ✓ CHERRY MUSCLEWOOD ✓ SMILAX, POISON IVY ✓	MANY TREES >24"		HIGH PRIORITY PROTECTION DUE TO WETLAND / STREAMS / # OF SPECIES
			SKUNK CABBAGE FESCUE VIOLETS			PHOTO 3837
						SYCAMORE - GREEN ASH - BOX ELDER - SILVER MAPLE ASSOCIATION

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS Wilson Forest B - FS 2
CHESTNUT OAK ASSOC.

Date: 4/25/13 Crew: WMM/ESG

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			Overstory Chestnut Oak ✓ – 60-70% Tulip Poplar ✓ – 30-40%	12-20"	Good DWD - moderate Canopy Closure 80%	No invasives High Retention Value – # of ST's & stand condition
			Understory Musclewood ✓ – 50-60% Cherry ✓ – 10% Hickory ✓ – 10% Witchhazel ✓ – 5%			early - mid successional
			Herbaceous NY Fern – 10% - no low shrub area			S-side of B disturbed - open area - gasline row
						photos - 3849-3840

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS WILSON FOREST C - FS 2
CHESTNUT OAK ASSOC.

Date: 4/25/13 Crew: ESG, WMH

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			OVERSTORY CHESTNUT OAK ✓ 60 TULIP ✓ 20 HICKORY ✓ 10	12-20"	FAIR - OVERSTORY good species LARGE % INVASIVES BITTERSWEET, BARBERRY	MORE trees < 12" AS COMPARED TO STAND B
			UNDERSTORY BITTERSWEET SASSAFRAS ✓ HICKORY ✓ CHERRY ✓ LOWBUSH BLUEBERRY ✓			3845, 3846 PHOTOS RECREATION value NOT, AS HIGH AS STAND A1, B
			POISON IVY GRAPEVINE			

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS WILSON FOREST D - FS1
TULIP POPLAR ASSOCIATION

Date: 5/10/13 Crew: KJH, WMM

PHOTOS # 2995, 2997, 2998 (STREAM)

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
		ALONG STREAM	TULIP ✓ ——— 50 CHESTNUT OAK ✓ — 20 HICKORY ✓ ——— 10 WHITE OAK ✓ ——— 15 MUSCLEWOOD ✓ ———	12-18"	GOOD LOTS OF UNDERSTORY SHRUBS LOW INVASIVES	FAIR AMOUT TREES >24" STREAM VALLEY W/ MANY SEEPS W/ SKUNK CABBAGE (PHOTO #2994, 2996)
			WITCH HAZEL ✓ ——— SPICE BUSH ✓ M.F ROSE ✓ FERN PLENTIFUL POISON IVY LOTS ✓		SOME INVASIVES: M.F ROSE GARLIC MUSTARD BARBERRY	BEDROCK FORMATION HIGH QUAL. FOREST HIGH RETENTION VALUE DUE TO STREAM, WETLANDS, ST

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS WILSON FOREST E-FS2
CHESTNUT OAK ASSOC.

Date: 5/10/13 Crew: KJA, WMH

PHOTO 2099

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			CHESTNUT OAK ✓ 60 N. RED OAK ✓ 20 TULIP POPLAR ✓ - 10 HICKORY ✓ W. OAK ✓ } 10	12-18" MxFo	FAIR/GOOD LITTLE UNDERSTORY NO HERBS GOOD CHESTNUT REGENERATION	ALMOST NO INVASIVES JUST EDGES along field & utility corridor some BITTERSWEET
					CWD- moderate	

- Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS Wilson-Forest F-FS2 CHESTNUT OAK ASSOC.

Date: 5/13/13 Crew: WMM/ET

Project.: MCS Photos: 3000-3001

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			Chestnut Oak ✓ 50% Tulip Poplar ✓ 25% Northern Red Oak ✓ 25%	12-18" dbh mid-successional	Fair to good	seedlings absent
			~~Understory~~ Cherry ✓ Blackgum ✓ Muscadwood ✓ Bittersweet		CWD- moderate	invasive bittersweet

- Area measured to the nearest 1/10 acre.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MLS - OPTION D City/County: MONT Sampling Date: 4/7/11

Applicant/Owner: MONT. CO. DPW State: MD Sampling Point: W3

Investigator(s): EAS, WMM Section, Township, Range: _____

Landform (hillslope, terrace, etc.): TOE SLOPE Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR or MLRA): MLRA 147/148 LLR-S Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?**	Yes X No _____
Hydric Soil Present?	Yes X No _____		
Wetland Hydrology Present?	Yes X No _____		

Remarks:

LAST FLAG W12–17

PHOTO #17

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): 0–2"
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): @ Surface

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	40	D	FAC
2. FRAXINUS PENNSYLVANICUM	15		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover	(27)	
Sapling/Shrub Stratum (Plot size: _____)			
1. VACCINIUM CORYMBOSUM	5		FACW
2. ILEX VERTICILLATA	20	D	FACW
3. CARPINUS CAROLINIANA	10	D	FAC
4. LINDERA BENZOIN	10	D	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	45 = Total Cover	(23)	
Herb Stratum (Plot size: _____)			
1. SYMPLOCARPUS FOETIDUS	90	D	OBL
2. IMPATIENS CAPENSIS	30		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	120 = Total Cover	(60)	
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #17

SOIL

Sampling Point: WH3

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
0-10" refusal	2.5Y 3/2	95	10YR 4/4	5	C	PL	silt loam	Rocky/cobbles 20% of total

[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)**
- X 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)
- X 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)**

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)**
- __ Red Parent Material (TF2)
- __ 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 X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS – Option D City/County: Montgomery Sampling Date: 4/7/11

Applicant/Owner: MD Co State: MD Sampling Point: WH

Investigator(s): WMM / EAS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR-S MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Photo #13

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:

floodplain terrace @ confluence of stream

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Carpinus caroliniana	40	D	FAC
2. Fraxinus pennsylvanicum	10		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		(25) (10)
Sapling/Shrub Stratum (Plot size: 10')			
1. Lindera benzoin	10	D	FAC
2. Rosa multiflora	T		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		(5)(2)
Herb Stratum (Plot size: _____)			
1. Symplocarpus foetidus	80	D	OBL
* 2. Jap Stiltgrass microstegium	10		FAC
3. Allium vineale	5		FACU
* 4. Indian strawberry DUCHESNEA indica	2		FACU
5. Impatiens capensis	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	102 = Total Cover		(51) (20)
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #13

SOIL

Sampling Point: W4

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
0-4	2.5Y 4/3	80	10YR 4/6	20	C	M	silt loam	
4-12	2.5Y 4/3	75	10YR 4/6	20	C	PL	silt loam	
			2.5Y 4/2	5	D	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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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: MCS-WILSON City/County: MONT Sampling Date: 6/25/13

Applicant/Owner: _____ State: MD Sampling Point: W6

Investigator(s): WMM, FT Section, Township, Range: _____

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

Subregion (LRR or MLRA): 149A IN LRRS Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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:
HYDRIC SOIL INDICATOR LACKING.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): >6"
Water Table Present?	Yes X	No _____	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): >6"

Wetland Hydrology Present? Yes X No _____

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

Remarks:
WETLAND FRINGE FOR STREAM W5

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W6

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. CARPINUS CAROLINIANA	30	Y	FAC
2. NYSSA SYLVATICA	20	Y	FAC
3. ACER RUBRUM	15		FAC
4. ULMUS RUBRA	15		FAC
5. CARYA GLABRA	10		FACU
6.			
7.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling/Shrub Stratum (Plot size: 5' R)			
1. LINDERA BENZOIN	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5')			
1. SYMPLOCARPUS foetidus	60	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

SOIL

Sampling Point: W6

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	—	—	—	—	loam	
3-12"	10YR 5/3	70	2.5YR 5/6	30	C	PL/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)
- X 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 X No ____

Remarks:

Photos 4512-4513

CHARACTERIZED SOIL TO BEST OF OUR ABILITY AND COULD NOT FIND A HYDRIC SOIL INDICATOR TO FIT SOIL

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MCS- WILSON City/County: MONT Sampling Date: 6/25/13

Applicant/Owner: _____ State: _____ Sampling Point: W-7

Investigator(s): WHM, ET Section, Township, Range: _____

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

Subregion (LRR or MLRA): 149A IN LRRS Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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:

HYDRIC SOIL INDICATOR MAPPING.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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)
- X 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 X	Depth (inches): >12"
Water Table Present?	Yes ___	No X	Depth (inches): >12"
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): >12"

Wetland Hydrology Present? Yes X No _____

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

Remarks:

SEEP WETLAND ADJACENT TO WILDCAT RD, ABOVE W1, W2

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W7

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. NYSSA SYLVATICA	35	Y	FAC
2. ACER RUBRUM	25	Y	FAC
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		

Sapling/Shrub Stratum (Plot size:)			
1. LINDERA BENZOIN	10	Y	FACW
2. CARPINUS CAROLINIANA	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		

Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	60	Y	OBL
2. OSMUNDA CINNAMOMEA	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

SOIL

Sampling Point: W7

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	100	—	—	—	—	silty clay loam	
2-12"	10YR 5/3	80	2.5YR 4/6	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)
- X 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:

OBTAINED FROM SFEP

COULD NOT FIND AN APPLICABLE HYDRIC SOIL INDICATOR.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MID COUNTY – OPTION D City/County: MONTGOMERY CO. Sampling Date: 4/6/11

Applicant/Owner: _____ State: MD Sampling Point: W8

Investigator(s): WMM/KDG Section, Township, Range: _____

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR or MLRA): LLR-S MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	Is the Sampled Area within a Wetland? Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Oxidized Rhizospheres on Living Roots (C3)
- X 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 X	No _____	Depth (inches): 0
Water Table Present?	Yes X	No _____	Depth (inches): 12
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

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

Remarks: SURFACE WATER PRESENT IN LOW AREAS

PHOTO 12

VEGETATION (Four Strata) – Use scientific names of plants.

W10 Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. WALNUT JUGLANS NIGRA	50	D	✓FACU
2. RED MAPLE ACER RUBRUM	35	D	~FAC
3. CHERRY PRUNUS SEROTINA	5		✓FACU
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. SPICEBUSH LINDERA BENZOIN	50	D	✓FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	

Herb Stratum (Plot size: _____)			
1. SKUNK CABBAGE SYMPLOCARPUS foetidus	80	D	✓OBL
2. GARLIC MUSTARD ALLIARIA petiolata	15		✓FACU
3. VIOLET sp. VIOLA SP.	5		UPL
4. SPRING BEAUTY CLAYTONIA SP.	T		~FACU
5. WILD ONION ALLIUM ASCOLOENUM	10		UPL
6. WILD STRAWBERRY	T		
7. SPHAGNUM MOSS	10		✓OBL
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	NA	= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	170	x 4 =	280
UPL species	15	x 5 =	75
Column Totals:	260 (A)		700 (B)

Prevalence Index = B/A = 2.69

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

photo #12

SOIL

Sampling Point: W.8

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					silt loam	
2-12	2.5Y 5/2	80	10YR 5/6	20	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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ___

Remarks:

Waters of the U.S. Data Sheet

Project: MCS Wilson Farm		**Feature ID:** W1	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4509	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class:			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate						Vegetation
✓ Natural Channel Shape	Width: 8-15 ft.	Depth: 2-8"	☐ Silts	✓ Sands	☐ Muck	RB: Spice bush, musclewood, skunk cabbage, red maple, multiflora rose
☐ Artificial (man-made)	Bank Erosion/stability:		✓ Cobbles	✓ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Minor erosion		☐ Bedrock	☐ Concrete		
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	☐ 3:1	☐ 4:1(*or less*)	LB: Spice bush, musclewood, skunk cabbage, red maple, multiflora rose
Notes: Originates from 24" pipe culvert under Wildcat Rd. Bank depth 2-4'. Flows into W2.						

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forested Width: 100+ ft.	☐ Federally listed species
☐ Poorly/undefined channel	✓ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes: Abuts W4			

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 litter and 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: MCS Wilson Farm		**Feature ID:** W2	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4510	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class:			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate					Vegetation
✓	Natural Channel Shape	Width: 10-15 ft. Depth: 2-12"	☐	Silts	✓	Sands	☐ Muck	RB: Red maple, musclewood, spice bush, multiflora rose, skunk cabbage
☐	Artificial (man-made)	Bank Erosion/stability: Severe erosion	✓	Cobbles	✓	Gravel	☐ Other:	
☐	Manipulated (man-altered)		☐	Bedrock	☐	Concrete		LB: Red maple, musclewood, spice bush, multiflora rose, skunk cabbage
☐	Other:	Side slope: ✓ 1:1 (to *vertical*)	✓	2:1	✓	3:1	☐ 4:1 (*or less*)	
Notes: Originates from pipe culvert under Wildcat Rd. Bank depth 2-8 ft. Crosses under Wildcat Rd. downstream.								

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow		Subsurface Flow		Biological Characteristics			
✓	Single channel – confined	☐	Yes	✓	Riparian corridor	*Habitat for:*	
☐	Multiple/braided channels	☐	No		Type: Forested Width: 100+ ft.	☐	Federally listed species
☐	Poorly/undefined channel	✓	Unknown	✓	Wetland fringe	☐	Fish/spawn areas
☐	Overland Sheetflow					☐	Other environmentally sensitive areas
Notes:							

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 litter and 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: Tributary to Wildcat Branch					

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS - OPTOMD City/County: MONT Sampling Date: 4/7/11

Applicant/Owner: MONT. CO. DPW State: MD Sampling Point: W3

Investigator(s): EAS, WMM Section, Township, Range: _____

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR or MLRA): LLR-S MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?**	Yes X No _____
Hydric Soil Present?	Yes X No _____		
Wetland Hydrology Present?	Yes X No _____		

Remarks:

LAST FLAG W12-17

PHOTO #17

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):	0-2"
Water Table Present?	Yes _____ No ✓	Depth (inches):	_____
Saturation Present? (includes capillary fringe)	Yes ✓ No _____	Depth (inches):	@ Surface

Wetland Hydrology Present? Yes ✓ No _____

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

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 15')	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	40	D	FAC
2. FRAXINUS PENNSYLVANICUM	15		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	55	= Total Cover	(27)
Sapling/Shrub Stratum (Plot size: _____)			
1. VACCINIUM CORYMBOSUM	5		FACW
2. ILEX VERTICILLATA	20	D	FACW
3. CARPINUS CAROLINIANA	10	D	FAC
4. LINDERA BENZOIN	10	D	FAC
5.			
6.			
7.			
8.			
9.			
10.			
	45	= Total Cover	(23)
Herb Stratum (Plot size: _____)			
1. SYMPLOCARPUS FOETIDUS	90	D	OBL
2. IMPATIENS CAPENSIS	30		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	(60)
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	0	= Total Cover	

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #17

SOIL

Sampling Point: WP 3

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
0-10"	2.5Y 3/2	95	10YR 4/4	5	C	PL	silt loam	Rocky/cobbles 20% of total
10+ (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)**
- X 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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MCS – Option D City/County: Montgomery Sampling Date: 4/7/11

Applicant/Owner: MD Co State: MD Sampling Point: WH

Investigator(s): WMM / EAS Section, Township, Range: _____

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

Subregion (LRR or MLRA): LRR-S MLRA 147/148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

Photo #13

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:

floodplain terrace @ confluence of stream

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: _____

Tree Stratum (Plot size: 10')	Absolute % Cover	Dominant Species?	Indicator Status
1. Carpinus caroliniana	40	D	FAC
2. Fraxinus pennsylvanicum	10		FACW
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		(25) (10)
Sapling/Shrub Stratum (Plot size: 10')			
1. Lindera benzoin	10	D	FAC
2. Rosa multiflora	T		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10 = Total Cover		(5)(2)
Herb Stratum (Plot size: _____)			
1. Symplocarpus foetidus	80	D	OBL
2. Jap Stiltgrass microstegium	10		FAC
3. Allium vineale	5		FACU
4. Indian strawberry DUCHESNEA indica	2		FACU
5. Impatiens capensis	5		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	102 = Total Cover		(51) (20)
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #13

SOIL

Sampling Point: W4

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
0-4	2.5Y 4/3	80	10YR 4/6	20	C	M	silt loam	
4-12	2.5Y 4/3	75	10YR 4/6	20	C	PL	silt loam	
			2.5Y 4/2	5	D	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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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: MCS Wilson		**Feature ID:** W5	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4511	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Originates from spring. Two ephemeral channels feed upstream.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate					Vegetation
✓ Natural Channel Shape	Width: 8-20 ft.	Depth: 2-18"	☐ Silts	✓ Sands	☐ Muck			RB: Stiltgrass, ferns, tulip poplar, black gum, bittersweet, jewel weed, chestnut oak, skunk cabbage, musclewood, hay scented fern, cinnamon fern
☐ Artificial (man-made)	Bank Erosion/stability:		✓ Cobbles	✓ Gravel	☐ Other:			
☐ Manipulated (man-altered)	Moderate erosion		✓ Bedrock	☐ Concrete				LB: Stiltgrass, ferns, tulip poplar, black gum, bittersweet, jewel weed, chestnut oak, skunk cabbage, musclewood, hay scented fern, cinnamon fern
☐ Other:	Side slope: ✓ 1:1(to *vertical*)		✓ 2:1	☐ 3:1	☐ 4:1(*or less*)			
Notes: Drains into wetland on opposite side of Wildcat Rd. through 24" pipe culvert. Bank depth 1-10 ft.								

Flow & Biological Characteristics: (***check all that apply***)

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forested Width: 100+ ft.	☐ Federally listed species
☐ Poorly/undefined channel	✓ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes:			

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 litter and 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: MCS-WILSON City/County: MONT Sampling Date: 6/25/13

Applicant/Owner: State: MD Sampling Point: W6

Investigator(s): WMH, FGT Section, Township, Range:

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

Subregion (LRR or MLRA): 149A IN LRRS Lat: Long: Datum:

Soil Map Unit Name: NWI classification:

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? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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:
HYDRIC SOIL INDICATOR (A11) (A16).

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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)
- X 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)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): >6"
Water Table Present?	Yes X	No ____	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): >6"

Wetland Hydrology Present? Yes X No ____

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

Remarks:
WETLAND FRINGE FOR STREAM W5

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W6

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. CARPINUS CAROLINIANA	30	Y	FAC
2. NYSSA SYLVATICA	30	Y	FAC
3. ACER RUBRUM	15		FAC
4. ULMUS RUBRA	15		FAC
5. CARYA GLABRA	10		FACU
6.			
7.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling/Shrub Stratum (Plot size: 5' R)			
1. LINDERA BENZOIN	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5')			
1. SYMPLOCARPUS FOETIDUS	60	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

SOIL

Sampling Point: W6

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	—	—	—	—	loam	
3-12"	10YR 5/3	70	2.5YR 5/6	30	C	PL/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)
- X 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:

Photos 4512-4513

CHARACTERIZED SOIL TO BEST OF MY ABILITY AND COULD NOT FIND A HYDRIC SOIL INDICATOR TO FIT SOIL

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MCS- WILSON City/County: MONT Sampling Date: 6/25/13

Applicant/Owner: _____ State: _____ Sampling Point: W-7

Investigator(s): WMM, ET Section, Township, Range: _____

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

Subregion (LRR or MLRA): 149A in LRRS Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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:

HYDRIC SOIL INDICATOR (MPRIN'G.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X 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)
- X 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 X	Depth (inches): >12"
Water Table Present?	Yes _____ No X	Depth (inches): >12"
Saturation Present? (includes capillary fringe)	Yes _____ No X	Depth (inches): >12"

Wetland Hydrology Present? Yes X No _____

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

Remarks:

SEEP WETLAND ADJACENT TO WILDCAT RD, ABUTTING W2

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W7

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. NYSSA SYLVATICA	35	Y	FAC
2. ACER RUBRUM	25	Y	FAC
3.			
4.			
5.			
6.			
7.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Sapling/Shrub Stratum (Plot size:)			
1. LINDERA BENZOIN	10	Y	FACW
2. CARPINUS CAROLINIANA	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	30 = Total Cover		
50% of total cover: 15	20% of total cover: 6		
Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	60	Y	OBL
2. OSMUNDA CINNAMOMEA	10	N	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	70 = Total Cover		
50% of total cover: 35	20% of total cover: 14		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

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

SOIL

Sampling Point: W7

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	100	—	—	—	—	silty clay loam	
2-12"	10YR 5/3	80	2.5YR 4/6	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)
- X 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:

ONSITE WATER FROM SEEP

COULD NOT FIND AN APPLICABLE HYDRIC SOIL INDICATOR.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: MID COUNTY – OPTION D City/County: MONTGOMERY CO. Sampling Date: 4/6/11

Applicant/Owner: _____ State: MD Sampling Point: WB

Investigator(s): WMM/KDG Section, Township, Range: _____

Landform (hillslope, terrace, etc.): TERRACE Local relief (concave, convex, none): _____ Slope (%): 0

Subregion (LRR or MLRA): MLRA 147/148 LLR-S Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: _____ NWI classification: _____

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? NO Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? NO (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 X No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X No _____	
Wetland Hydrology Present?	Yes X No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Oxidized Rhizospheres on Living Roots (C3)
- X 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): 0

Water Table Present? Yes X No _____ Depth (inches): 12

Saturation Present? (includes capillary fringe) Yes X No _____ Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

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

Remarks: SURFACE WATER PRESENT IN LOW AREAS

PHOTO 12

VEGETATION (Four Strata) – Use scientific names of plants.

W10 Sampling Point: _____

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. WALNUT JUGLANS NIGRA	50	D	✓FACU
2. RED MAPLE ACER RUBRUM	35	D	FAC
3. CHERRY PRUNUS SEROTINA	5		✓FACU
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. SPICEBUSH LINDERA BENZOIN	50	D	✓FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	

Herb Stratum (Plot size: _____)			
1. SKUNK CABBAGE SYMPLOCARPUS foetidus	80	D	✓OBL
2. GARLIC MUSTARD Alliaria petiolata	15		✓FACU
3. VIOLET sp. VIOLA SP	5		UPL
4. SPRING BEAUTY CLAYTONIA SP.	T		✓FACU
5. WILD ONION Allium ASCOLOENUM	10		UPL
6. WILD STRAWBERRY	T		
7. SPHAGNUM MOSS	10		✓OBL
8.			
9.			
10.			
11.			
12.			
	120	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	NA	= Total Cover	

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	90	x 1 =	90
FACW species	0	x 2 =	0
FAC species	85	x 3 =	255
FACU species	170	x 4 =	280
UPL species	15	x 5 =	75
Column Totals:	260 (A)		700 (B)

Prevalence Index = B/A = 2.69

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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No _____

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

PHOTO #12

SOIL

Sampling Point: W.8

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					silt loam	
2-12	2.5Y 5/2	80	10YR 5/6	20	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)
- X 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)**

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)**
- ___ Red Parent Material (TF2)
- ___ 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 X No ___

Remarks:

Waters of the U.S. Data Sheet

Project: MCS Wilson Farm		**Feature ID:** W1	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4509	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class:			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate					Vegetation
✓ Natural Channel Shape	Width: 8-15 ft.	Depth: 2-8"	☐ Silts	✓ Sands	☐ Muck			RB: Spice bush, musclewood, skunk cabbage, red maple, multiflora rose
☐ Artificial (man-made)	Bank Erosion/stability:		✓ Cobbles	✓ Gravel	☐ Other:			
☐ Manipulated (man-altered)	Minor erosion		☐ Bedrock	☐ Concrete				LB: Spice bush, musclewood, skunk cabbage, red maple, multiflora rose
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	☐ 3:1	☐ 4:1(*or less*)				
Notes: Originates from 24" pipe culvert under Wildcat Rd. Bank depth 2-4'. Flows into W2.								

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forested Width: 100+ ft.	☐ Federally listed species
☐ Poorly/undefined channel	✓ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes: Abuts W4			

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 litter and 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: MCS Wilson Farm		**Feature ID:** W2	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4510	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class:			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate			Vegetation
✓ Natural Channel Shape	Width: 10-15 ft. Depth: 2-12"		☐ Silts	✓ Sands	☐ Muck	RB: Red maple, musclewood, spice bush, multiflora rose, skunk cabbage
☐ Artificial (man-made)	Bank Erosion/stability: Severe erosion		✓ Cobbles	✓ Gravel	☐ Other:	
☐ Manipulated (man-altered)			☐ Bedrock	☐ Concrete		LB: Red maple, musclewood, spice bush, multiflora rose, skunk cabbage
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	✓ 3:1	☐ 4:1(*or less*)		
Notes: Originates from pipe culvert under Wildcat Rd. Bank depth 2-8 ft. Crosses under Wildcat Rd. downstream.						

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forested Width: 100+ ft.	☐ Federally listed species
☐ Poorly/undefined channel	✓ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes:			

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 litter and 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: Tributary to Wildcat Branch		

Waters of the U.S. Data Sheet

Project: MCS Wilson		**Feature ID:** W5	**Stream Order:** 1
Date: 6/25/2013	**State:** MD	**Photos:** 4511	
Crew: ET/WMM	**County:** Montgomery	**Last Flag Number:** N/A	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Originates from spring. Two ephemeral channels feed upstream.			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)			Substrate			Vegetation
✓ Natural Channel Shape	Width: 8-20 ft.	Depth: 2-18"	☐ Silts	✓ Sands	☐ Muck	RB: Stiltgrass, ferns, tulip poplar, black gum, bittersweet, jewel weed, chestnut oak, skunk cabbage, musclewood, hay scented fern, cinnamon fern
☐ Artificial (man-made)	Bank Erosion/stability:		✓ Cobbles	✓ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Moderate erosion		✓ Bedrock	☐ Concrete		LB: Stiltgrass, ferns, tulip poplar, black gum, bittersweet, jewel weed, chestnut oak, skunk cabbage, musclewood, hay scented fern, cinnamon fern
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	☐ 3:1	☐ 4:1(*or less*)		
Notes: Drains into wetland on opposite side of Wildcat Rd. through 24" pipe culvert. Bank depth 1-10 ft.						

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forested Width: 100+ ft.	☐ Federally listed species
☐ Poorly/undefined channel	✓ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes:			

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 litter and 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:		

Wilson Farm Specimen Tree Inventory					
Tree Number	**Species - Common Name**	**Species - Scientific Name**	**DBH**	**Condition**	**Comments**
T1	Red maple	Acer rubrum	52	Poor	mainstem decay, deadwood, cavities
T2	Red maple	Acer rubrum	34	Fair	deadwood, broken limbs
T3	Red maple	Acer rubrum	31	Poor	decay, busted limbs, broken top
T4	Red maple	Acer rubrum	35	Fair	decay spot, broken limbs
T5	Tree of heaven	Ailanthus altissima	28	Fair	interfering branches
T6	Black walnut	Juglans nigra	35	Fair	deadwood, twin
T7	Black walnut	Juglans nigra	24	Fair	deadwood, vines
T8	Black walnut	Juglans nigra	32	Fair/poor	mainstem crack, deadwood
T9	Black walnut	Juglans nigra	30	Poor	decay spot from injury, vines, deadwood
T10	Black walnut	Juglans nigra	26	Fair	lean, deadwood
T11	Black walnut	Juglans nigra	26	Good/fair	some deadwood
T12	Black walnut	Juglans nigra	28	Fair	deadwood, some decay
T13	Black walnut	Juglans nigra	28	Fair	deadwood
T14	Green ash	Fraxinus pennsylvanica	28	Fair	deadwood, lean
T15	Tulip poplar	Liriodendron tulipifera	41	Good/fair	minor lean, deadwood
T16	Green ash	Fraxinus pennsylvanica	25	Good/fair	included bark, deadwood, twin
T17	Northern red oak	Quercus rubra	26	Good	
T18	Tulip poplar	Liriodendron tulipifera	31	Good	
T19	Tulip poplar	Liriodendron tulipifera	24	Good	
T20	Red maple	Acer rubrum	27	Poor	mainstem decay, cavity, dying
T21	White oak	Quercus alba	31	Good	
T22	White oak	Quercus alba	37	Poor	hollow, base decay, cavity
T23	Tulip poplar	Liriodendron tulipifera	28	Good/fair	included bark
T24	Red maple	Acer rubrum	30	Poor	dying, decay
T25	Tulip poplar	Liriodendron tulipifera	27	Good	deadwood
T26	Tulip poplar	Liriodendron tulipifera	27	Fair	mainstem crack
T27	Red maple	Acer rubrum	24	Poor	cavities, suckering
T28	Tulip poplar	Liriodendron tulipifera	32	Good	vines
T29	Tulip poplar	Liriodendron tulipifera	28	Good	vines
T30	Tulip poplar	Liriodendron tulipifera	25	Fair	lean, deadwood
T31	Red maple	Acer rubrum	25	Good/fair	included bark
T32	Tulip poplar	Liriodendron tulipifera	32	Good	
T33	Tulip poplar	Liriodendron tulipifera	29	Good	
T35	Green ash	Fraxinus pennsylvanica	26	Fair/poor	busted lead, cavities
T36	Tulip poplar	Liriodendron tulipifera	26	Good	
T37	Tulip poplar	Liriodendron tulipifera	28	Good	some lean
T38	Tulip poplar	Liriodendron tulipifera	24	Good	
T39	Tulip poplar	Liriodendron tulipifera	28	Poor	major mainstem decay, hazard tree
T40	Tulip poplar	Liriodendron tulipifera	27	Good	
T41	Chestnut oak	Quercus prinus	26	Good	
T42	Chestnut oak	Quercus prinus	27	Good	
T43	Tulip poplar	Liriodendron tulipifera	29	Good	
T44	Northern red oak	Quercus rubra	26	Good	
T45	Chestnut oak	Quercus prinus	26	Good	deadwood
T46	Chestnut oak	Quercus prinus	24	Good	
T47	Chestnut oak	Quercus prinus	25	Good	
T48	Northern red oak	Quercus rubra	25	Good	some deadwood
T49	Chestnut oak	Quercus prinus	26	Fair	swollen trunk, lean, deadwood
T50	White oak	Quercus alba	24	Good	some deadwood
T51	Tulip poplar	Liriodendron tulipifera	25	Good	
T52	Tulip poplar	Liriodendron tulipifera	32	Good	
T53	Pignut hickory	Carya glabra	28	Fair	mainstem crack
T54	Chestnut oak	Quercus prinus	28	Fair	included bark
T55	Tulip poplar	Liriodendron tulipifera	24	Good	
T56	Tulip poplar	Liriodendron tulipifera	26	Good	
T57	Tulip poplar	Liriodendron tulipifera	28	Good	
T58	Chestnut oak	Quercus prinus	27	Fair	deadwood
T59	Chestnut oak	Quercus prinus	30	Fair	vines, deadwood

T60	Tulip poplar	Liriodendron tulipifera	25	Good	
T61	Chestnut oak	Quercus prinus	61	Good	
T62	Chestnut oak	Quercus prinus	30	Good	
T63	Chestnut oak	Quercus prinus	29	Fair	included bark, split at DBH
T64	Tulip poplar	Liriodendron tulipifera	26	Good	
T65	Tulip poplar	Liriodendron tulipifera	26	Good	lean
T66	Tulip poplar	Liriodendron tulipifera	25	Good	
T67	Chestnut oak	Quercus prinus	24	Good/fair	twin, included bark
T68	Chestnut oak	Quercus prinus	25	Good	
T69	Chestnut oak	Quercus prinus	24	Good	
T70	Chestnut oak	Quercus prinus	28	Good	
T71	Chestnut oak	Quercus prinus	27	Good	
T72	Chestnut oak	Quercus prinus	26	Good	
T73	Northern red oak	Quercus rubra	26	Good	
T74	Tulip poplar	Liriodendron tulipifera	28	Good/fair	trunk scar
T75	Chestnut oak	Quercus prinus	31	Good	
T76	Chestnut oak	Quercus prinus	24	Good	
T77	Chestnut oak	Quercus prinus	25	Fair	twisted growth form
T78	Tulip poplar	Liriodendron tulipifera	26	Good	
T79	Northern red oak	Quercus rubra	24	Good	
T80	Tulip poplar	Liriodendron tulipifera	28	Good	
T81	Black gum	Nyssa sylvatica	24	Good/fair	curved growth form
T82	Tulip poplar	Liriodendron tulipifera	26	Good	
T83	Tulip poplar	Liriodendron tulipifera	33	Fair	split at DBH
T84	Chestnut oak	Quercus prinus	29	Good	slight lean
T85	Chestnut oak	Quercus prinus	26	Good	
T86	Chestnut oak	Quercus prinus	28	Fair	sooty mold
T87	Chestnut oak	Quercus prinus	24	Good	
T88	Chestnut oak	Quercus prinus	24	Good	
T89	Chestnut oak	Quercus prinus	26	Fair	twisted growth form
T90	Chestnut oak	Quercus prinus	24	Good	
T91	White oak	Quercus alba	24	Good	
T92	Chestnut oak	Quercus prinus	24	Good	
T93	Northern red oak	Quercus rubra	24	Fair/poor	base rot, deadwood
T94	Chestnut oak	Quercus prinus	25	Good	lean
T95	Tulip poplar	Liriodendron tulipifera	27	Good	
T96	Chestnut oak	Quercus prinus	25	Good	slight lean
T97	Pignut hickory	Carya glabra	26	Poor	lightning strike, canopy broken
T98	Tulip poplar	Liriodendron tulipifera	29	Good	
T99	Tulip poplar	Liriodendron tulipifera	37	Good/fair	deadwood, interfering branches
T100	Tulip poplar	Liriodendron tulipifera	34	Fair	multiple stems, deadwood
T101	Tulip poplar	Liriodendron tulipifera	28	Good	slight lean
T102	Tulip poplar	Liriodendron tulipifera	25	Fair	twisted growth form
T103	Tulip poplar	Liriodendron tulipifera	28	Fair	split at DBH, trunk rot
T104	Northern red oak	Quercus rubra	27	Good	
T105	Chestnut oak	Quercus prinus	30	Fair	included bark, splits just above DBH
T106	Chestnut oak	Quercus prinus	28	Good	
T107	White oak	Quercus alba	27	Good	deadwood
T108	Tulip poplar	Liriodendron tulipifera	34	Poor	trunk cavity, stem decay
T109	Northern red oak	Quercus rubra	30	Good/fair	lots of deadwood
T110	Pignut hickory	Carya glabra	29	Fair	vines in crown, deadwood
T111	Northern red oak	Quercus rubra	26	Fair/poor	deadwood
T112	White oak	Quercus alba	25	Good	
T113	Chestnut oak	Quercus prinus	28	Good/fair	included bark, split at DBH
T114	White oak	Quercus alba	34	Fair	deadwood, exposed root
T115	Eastern white pine	Pinus strobus	25	Good	lean
T116	Tulip poplar	Liriodendron tulipifera	28	Fair	trunk decay
T117	Tulip poplar	Liriodendron tulipifera	26	Fair	roots exposed, deadwood, edge of stream
T118	Tulip poplar	Liriodendron tulipifera	25	Fair	trunk decay, lean
T119	Eastern white pine	Pinus strobus	24	Good/fair	split at 10 ft., slight lean
T120	Tulip poplar	Liriodendron tulipifera	30	Good/fair	split above DBH, trunk decay

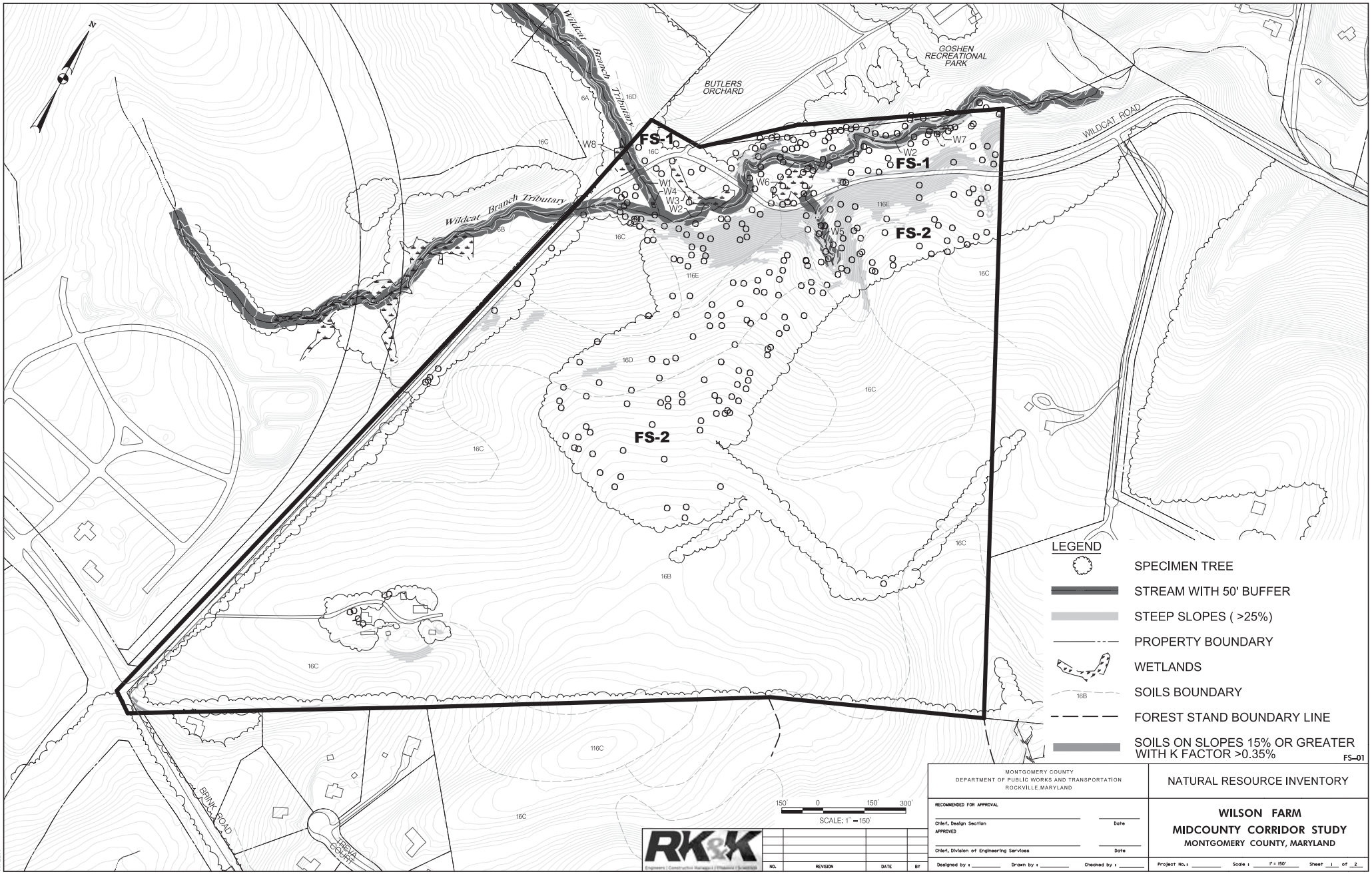
T121	Tulip poplar	Liriodendron tulipifera	42	Fair	split, trunk decay, deadwood
T122	Tulip poplar	Liriodendron tulipifera	24	Fair	deadwood, trunk decay, split
T123	Tulip poplar	Liriodendron tulipifera	26	Fair	twin, split, trunk decay
T124	Tulip poplar	Liriodendron tulipifera	25	Good/fair	trunk decay
T125	Tulip poplar	Liriodendron tulipifera	28	Fair	trunk decay, deadwood
T126	Tulip poplar	Liriodendron tulipifera	39	Good/fair	twin, trunk decay, split above DBH
T127	White oak	Quercus alba	28	Good/fair	deadwood
T128	Tulip poplar	Liriodendron tulipifera	41	Poor	large trunk cavity, trunk rot, twisted growth f
T129	Tulip poplar	Liriodendron tulipifera	33	Good/fair	trunk decay, deadwood
T130	Tulip poplar	Liriodendron tulipifera	27	Fair	twin, trunk decay, split below DBH
T131	Tulip poplar	Liriodendron tulipifera	24	Poor	severe trunk cavity, trunk decay, poison ivy v
T132	Tulip poplar	Liriodendron tulipifera	24	Good/fair	split, unusual growth form
T133	Tulip poplar	Liriodendron tulipifera	30	Good	
T134	Red maple	Acer rubrum	24	Poor	trunk decay, broken crown, vines in crown, s
T135	Tulip poplar	Liriodendron tulipifera	26	Good	
T136	Tulip poplar	Liriodendron tulipifera	27	Fair	twin, trunk decay, twisted growth form
T137	Tulip poplar	Liriodendron tulipifera	29	Fair	trunk decay, deadwood in crown
T138	Tulip poplar	Liriodendron tulipifera	24	Fair	twisted growth form
T139	White oak	Quercus alba	32	Good	minor deadwood, top of stream bank
T140	Chestnut oak	Quercus prinus	29	Fair	top of steam bank, deadwood, irregular grow
T141	White oak	Quercus alba	29	Good	
T142	Red maple	Acer rubrum	27	Poor	trunk cavity, trunk decay, suckering
T143	Tulip poplar	Liriodendron tulipifera	31	Poor	large trunk cavity, trunk decay
T144	Tulip poplar	Liriodendron tulipifera	24	Good	
T145	Tulip poplar	Liriodendron tulipifera	24	Good/fair	irregular growth form
T146	Tulip poplar	Liriodendron tulipifera	27	Good/fair	trunk decay
T147	Tulip poplar	Liriodendron tulipifera	29	Good	
T148	Tulip poplar	Liriodendron tulipifera	29	Good	
T149	Tulip poplar	Liriodendron tulipifera	29	Good/fair	exposed root, trunk decay
T150	Tulip poplar	Liriodendron tulipifera	29	Good	
T151	White oak	Quercus alba	35	Fair	deadwood in crown
T152	Tulip poplar	Liriodendron tulipifera	27	Fair/poor	trunk decay, cavity
T153	Chestnut oak	Quercus prinus	28	Good	slight lean
T154	Northern red oak	Quercus rubra	31	Good/fair	vines in crown, irregular growth form
T155	Tulip poplar	Liriodendron tulipifera	28	Good	
T156	Tulip poplar	Liriodendron tulipifera	30	Good	
T157	Tulip poplar	Liriodendron tulipifera	25	Good	
T158	Tulip poplar	Liriodendron tulipifera	24	Good	
T159	Tulip poplar	Liriodendron tulipifera	27	Good	
T160	Tulip poplar	Liriodendron tulipifera	26	Good/fair	irregular growth form
T161	Tulip poplar	Liriodendron tulipifera	24	Good	
T162	Tulip poplar	Liriodendron tulipifera	24	Good/fair	slight lean, deadwood
T163	Chestnut oak	Quercus prinus	30	Good	
T164	Tulip poplar	Liriodendron tulipifera	24	Good	
T165	Tulip poplar	Liriodendron tulipifera	26	Good	
T166	Tulip poplar	Liriodendron tulipifera	26	Good	
T167	Tulip poplar	Liriodendron tulipifera	24	Good	
T168	Tulip poplar	Liriodendron tulipifera	24	Good	
T169	Tulip poplar	Liriodendron tulipifera	27	Good	
T170	Tulip poplar	Liriodendron tulipifera	24	Good	
T171	Tulip poplar	Liriodendron tulipifera	27	Good	
T172	Tulip poplar	Liriodendron tulipifera	24	Fair/poor	trunk damage, vines in crown
T173	Tulip poplar	Liriodendron tulipifera	25	Good	
T174	Tulip poplar	Liriodendron tulipifera	24	Good	
T175	Tulip poplar	Liriodendron tulipifera	25	Good	
T176	Tulip poplar	Liriodendron tulipifera	26	Good	
T177	Tulip poplar	Liriodendron tulipifera	24	Good	
T178	Chestnut oak	Quercus prinus	27	Fair	base cavity
T179	White oak	Quercus alba	24	Fair	vines in crown
T180	Tulip poplar	Liriodendron tulipifera	27	Fair	top of stream bank, exposed roots
T181	Tulip poplar	Liriodendron tulipifera	27	Good	
T182	Tulip poplar	Liriodendron tulipifera	25	Good/fair	deadwood

T183	Tulip poplar	Liriodendron tulipifera	25	Good	
T184	Tulip poplar	Liriodendron tulipifera	25	Good	
T185	Tulip poplar	Liriodendron tulipifera	26	Good	
T186	Tulip poplar	Liriodendron tulipifera	28	Fair	vines in crown, trunk decay
T187	Tulip poplar	Liriodendron tulipifera	28	Good	minor trunk decay
T188	Tulip poplar	Liriodendron tulipifera	25	Fair	irregular growth form
T189	Tulip poplar	Liriodendron tulipifera	24	Good	twin
T190	Chestnut oak	Quercus prinus	25	Fair	slight lean, trunk cavity
T191	Tulip poplar	Liriodendron tulipifera	29	Good	
T192	Tulip poplar	Liriodendron tulipifera	26	Good/fair	trunk wound healed over
T193	Tulip poplar	Liriodendron tulipifera	24	Fair	trunk damage, deadwood
T194	Tulip poplar	Liriodendron tulipifera	28	Fair	lean, deadwood
T195	Tulip poplar	Liriodendron tulipifera	32	Good	
T196	Tulip poplar	Liriodendron tulipifera	26	Fair	irregular growth form
T197	Tulip poplar	Liriodendron tulipifera	30	Fair	trunk decay, lean, exposed roots, top of strea
T198	Northern red oak	Quercus rubra	29	Fair	lots of deadwood
T199	Pin oak	Quercus palustris	40	Fair/poor	twin, Trunk decay, included bark,
T200	Northern red oak	Quercus rubra	24	Fair	deadwood in crown, small base cavity
T201	Chestnut oak	Quercus prinus	24	Good	
T202	Chestnut oak	Quercus prinus	24	Good	
T203	Chestnut oak	Quercus prinus	24	Good	
T204	Chestnut oak	Quercus prinus	25	Fair	trunk decay, deadwood
T205	Chestnut oak	Quercus prinus	24	Fair	lean, deadwood
T206	Chestnut oak	Quercus prinus	24	Good/fair	deadwood, large dead branch at base
T207	Chestnut oak	Quercus prinus	27	Good	
T208	Northern red oak	Quercus rubra	29	Fair	twin, drunk decay, included bark,
T209	Chestnut oak	Quercus prinus	25	Good/fair	trunk decay
T210	Chestnut oak	Quercus prinus	36	Fair	twin, split above DBH, included bark
T211	Chestnut oak	Quercus prinus	31	Fair	irregular growth form, deadwood
T212	Chestnut oak	Quercus prinus	24	Fair	trunk decay, cavity
T213	White oak	Quercus alba	31	Fair	splits above DBH, included bark
T214	Chestnut oak	Quercus prinus	31	Fair	triple stem, included bark
T215	Chestnut oak	Quercus prinus	36	Fair	split above DBH, included bark
T216	Tulip poplar	Liriodendron tulipifera	28	Fair	deadwood, trunk decay
T217	Tulip poplar	Liriodendron tulipifera	29	Fair	deadwood, trunk decay, lean, broken branch
T218	Tulip poplar	Liriodendron tulipifera	25	Good	
T219	Tulip poplar	Liriodendron tulipifera	41	Fair/poor	included bark, split above DBH, trunk decay
T220	Red maple	Acer rubrum	29	Fair/poor	irregular growth form, trunk decay, suckering
T221	Northern red oak	Quercus rubra	26	Fair/poor	severe lean, irregular growth form, deadwoo
T222	Northern red oak	Quercus rubra	25	Good	
T223	Red maple	Acer rubrum	26	Good/fair	lean, split above DBH
T224	Northern red oak	Quercus rubra	28	Poor	vines in crown, dead crown
T225	White oak	Quercus alba	25	Fair/poor	split above DBH, included bark, diseased
T226	Tulip poplar	Liriodendron tulipifera	30	Good	vines
T226	Northern red oak	Quercus rubra	25	Fair	lean, included bark at trunk
T227	Tulip poplar	Liriodendron tulipifera	30	Fair/poor	dead crown
T228	Tulip poplar	Liriodendron tulipifera	26	Good	
T229	Northern red oak	Quercus rubra	28	Fair	deadwood, thin crown
T230	Chestnut oak	Quercus prinus	26	Good	
T231	Northern red oak	Quercus rubra	25	Fair	lean, included bark at trunk
T232	Chestnut oak	Quercus prinus	24	Good/fair	deadwood
T233	Chestnut oak	Quercus prinus	25	Good	
T234	Chestnut oak	Quercus prinus	28	Fair	split just above DBH, included bark
T235	Chestnut oak	Quercus prinus	24	Good/fair	trunk decay, deadwood
T236	Northern red oak	Quercus rubra	26	Fair	crown dieback
T237	Northern red oak	Quercus rubra	26	Good/fair	deadwood in crown, flared base
T238	Northern red oak	Quercus rubra	24	Fair	deadwood in crown
T239	Northern red oak	Quercus rubra	25	Good	
T240	Chestnut oak	Quercus prinus	26	Fair	cavity at trunk, deadwood
T241	Northern red oak	Quercus rubra	24	Good/fair	vines in crown, deadwood
T242	Tulip poplar	Liriodendron tulipifera	29	Good	
T243	Chestnut oak	Quercus prinus	27	Fair	deadwood, lean
T244	Chestnut oak	Quercus prinus	24	Poor	decayed base, twin, 1/2 is dead

T245	Chestnut oak	Quercus prinus	30	Fair	trunk decay, included bark
T246	Tulip poplar	Liriodendron tulipifera	31	Good/fair	irregular branching
T247	Tulip poplar	Liriodendron tulipifera	26	Fair	split below DBH
T248	Tulip poplar	Liriodendron tulipifera	26	Good	
T249	Tulip poplar	Liriodendron tulipifera	31	Fair	twin, deadwood,
T250	Northern red oak	Quercus rubra	29	Fair	lean, included bark
T251	Northern red oak	Quercus rubra	24	Fair	vines in crown, lean
T252	Tulip poplar	Liriodendron tulipifera	25	Fair	twin, deadwood
T253	Tulip poplar	Liriodendron tulipifera	33	Fair	vines in crown, sllit
T254	Tulip poplar	Liriodendron tulipifera	33	Fair	twin, deadwood
T255	Tulip poplar	Liriodendron tulipifera	35	Good/fair	deadwood
T256	Tulip poplar	Liriodendron tulipifera	27	Fair	irregular growth form, deadwood
T257	Chestnut oak	Quercus prinus	24	Good/fair	twin, included bark, deadwood
T258	Northern red oak	Quercus rubra	25	Fair	split, canker. deadwood
T259	Chestnut oak	Quercus prinus	33	Fair	split, included bark
T260	Northern red oak	Quercus rubra	26	Good/fair	sparse crown, deadwood
T261	Chestnut oak	Quercus prinus	24	Fair	twin, deadwood
T262	Chestnut oak	Quercus prinus	24	Good	
T263	Northern red oak	Quercus rubra	25	Fair	lean, deadwood
T264	Tulip poplar	Liriodendron tulipifera	24	Good/fair	vines, deadwood
T265	Tulip poplar	Liriodendron tulipifera	24	Good/fair	vines, thin crown
T266	Tulip poplar	Liriodendron tulipifera	24	Fair	vines in crown
T267	Tulip poplar	Liriodendron tulipifera	25	Good	
T268	Northern red oak	Quercus rubra	25	Fair/poor	deadwood, crown dieback
T269	Northern red oak	Quercus rubra	24	Good/fair	deadwood, sparse crown
T270	Northern red oak	Quercus rubra	26	Good	
T271	Northern red oak	Quercus rubra	26	Fair	deadwood, lean
T272	Northern red oak	Quercus rubra	25	Good/fair	vines in crown, lean
T273	Tulip poplar	Liriodendron tulipifera	25	Fair	deadwood, sparse crown
T274	Tulip poplar	Liriodendron tulipifera	25	Good	
T275	Tulip poplar	Liriodendron tulipifera	32	Good	
T276	Empress tree	Paulownia tomentosa	29	Poor	almost dead
T277	Tulip poplar	Liriodendron tulipifera	24	Good/fair	lean, included bark, deadwood
T278	Tulip poplar	Liriodendron tulipifera	26	Good/fair	sparse crown
T279	Red maple	Acer rubrum	29	Fair	split, trunk decay
T280	Tulip poplar	Liriodendron tulipifera	25	Good/fair	twin, included bark, deadwood
T281	Northern red oak	Quercus rubra	26	Fair/poor	vines in crown, split, included bark
T282	Tulip poplar	Liriodendron tulipifera	24	Fair	deadwood, sparse crown
T283	Tulip poplar	Liriodendron tulipifera	25	Fair	irregular growth form
T284	Tulip poplar	Liriodendron tulipifera	24	Fair	vines, deadwood
T285	Northern red oak	Quercus rubra	29	Fair	heavy lean, irregular growth form
T286	Tulip poplar	Liriodendron tulipifera	27	Good	
T287	Tulip poplar	Liriodendron tulipifera	28	Fair	vines in crown, twin
T288	Tulip poplar	Liriodendron tulipifera	24	Fair	vines in crown, sparse crown
T289	Tulip poplar	Liriodendron tulipifera	28	Fair	sparse crown
T290	Tulip poplar	Liriodendron tulipifera	28	Good/fair	split, included bark
T291	Tulip poplar	Liriodendron tulipifera	31	Good	vines
T292	Northern red oak	Quercus rubra	29	Fair	vines in crown
T293	Pin oak	Quercus palustris	24	Fair	lean, deadwood in crown
T294	Tulip poplar	Liriodendron tulipifera	34	Good/fair	split
T295	White oak	Quercus alba	32	Good/fair	deadwood, fill around truck
T296	Green ash	Fraxinus pennsylvanica	34	Good	
T297	Tulip poplar	Liriodendron tulipifera	24	Poor	trunk wound, trunk decay, deadwood in crov
T298	Northern red oak	Quercus rubra	24	Good	

APPENDIX D

NRI Plan



FS-01

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

NATURAL RESOURCE INVENTORY

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief, Division of Engineering Services — Date

WILSON FARM
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

Designed by : _____ Drawn by : _____ Checked by : _____

Project No. : _____ Scale : 1" = 150' Sheet 1 of 2

RK&K
Engineers | Construction Managers | Planners | Scientists

NO.	REVISION	DATE	BY

NATURAL RESOURCE INVENTORY
FOR THE SNOW PROPERTY

RK&K conducted a Natural Resource Inventory at the Snow property in Damascus, Maryland, on July 2, 2013. The Snow property is a 102.75-acre site bounded on all sides by large parcels in private ownership (see NRI Plan in **Appendix D**), and located north and east of Bethesda Church Road, south of Belliston Road, and west of Ridge Road (MD 27).

The Snow property is a candidate site for forest and park mitigation, stream restoration, and/or wetland creation for the Midcounty Corridor Study (MCS) or a future Montgomery County project requiring mitigation. If purchased and reforested, the Snow property would provide an additional 24.74 acres of forest to the riparian areas of Bennett Creek and its tributary, improving water quality through the conversion of non-forest land to forest. Much of the existing forest has fair to high retention priority due to the presence of streams and/or wetlands, steep slopes, and moderate quality forest. Forest retention value rating characteristics are discussed below. Surrounding land use consists of agriculture and large-tract rural residential development. There is no Maryland Agricultural Land Preservation Easement (MALP) on this property. Natural Resource Inventory (NRI) plans are attached. See **Appendix A** for project photos.

Summary

Four forest stands, two streams, one channel, and eight wetlands were observed on the Snow property. A 39.97 acre mid-successional Chestnut Oak Association was observed in the northern, upland section of the Snow property, and an 6.28 acre mid-successional Tulip Poplar Association was noted in the floodplains of the unnamed tributary of Bennett Creek (see NRI Plan in **Appendix D**). The southern section of the Snow property is predominantly a 26.71 acre early successional Virginia pine community, with a 2.53 acre early to mid-successional Tulip Poplar Association adjacent to the stream/wetland complex of Bennett Creek, in the southwestern portion of the property. An old farm field successional community dominates the central region of the study area.

Bennett Creek tributary is associated with three abutting wetlands located in the southwestern portion of the property, five abutting wetlands located in the northern portion of the property, and an ephemeral channel in the south central portion of the property.

Background Information

Background environmental information was obtained from the USGS 7.5 minute Gaithersburg quadrangle, FEMA FIRM maps, NRCS Web Soil Survey, U.S. Fish and Wildlife National Wetland Inventory, and recent surveys of topography and property boundaries.

Topography

Snow property topography is characterized by gently to somewhat steeply sloping upland hillsides on the majority of the site, with slightly incised streams flowing through the northern and southwestern portions of the property. Elevations on the property range from 570 to 724 NGVD 88. The NRI plans in Appendix D show slopes greater than 25% and slopes greater than 15% with highly erodible soils. Highly erodible soils are defined as those having a K- (erodibility) factor greater than 0.35.

Geology and Soils

The property is located in the Piedmont physiographic province characterized by broadly undulating to rolling topography underlain by metamorphic rocks with relief increased locally by low knobs or ridges and valleys.

The Maryland Physiographic Map (2008) indicates that the Snow property is located in the Mt. Airy Upland District, characterized as a rolling upland due to the interaction of thick siltstones and quartzites with stream reaches sometimes incised and within bedrock. The Maryland Geological Survey's Geologic Map of Maryland (1968) indicates that the project area is underlain by a Precambrian tuffaceous and non-tuffaceous phyllite, slate, and quartzite. The NRCS web soils data indicates that soils at Snow property include Baile silt loam, 0-3% slopes (all hydric); Blocktown channery silt loam, 15-25% and 25-45% slopes; Brinklow-Blocktown channery silt loam, 3-8%, 8-15%, and 15-25% slopes; Glenville silt loam, 3-8% slopes; Hatboro silt loam, 0-3% slopes (all hydric); Codorus silt loam, 0-3% slopes, and Hyattstown channery silt loam, 15-25% slopes, as indicated in **Table 1** below.

Table 1. Characteristics of Soils on the Snow Property

Map Unit Symbol	Map Unit Name	K-Factor (Whole Soil)	Hydric Rating	Hydrologic Soil Group
6A	Baile silt loam, 0-3% slopes	0.43	All Hydric	D
116D and 116E	Blocktown channery silt loam, 15-25% & 25-45%	0.24	Not All Hydric	C
16B, 16C, 16D	Brinklow-Blocktown channery silt loam, 3-8%, 8-15%, & 15-25%	0.28	Not All Hydric	B
5B	Glenville silt loam, 3-8%	< 0.35	Not All Hydric	C
54A	Hatboro silt loam, 0-3%, frequently flooded	0.49	All Hydric	D
53A	Codorus silt loam, 0-3% slopes, occasionally flooded	0.49	Not All Hydric	C
109D and 109E	Hyattstown channery silt loam, 15-25% slopes, very rocky	0.24	Not All Hydric	C

Waters of the United States

Bennett Creek (W7), an unnamed tributary to Bennett Creek (W3), and an ephemeral non-jurisdictional channel (W9) are located on the Snow property. W7 and W3 are perennial streams receiving flow from outside the property. Bennett Creek and its tributaries are Use I-P waters. The National Wetland Inventory mapping indicates that no non-tidal wetlands were located on the Snow property (See **Appendix A**). MCDOT delineated eight wetlands on the property, which are discussed below.

Floodplains

The FEMA FIRM map for Montgomery County, Maryland, panel 24031C0065D, indicates that the portion of the property abutting the Bennett Creek tributary is located in the 500 year floodplain. The remainder of the site is not in a mapped FEMA floodplain (See **Appendix A**).

Rare, Threatened, and Endangered Species

Letters requesting information about the presence of rare, threatened or endangered species (RTE's) were sent to the MDNR-Wildlife and Heritage Services (MDNR-WHS), and MDNR-Environmental Review Unit (MDNR-ERU) on July 9, 2013. The U.S. Fish and Wildlife Service Chesapeake Bay Field Office (USFWS) website was reviewed on July 8, 2013, and it was determined that the Gaithersburg quadrangle is included on the USFWS list of USGS topographic maps where no federally proposed or listed endangered or threatened species are known to occur in Maryland. As a result, the online list request certification resource was used to generate an online certification letter.

Responses are pending from MDNR-Wildlife and Heritage Services (MDNR-WHS) and MDNR-Environmental Review Unit (MDNR-ERU). See **Appendix B** for agency correspondence.

Cultural Resources

A letter requesting information about the presence of cultural resources at the Snow property was sent to Maryland Historical Trust on July 9, 2013. A response is pending. See **Appendix B** for this correspondence.

Forest Characterization – Methods

The investigation method employed for this forest characterization was based on the *State Forest Conservation Technical Manual, Third Edition, 1997* for a Simplified Forest Stand Delineation (FSD). The State 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) areas that have been cut but not cleared." Forest stands were characterized by their community type, successional stage, and overall forest condition. A walk-through level forest stand delineation was conducted and no plot points were recorded. Forest association designations are derived from *Maryland Forest Associations Species List* (Brush et al., 1977). Forest stand locations are shown on the NRI plans (See **Appendix D**).

The Snow property forest characterization did not include an inventory of specimen trees. Montgomery County defines specimen trees as, "trees having a diameter at breast height of 24 inches or more; trees having 75 percent or more of the diameter at breast height (dbh) of the current champion of that species; or a particularly impressive or unusual example of a species due to its size, shape, age, or any other trait that epitomizes the character of the species."

Forest condition ratings are based on the following general factors. An "excellent" forest condition rating includes forest with numerous specimen trees, trees in good health, varied tree species diversity including climax forest tree species, excellent representation for all forest layers (overstory and understory trees, shrubs, and herbaceous perennials), almost no invasive plants, and ample wildlife habitat including food and cover. A "good" forest condition rating would include forest with some specimen trees, trees in good health, some tree species diversity, good representation of forest layers, very few invasive plants, and good wildlife habitat. A "fair" forest condition rating would include a forest with few or no specimen trees, trees in questionable health, little tree species diversity, absence of one forest layer, moderate presence of invasive plants, and limited wildlife habitat. A "poor" forest condition rating would include a forest with no specimen trees, many trees in poor health, little tree species diversity, absence of one or more forest layers, heavy invasive plant presence, and little to no wildlife habitat.

The forest inventory included dominant canopy and understory species, dominant canopy size class, percent canopy closure, stand successional stage, stand condition, invasive cover, downed woody debris, and forest retention value. **Table 2** lists characteristics for determining forest retention value ratings.

Table 2. Forest Retention Value Rating Characteristics

High Retention Value	Intermittent and perennial streams and their forest buffers
	Slopes > 25%
	Nontidal wetlands and buffers
	Erodible soils on slopes > 25%
	100-year floodplains
	Habitat for rare, threatened and endangered (RTE) species or County Watchlist Species
	Large contiguous forest tracts especially those w/ FIDS habitat
	Forest stands w/ multiple specimen trees
	Forest with County Green infrastructure
Moderate Retention Value	Stands with good structural diversity
	Corridor +300' foot wide
	Forest stream buffers
	Tree buffers between incompatible land uses
	>24" dbh trees
Low Retention Value	Stands with poor structural diversity
	Stands with moderate to high exotic/ invasive plant cover

Forest Characterization – Results

Four forest stands and several specimen trees were observed during the investigation. In the northern part of the property, a Chestnut Oak Association is designated as FS-1 on the plans and a mid-successional Tulip Poplar Association is designated as FS-2. An old farm field successional community dominates the central portion of the study area. The majority of the southern part of the property is an early successional Virginia pine forest community designated as FS-3 on the plans and the early to mid-successional Tulip Poplar Association along Bennett Creek, in the southeastern corner of the property, is designated as FS-4. These communities are summarized below.

FS1: Mid-successional Chestnut Oak Association

This 39.97 acre mid-successional forest stand is located in the northern portion of the snow property. The most common canopy tree species is *Quercus prinus* (chestnut oak). Other canopy tree species include *Quercus rubrum* (northern red oak), *Quercus alba* (white oak), *Carya glabra* (pignut hickory), and *Fraxinus pennsylvanicus* (green ash), with inclusions of *Nyssa sylvatica* (black gum), *Acer rubrum* (red maple), and *Liriodendron tulipifera* (tulip poplar). The understory is dominated by *Carpinus caroliniana* (ironwood), pignut hickory, red maple, and black gum. Trees between 12 and 20 inch dbh comprise the dominant canopy size class in FS1 with some scattered specimen trees and many trees that are nearly specimen size (20 to 23 inch dbh). The shrub, vine, and herbaceous layers are dominated by *Vaccinium corymbosum* (high bush blueberry), *Rubus phoenicolasius* (wineberry), and *Parthenocissus quinquefolia* (Virginia creeper), with some *Microstigeum vimenium* (stilt grass) and *Alliaria petiolata* (garlic mustard). Canopy closure is estimated at approximately 80-100% and downed woody debris is moderate. FS1 has a

good forest condition rating and a high Forest Retention Value due to its many trees of near specimen diameter, use as a wildlife corridor with high wildlife habitat value, and low amount of invasive plant cover.

FS2: Mid-successional Tulip Poplar Association
FS2 is a 6.28 acre mid-successional Tulip Poplar Association forest abutting Bennett Creek tributary and numerous wetlands in the northern portion of the Snow property. The dominant canopy tree species is tulip poplar. Other canopy tree species include red maple and green ash. The understory is dominated by ironwood, *Hammamelis virginiana* (American witch-hazel), *Prunus serotina* (black cherry), red maple, and *Lindera benzoin* (spicebush). Trees between 12 and 20 inch dbh comprise the dominant canopy size class in this forest stand with few specimen trees. The vine and herbaceous layers are dominated by *Dennstaedtia punctilobula* (hayscented fern), *Arisaema triphyllum* (jack-in-the-pulpit), *Symplocarpus foetidus* (skunk cabbage), Virginia creeper, and stilt grass. Canopy closure is estimated at approximately 60-80% and woody debris is moderate. FS2 has a good forest condition rating and a high Forest Retention Value due to the presence of a perennial stream within the stand, its function as a riparian buffer, its use as a wildlife corridor, and its low coverage of invasive plants.

FS-3: Early Successional Virginia Pine Community
FS-3 is a 26.71 acre early successional Virginia pine forest located in the southern portion of the snow property. The dominant canopy size class is 8 to 14 inch dbh and canopy closure varies from 60 to 80%. The dominant canopy tree species include *Pinus virginiana* (Virginia pine), *Juglans nigra* (black walnut), black cherry, and *Juniperus virginiana* (eastern red cedar), with scattered tulip poplar. This younger tree stand contains prevalent pioneer species in the understory. Dominant understory species include red cedar, *Robinia pseudoacacia* (black locust), spicebush, *Ailanthus altissima* (tree of heaven), Virginia pine, and *Sassafras albidum* (sassafras). The shrub and herbaceous layers are very thick, with dominant species including *Elaeagnus angustifolia* (Russian olive), *Smilax rotundifolia* (greenbrier), wine berry, *Rosa multiflora* (multiflora rose), *Glechoma hederacea* (ground ivy), Virginia creeper, stilt grass, and garlic mustard. Overall condition of this stand is fair, with several declining trees, one specimen tree, and high invasive plant cover. FS3 has a low retention value due to its smaller average tree size, poorer general condition, and high level of invasive plant species, including wineberry, garlic mustard, stilt grass, multiflora rose, tree of heaven and Russian olive.

FS-4: Early to Mid-successional Tulip Poplar Association
This 2.53 acre early to mid-successional Tulip Poplar Association is adjacent to Bennett Creek and its abutting wetlands located in the southwestern portion of the Snow property. The dominant size classes in this stand are 6 to 11 inch and 12 to 20 inch dbh. Dominant canopy species include tulip poplar and red maple. Dominant species in the understory include ironwood, hickory, spice bush, and witch hazel. This stand is in fair overall condition with several declining trees, high cover of invasive plants, and a high level of woody debris. The shrub and herbaceous layer is dominated by invasive species, including stilt grass and multiflora rose. The retention value of FS-4 is moderate, since it is adjacent to a stream and wetland complex, but contains trees in a declining condition with a high level of invasive species.

Old Field Successional Community
An old farm field successional community dominates the central region of the study area. In the higher elevations, the field has begun to fill in with early successional tree species. Tree density is not high enough in this area to be considered a forest, but many 15-20 year old trees are scattered throughout and includes the following dominant

species: *Diospyros virginiana* (persimmon), *Juniperus virginiana* (eastern red cedar), red maple, black walnut, tulip poplar, black cherry, *Lonicera maackii* (bush honeysuckle), multiflora rose, and *Solidago sp.* (goldenrod).

Specimen Trees
The Snow property contains approximately ten specimen trees with the majority located in the northern portion of the site. FS-1 and FS-2 contained many trees in the 21 to 23 dbh range, just below the diameter of a specimen tree. Very few specimen trees were identified within FS-3 and no specimen trees were observed in FS-4.

WETLAND DELINEATION - FIELD INVESTIGATION

Two jurisdictional waters of the U.S., one non-jurisdictional waters of the U.S., and eight wetlands were identified during the wetland delineation. Photographs of the wetlands can be found in **Appendix C**. Wetland quality evaluations are based on an evaluation of wetland functions and values, the condition of the resource, diversity of plant species, and presence of invasive plants. In addition, quality evaluations for streams are based on referencing existing DNR and Montgomery County data collected by for benthic macro-invertebrates and fish and an index of Biological Integrity (IBI) to rate stream health.

WETLAND DELINEATION-Methods

All waters of the U.S., including wetlands, in the study area were delineated by a team of environmental scientists. The applicable data form (Routine Wetland Determination for wetlands and/or the RK&K-derived Waters of the U.S. form) was completed for each delineated feature. Each delineated feature was named, the boundary points marked with pink flagging numbered consecutively and photographed. Boundary point positions were located using an iPad.

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.

Wetlands were delineated in accordance with the U.S. Army Corps of Engineers 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountain 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: U.S. Army Engineer Research and Development Center and supplemental guidance issued by the United States Army Corps of Engineers (USACE). Routine wetland determination methods with onsite inspection were used to determine the presence of wetlands in the study area.

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

W1 – Forested Wetland

W1 is a large forested wetland abutting W3, a perennial unnamed tributary to Bennett Creek. Dominant vegetation includes red maple, ironwood, spicebush, American witch-hazel, skunk cabbage, and swamp smartweed *(Persicaria hydropiperoides*). There are no primary indicators of hydrology and secondary indicators include B10: Drainage Patterns and D2: Geomorphic Position. The soils in W1 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W1 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Feature W3, an RPW flowing year round. W1 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W2 – Forested Wetland

W2 is a large forested wetland abutting W3, a perennial unnamed tributary to Bennett Creek. Dominant vegetation includes red maple, tulip poplar, spicebush, American witch-hazel, skunk cabbage, and swamp smartweed. Primary indicators of hydrology include B9: Water-stained leaves and buttressed tree roots with secondary indicators including B10: Drainage Patterns and D2: Geomorphic Position. The soils in W2 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W2 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Feature W3, an RPW flowing year round. W2 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W3 – Waters of the U.S. (Bennett Creek tributary)

W3 is a perennial, unnamed tributary to Bennett Creek entering the property from the northeast and flowing to the west across the northern portion of the site. W3 is an RPW (Relatively Permanent Water) with a natural channel shape, a width of 5 to 10 feet, bank depth of 2 to 5 feet, water depth of 2-12”, and banks with slopes of 3:1, 2:1, or 1:1. Channel substrate consists of silts, cobbles, sands, and gravel. The feature has well defined bed and banks with a single channel, and observed indicators of the ordinary high water mark include vegetation matted down, bent or absent; disturbed leaf litter; sediment deposition; presence of litter and debris; destruction of terrestrial vegetation; sediment sorting; and scour. The forest surrounding W3 is dominated by tulip poplar, ironwood, red maple, black cherry, pignut hickory, American witch-hazel, and fern. There are no DNR biological monitoring records for the Bennett Creek tributary. This feature provides adequate habitat for fish and benthic macroinvertebrates due to its instream cover, variety of substrates and the presence of riffle-pool sequences. Feature W3 was flowing during the field review and is jurisdictional under Rapanos guidance.

W4 – Forested Wetland

W4 is a large forested wetland on the north side of the Bennett Creek tributary (W3) originating from numerous seeps in the abutting steep slopes. An upland berm separates W4 from the stream. Dominant vegetation includes tulip poplar, ironwood, winterberry holly (*Ilex verticillata*), skunk cabbage, and shallow sedge (*Carex lurida*). Primary indicators of hydrology include A2: High water table, A3: Saturation, B7: Inundation visible on aerial imagery, and B9: Water-Stained Leaves. The soils in W4 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W4 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Feature W3, an RPW flowing year round. W4 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W5 – Forested Wetland
W5 is a large forested wetland on the north side of the Bennett Creek tributary (W3) originating from seeps in the abutting slopes. A small upland berm separates W5 from the stream. Dominant vegetation includes red maple, tulip poplar, spicebush, and skunk cabbage. Primary indicators of hydrology include A1: Surface water, A2: High water table, A3: Saturation, B2: Sediment deposits, and B7: Inundation visible on aerial imagery. The soils in W5 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W5 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W3, an RPW flowing year round. W5 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and minimal invasive species.

W6 – Forested Wetland
W6 is a small forested wetland on the north side of Bennett Creek tributary (W3) originating from slope seeps. Dominant vegetation includes red maple, ironwood, tulip poplar, and skunk cabbage. Primary indicators of hydrology include A1: Surface water, B2: Sediment deposits, and B9: Water-stained leaves. The soils in W6 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W6 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Features W3, an RPW flowing year round. W6 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and absence of invasive species.

W7 – Waters of the U.S. (Bennett Creek)
W7 is perennial stream that originates offsite to the west and flows in an easterly direction across the southern portion of the Snow property. W7 is a RPW with a natural channel shape, with a width of 5 to 20 feet, a bank depth of 2 to 5 feet, water depth of 2-12", and banks with a slopes of 3:1, 2:1 or 1:1. Channel substrate consists of cobbles, silts, sands, and gravel. The feature has well defined bed and banks, and observed indicators of the ordinary high water mark include vegetation matted down, bent, or absent; disturbed leaf litter; sediment deposition; presence of litter and debris; destruction of terrestrial vegetation; presence of a wrack line; sediment sorting; and scour. The forest surrounding W7 is dominated by tulip poplar, red maple, green ash, black walnut, spice bush, Japanese stiltgrass, multiflora rose), and swamp smartweed. Maryland DNR's Maryland Biological Stream Survey collected benthic macro-invertebrate and fish samples at a site (LMON-131-R-2003) along Bennett Creek just downstream of Feature W7 in 2003. The site had a total of 15 macroinvertebrate families, with 9 EPT taxa and 16 Dipterans, resulting in a "Fair" IBI score of 3.00. The site received a "Fair" fish IBI score of 3.67. A relatively high number of benthic fish species (3) were observed at the site, which is often associated with higher quality streams. This feature provides adequate habitat for fish and benthic macroinvertebrates due to its instream cover, variety of substrates and the presence of riffle-pool sequences. Feature W7 was flowing during the field review, and is jurisdictional under Rapanos guidance.

W8 – Forested Wetland
W8 is a forested wetland abutting Bennett Creek (W7) on its east side at the bottom of a steep slope. This wetland is located on the western boundary of the Snow property and continues off the property to the northwest. Dominant vegetation includes red maple, tulip poplar, winterberry holly, spicebush, swamp smartweed and skunk cabbage. Primary indicators of hydrology include A1: Surface water, A2: High Water Table and B9: Water-Stained Leaves. The soils in W8 meet the requirements of a Hydric Soil Indicator F3: Depleted Matrix. Feature W8 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Bennett Creek, an

RPW flowing year round. W8 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and lack of invasive species.

W9 – Waters of the U.S. (ephemeral channel)
W9 is an ephemeral channel in the southern portion of the property draining from east to west to Bennett Creek. Feature W9 is an ephemeral non-RPW draining uplands. The channel shape is natural with a width of 2 to 6 feet, a bank depth of 1 to 6 feet, and banks with slopes of 4:1, 2:1 or 1:1. Channel substrate consists of cobbles, silts, sands, and gravel. The feature has well defined bed and banks, and observed indicators of the ordinary high water mark include vegetation matted down, bent, or absent; disturbed leaf litter; presence of litter and debris; destruction of terrestrial vegetation; and scour. The forest surrounding W9 is dominated by tulip poplar, red maple, green ash, black walnut, spice bush, Japanese stiltgrass, multiflora rose, and swamp smartweed. Feature W9 was dry during the field review over most of its extent with a small area with standing water near its confluence with Bennett Creek. W9 is not jurisdictional under Rapanos guidance.

W10 – Forested Wetland
W10 is a large forested wetland abutting the west side of and draining to Bennett Creek. Dominant vegetation includes red maple, slippery elm (*Ulmus parvifolia*), ironwood, spicebush, shallow sedge, Jack-in-the-Pulpit, and skunk cabbage. Primary indicators of hydrology include B2: Sediment Deposits and B9: Water-stained leaves. The soils in W10 meet the requirements of Hydric Soil Indicator F3: Depleted Matrix. Feature W10 is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Bennett Creek, an RPW flowing year round. W10 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and absence of invasive species.

W11 – Forested Wetland
W11 is a large forested wetland abutting the eastern bank of Bennett Creek and continuing beyond the southern boundary of the Snow property. A small stream runs through W11. Dominant vegetation includes red maple, spicebush, jewel weed (*Impatiens capensis*), and skunk cabbage. Primary indicators of hydrology include A1: Surface Water, A2: High Water Table, A3: Saturation, and B9: Water-stained leaves. The soils in W11 meet the requirements of Hydric Soil Indicator A4: Hydrogen Sulfide. Feature W11is a USACE jurisdictional wetland since it meets the three-parameter definition of a wetland and is adjacent to Bennett Creek, an RPW flowing year round. W11 resource quality is good based on the undisturbed condition of the resource, the diversity of plant species, and absence of invasive species.

MITIGATION POTENTIAL OF THE SNOW PROPERTYPROPERTY

The Snow property is in the watershed of Bennett Creek, which drains to the Monocacy River.

Forest and Parkland Mitigation

Table 3 summarizes the acreage of impact to all parks (first row) and to the subset of Montgomery County/ M-NCPPC owned parkland (second row).

Table 3: Park Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Park Impact (acres)	0	19.4	0.2	45.2	30.6	29.6	48.1	33.5	32.5
Impact to County & M-NCPPC-owned Park (acres)	0	15.4	0.2	43.3	28.7	27.7	45.5	30.9	29.9

Table 4 summarizes the acreage of impact to all forests (first row) and to the subset of forest that is on Montgomery County/M-NCPPC owned parkland (second row).

Table 4: Forest Impacts of the Midcounty Corridor Study Alternatives

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
Total Forest Impact (acres)	0	31.0	2.0	57.6	52.5	61.4	72.9	67.7	76.7
Impact to Forest on County Parklands (acres)	0	8.35	2.0	41.0	26.5	25.5	43.3	28.7	27.7

Currently, 75.49 acres of the 102.75-acre Snow property is forest, leaving 27.26 acres of farm fields available to reforest. MCDOT would propose that all remaining farm fields be reforested, and the entire property conveyed to M-NCPPC. The Snow property conveyance would include the 26.71 acres of early-successional forest, 2.53 acres of early to mid-successional forest, and 46.25 acres of mid-successional forest that already exist on the property. MCDOT would appreciate M-NCPPC's consideration of mitigation credit for the preservation of existing forest. MCDOT would anticipate this property being sufficient to satisfy the following:

- The entire parkland mitigation obligation for impacts to Montgomery County/M-NCPPC parkland, including the replacement of the approximately 5 acres of non-forested parkland that will be sought for wetland mitigation, and
- But only a portion of the forest mitigation required for impacts to parkland forest.

Section 22A-12 (h) of the Montgomery County Forest Conservation Law requires legal instruments *such as* conservation easements, deed restrictions, covenants, and *other agreements, as necessary* to protect forest conservation areas. Unless notified otherwise by M-NCPPC, MCDOT assumes that the conveyance of the property to M-NCPPC would satisfy the requirement for protecting the forest, and would not require a forest conservation easement.

FIDS Habitat

Approximately 49 acres of new FIDS habitat would be created when the proposed reforestation on the Snow property matures (see **Interior Forest** figure).

Connectivity to Existing Parkland

The Snow Property is not contiguous to any existing parkland.

Water Quality Benefits

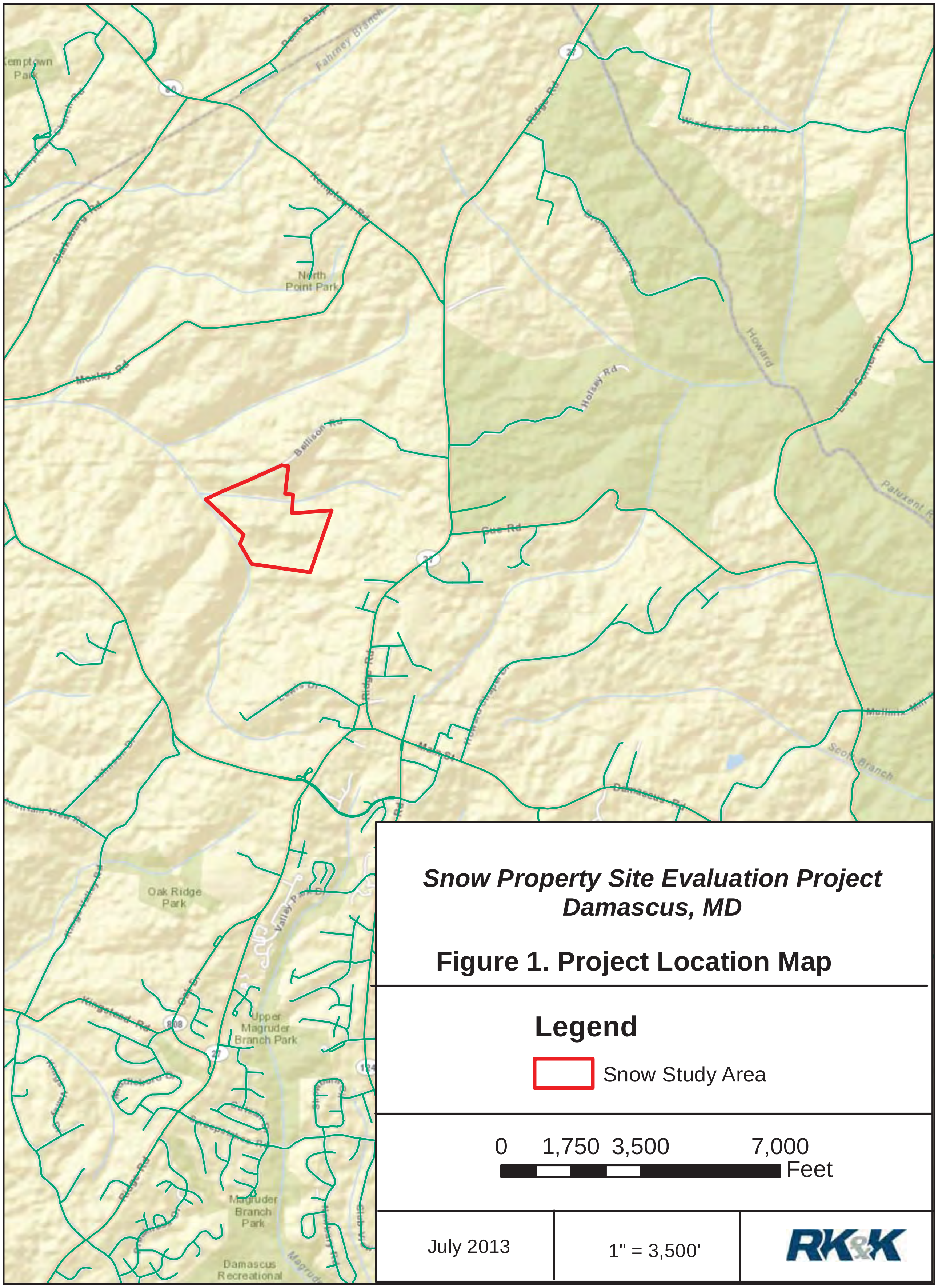
The Snow property drains to Bennett Creek, a Use I-P stream. The Snow property is no longer farmed, therefore, nutrient inputs have largely subsided. However, the reforestation of the property would stabilize the highly erodible soils and slow the runoff from the two knolls that are the predominant topographic feature within the old field successional community. The reforestation would potentially help improve the water quality and biological productivity of Bennett Creek.

APPENDIX A

Project Map/NWI Map

Project Photos

FIRM Map



Snow Property Site Evaluation Project
Damascus, MD

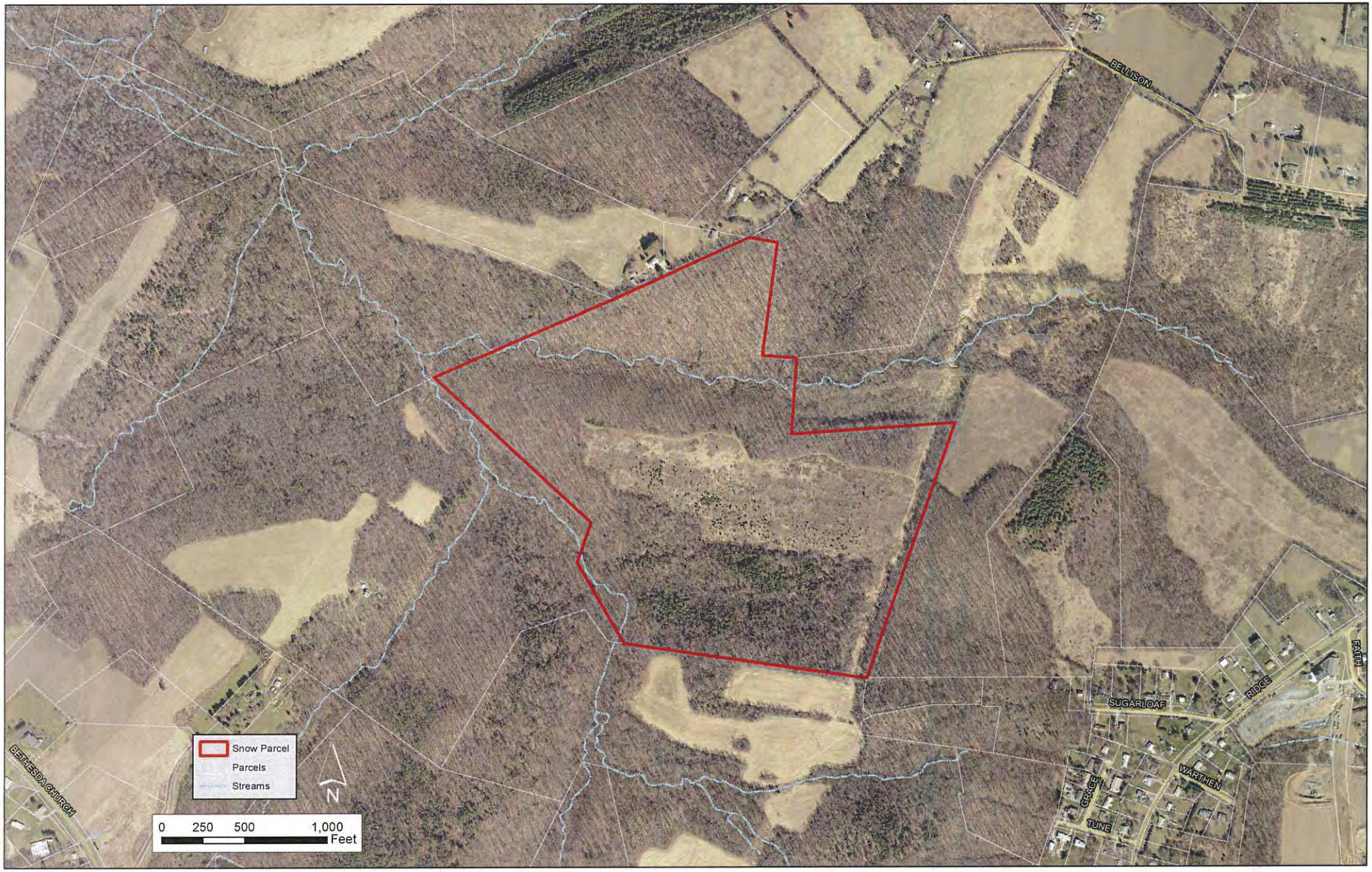
Figure 1. Project Location Map

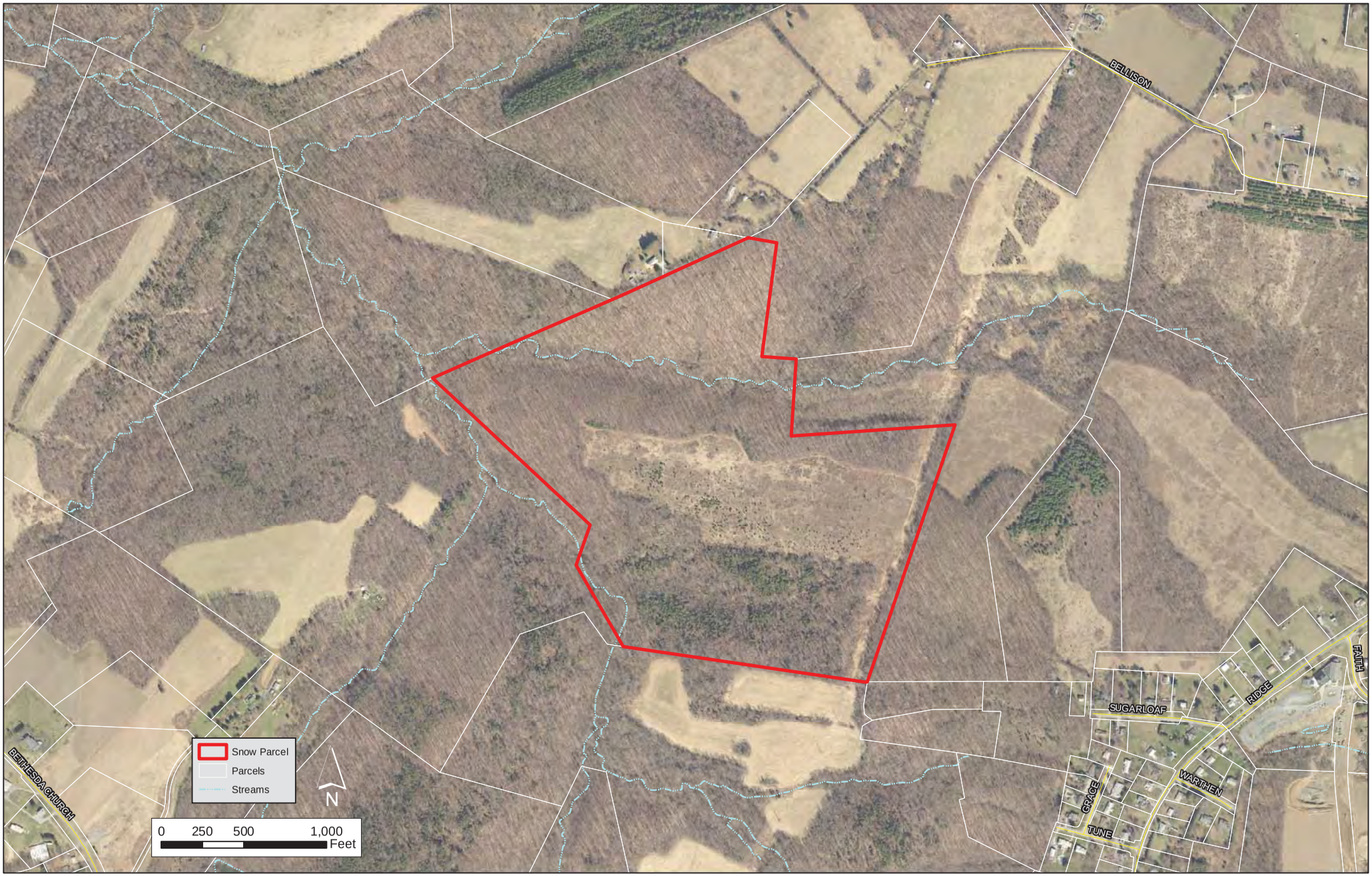
Legend

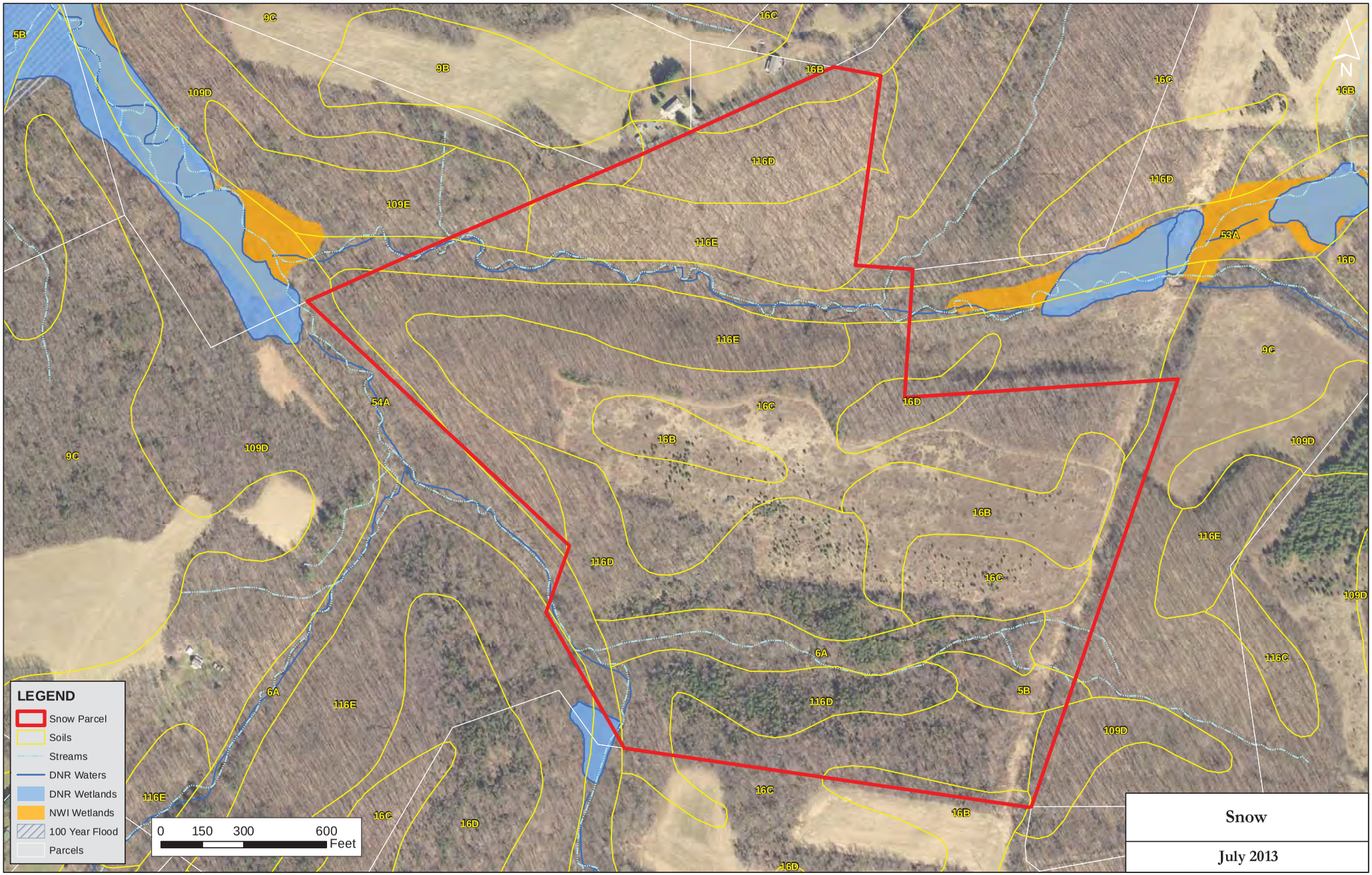
Snow Study Area

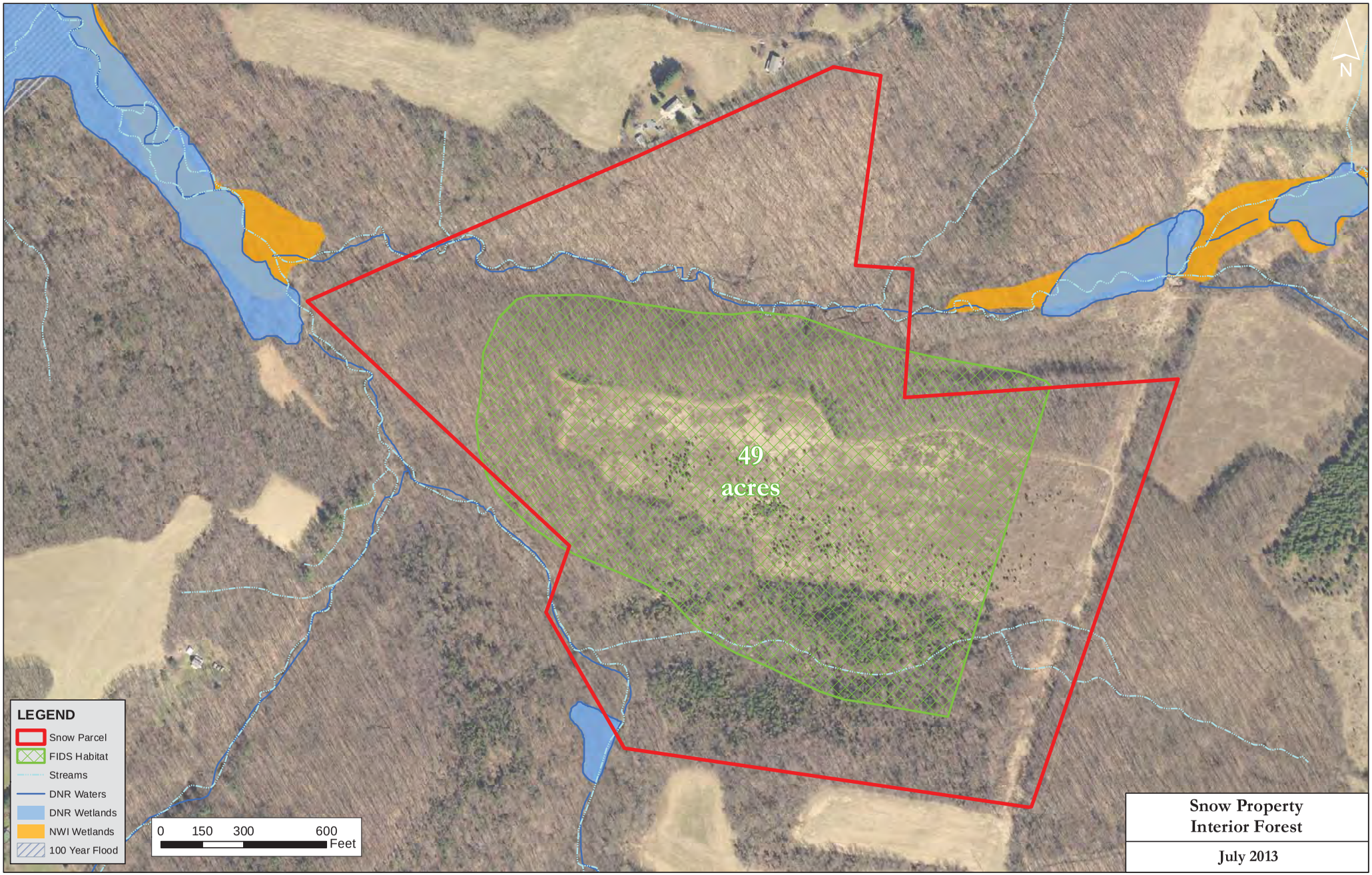
0 1,750 3,500 7,000
Feet

July 2013	1" = 3,500'	RK&K


BELLISON
SUGARLOAF
RIDGE
FAITH
WARTHEN
GRACE
TUNE
BETHESDA CHURCH
Snow Parcel
Parcels
Streams
N
0 250 500 1,000
Feet


BELLISON
SUGARLOAF
RIDGE
FAITH
WARTHEN
GRACE
TUNE
BETHESDA CHURCH
Snow Parcel
Parcels
Streams
N
0 250 500 1,000
Feet


LEGEND
Snow Parcel
Soils
Streams
DNR Waters
DNR Wetlands
NWI Wetlands
100 Year Flood
Parcels
0 150 300 600
Feet
N
Snow
July 2013


N
49
acres
LEGEND
Snow Parcel
FIDS Habitat
Streams
DNR Waters
DNR Wetlands
NWI Wetlands
100 Year Flood
0 150 300 600
Feet
Snow Property
Interior Forest
July 2013

NRI – Snow

Project Photos

W1

W2

W3

W4

NRI – Snow

Project Photos

W5

W6

W7

W8

NRI – Snow

Project Photos

FS1

FS2

FS3

FS4

NRI – Snow

Project Photos

W9

W10

W11

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

MAP SCALE 1" = 1000'

00 0 1000 2000

FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0065D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, MARYLAND

AND INCORPORATED AREAS

PANEL 65 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

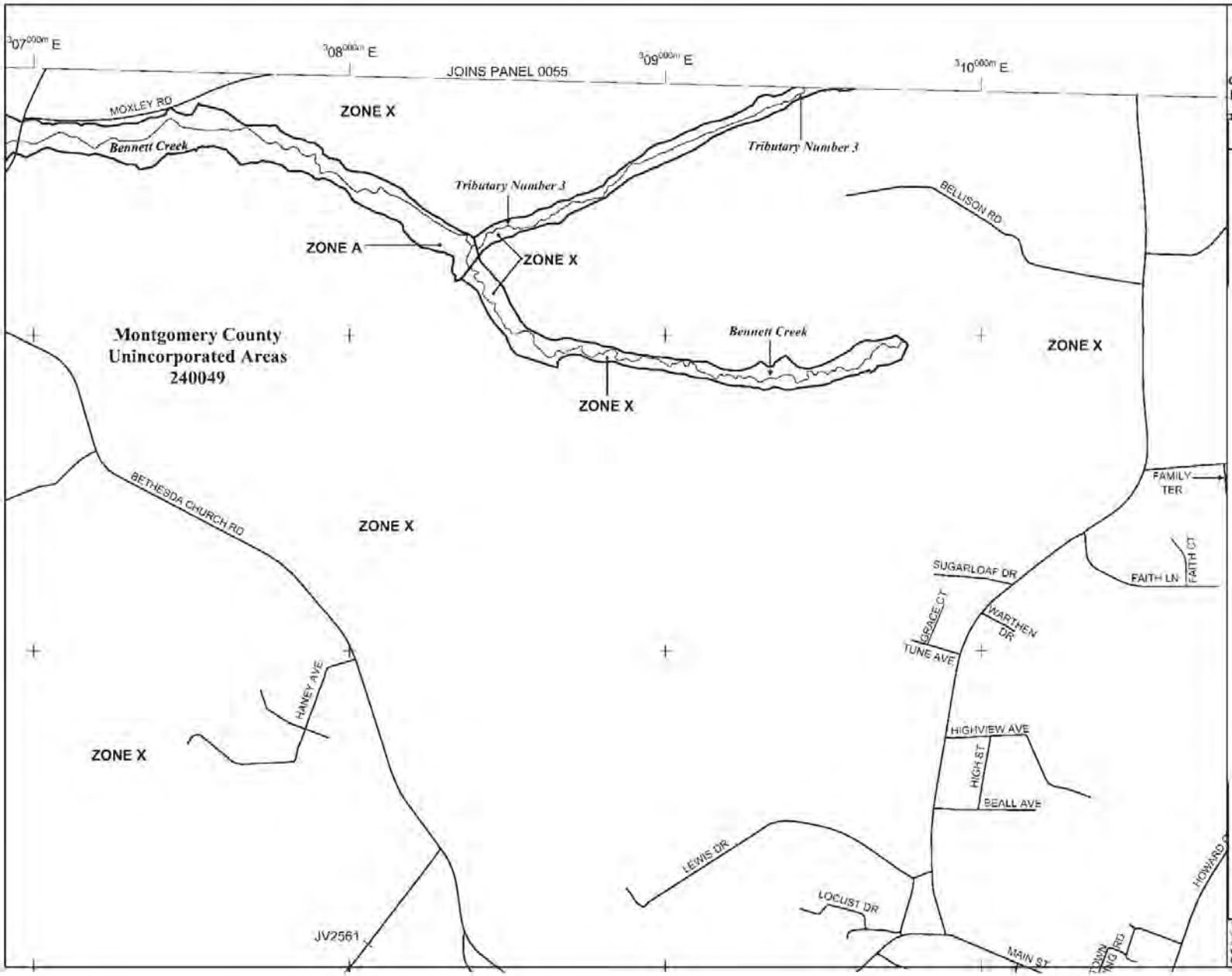
COMMUNITY	NUMBER	PANEL	SUFFIX
MONTGOMERY COUNTY	240049	0065	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community

MAP NUMBER
24031C0065D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency



MAP SCALE 1" = 1000'

00 0 1000 2000 FEET

METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0065D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, MARYLAND

AND INCORPORATED AREAS

PANEL 65 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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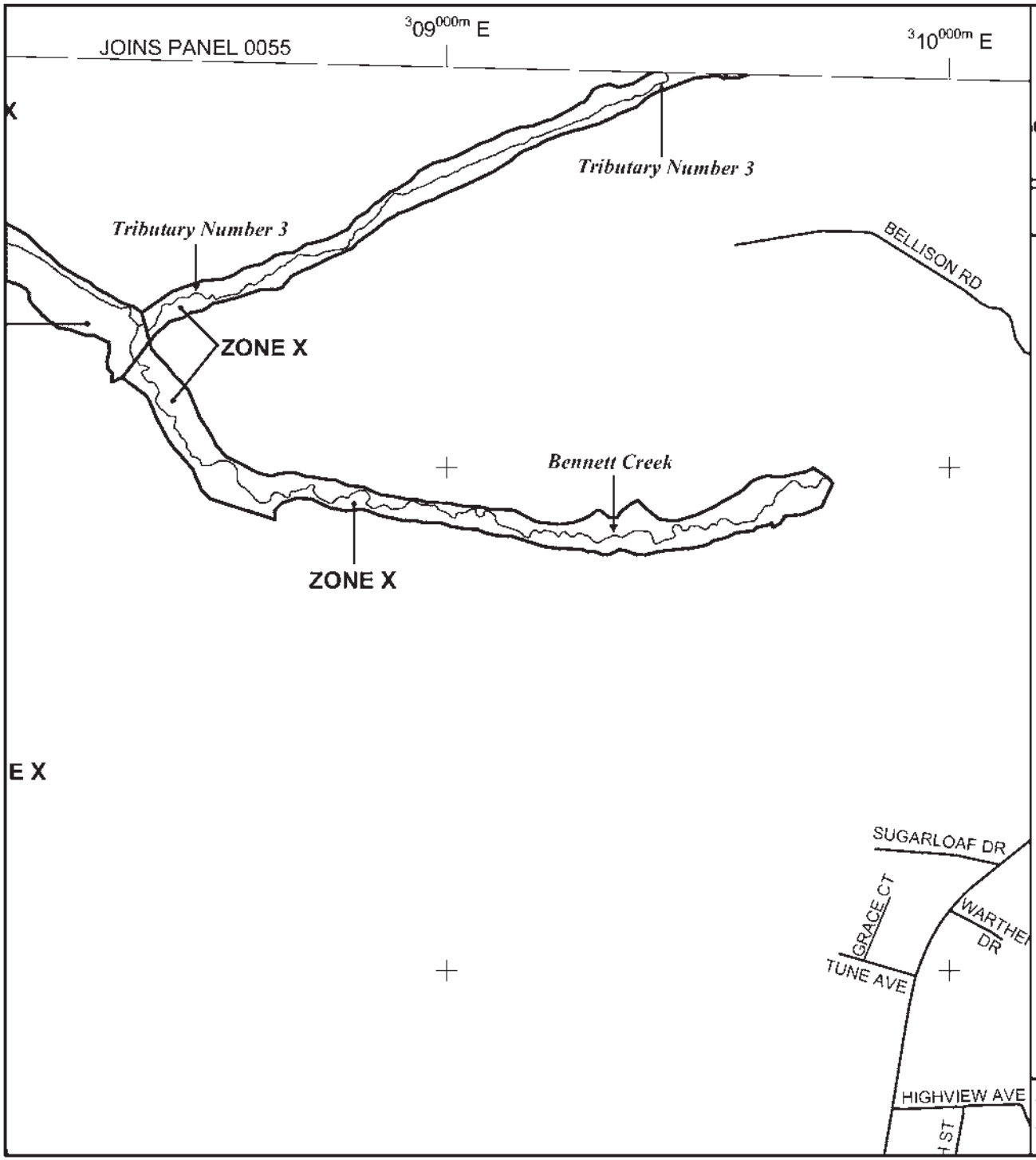
MAP NUMBER
24031C0065D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov



MAP SCALE 1" = 1000'

00 0 1000 2000 FEET

METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0065D

FIRM

FLOOD INSURANCE RATE MAP

MONTGOMERY COUNTY, MARYLAND

AND INCORPORATED AREAS

PANEL 65 OF 480

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
MONTGOMERY COUNTY	240049	0065	D

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
24031C0065D

EFFECTIVE DATE
SEPTEMBER 29, 2006

Federal Emergency Management Agency

APPENDIX B

Agency Correspondence

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

June 12, 2013

Mr. Roland Limpert
Maryland Department of Natural Resources
Environmental Review
Tawes State Office Building, E-1
580 Taylor Avenue
Annapolis, Maryland 21401

Project: Site Evaluation -- Wilson Farm and Bethel Church

Subject: Request for Project Area Fisheries Resources Information

Dear Mr. Limpert:

We are providing site evaluation planning services to the Montgomery County Department of Transportation, Transportation and Design Section for the Wilson Farm and Bethel Church properties. These sites abut each other and are being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study project in Germantown, Montgomery County, MD. The 105 acre Wilson Farm and the 120 acre Bethel Church property are located north of Brink Road, east of Wildcat Road, and west of Davis Mill Road. The Midcounty Corridor Study project may result in minor impacts to nontidal Waters of the U.S. and may require both state and federal permit authorizations (Section 404/401).

We are requesting information regarding the potential presence of state fisheries resources within or near the project area. Project location maps are enclosed for each site to aid your review.

If you have any questions concerning this project, please contact me at wmorgante@rkk.com (410) 462-9174. Thank you for your assistance.

Sincerely,
Rummel, Klepper & Kahl, LLP

William Morgante
Project Scientist

Enclosure

cc: Rick Adams (RK&K)
Paul Wettlaufer (RK&K)

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: **May 30, 2013**

PROJECT NAME AND LOCATION: **Site Evaluation-Wilson Farm and Bethel Church**
Germantown, Montgomery County Maryland (maps enclosed)

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA:
Two unnamed tributaries to Wildcat Branch, Use III-P (Wilson Farm)
Two unnamed tributaries to Great Seneca Creek, Use I-P (Bethel Church)

SUB-BASIN (6 digit watershed): **02-14-02**

DNR RESPONSE (sections below to be completed by MD DNR):

____Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

____Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I and Certain Use II waters during the period of February 15 through June 15, inclusive, during any year.

____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

---

xxxxx -

DATE: ----------
PHONE: 410-260-8334

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: **May 30, 2013**

PROJECT NAME AND LOCATION: **Site Evaluation-Wilson Farm and Bethel Church**
Germantown, Montgomery County Maryland (maps enclosed)

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA:
Two unnamed tributaries to Wildcat Branch, Use III-P (Wilson Farm)
Two unnamed tributaries to Great Seneca Creek, Use I-P (Bethel Church)

SUB-BASIN (6 digit watershed): **02-14-02**

DNR RESPONSE (sections below to be completed by MD DNR):

____Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

____Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I and Certain Use II waters during the period of February 15 through June 15, inclusive, during any year.

____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

---

xxxxx

DATE: ----------
PHONE: 410-260-8334

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: May 28, 2013

Project: Site Evaluation - Wilson Farm & Bethel Church

Dear Applicant for online certification:

Thank you for choosing to use the U.S. Fish and Wildlife Service Chesapeake Bay Field Office online list request certification resource. This letter confirms that you have reviewed the conditions in which this online service can be used. On our website (http://www.fws.gov/chesapeakebay/EndSppWeb/ELEMENTS/listreq.html) are the USGS topographic map areas where no federally proposed or listed endangered or threatened species are known to occur in Maryland, Washington, D.C. and Delaware.

You have indicated that your project is located on the following USGS topographic map(s)

Gaithersburg

Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8540. For information in Delaware you should contact the Delaware Natural Heritage and Endangered Species Program, at (302) 653-2880. For information in the District of Columbia, you should contact the National Park Service at (202) 535-1739.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize

loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay)

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4527.

Sincerely,

Genevieve LaRouche
Field Supervisor

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
Joseph P. Gill, Secretary
Frank W. Dawson III, Deputy Secretary

June 25, 2013

William Morgante
Rummel, Klepper, and Kahl, LLP
81 Mosher St.
Baltimore, MD 21217

RE: Environmental Review for Wilson Farm and Bethel Church, Germantown, possible mitigation sites for Mid Country Corridor Study project, north of Brink Road east of Wildcat Rd. and west of Davis Mill Rd., Montgomery County, MD.

Dear Mr. Morgante:

The Wildlife and Heritage Service has determined that there are no State or Federal records for rare, threatened or endangered species within the boundaries of the project site as delineated. As a result, we have no specific comments or requirements pertaining to protection measures at this time. This statement should not be interpreted however as meaning that rare, threatened or endangered species are not in fact present. If appropriate habitat is available, certain species could be present without documentation because adequate surveys have not been conducted.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne,
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER# 2013.0908.mo

RECEIVED
JUL 0 1 2013
BY:_____

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: **July 9, 2013**

PROJECT NAME AND LOCATION: **Site Evaluation - Snow Property**
Damascus, Montgomery County Maryland (maps enclosed)

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA:
Bennett Creek (Use I-P)
Unnamed tributary to Bennett Creek (Use I-P)

SUB-BASIN (6 digit watershed): **02-14-03**

DNR RESPONSE (sections below to be completed by MD DNR):

____Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

____Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I and Certain Use II waters during the period of February 15 through June 15, inclusive, during any year.

____Generally, no instream work is permitted in Use III streams during the period of October 1 through April 30, inclusive, during any year.

____Generally, no instream work is permitted in Use IV streams during the period of March 1 through May 31, inclusive, during any year.

____Other applicable site specific time of year restriction information:

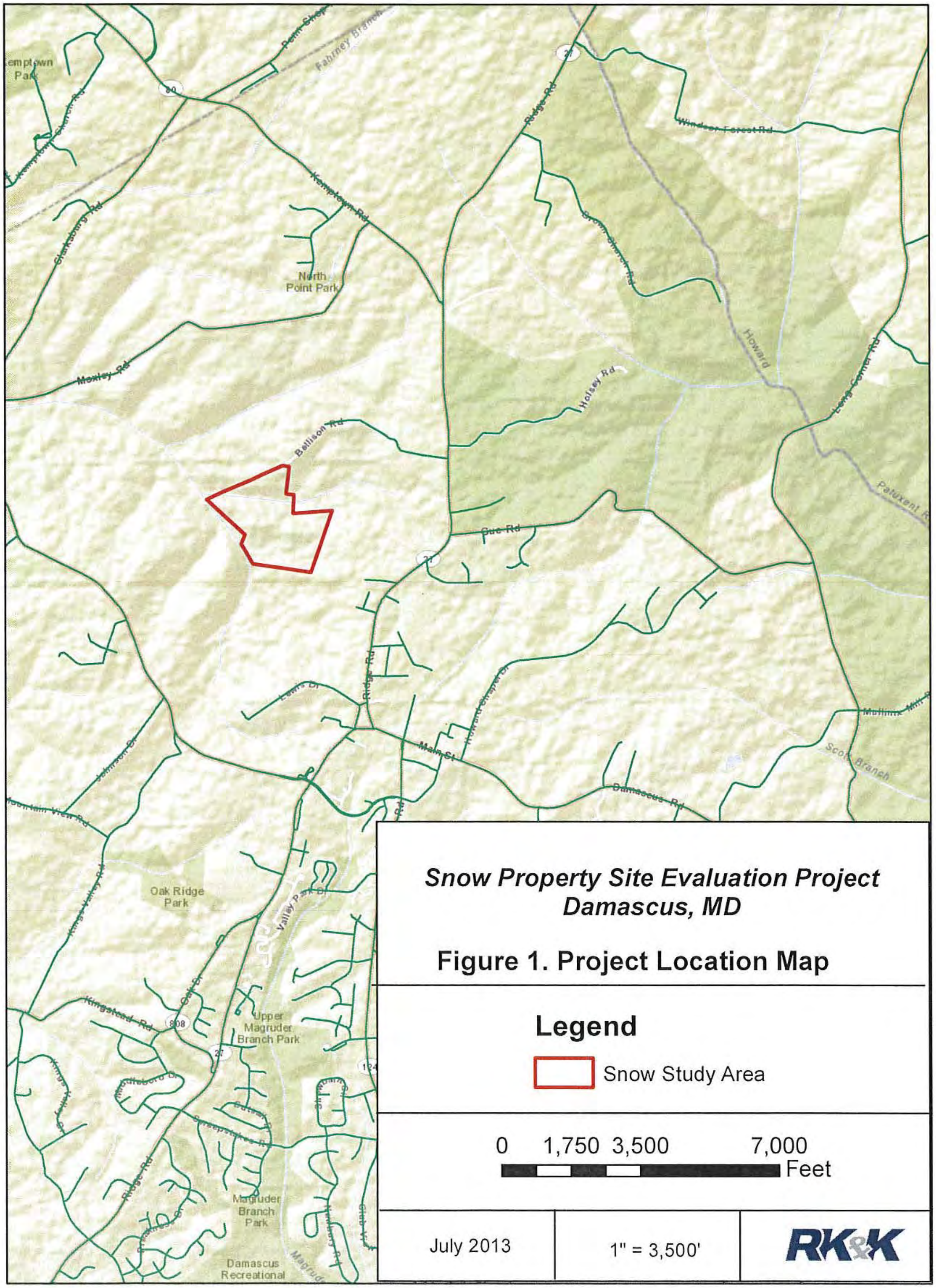
ADDITIONAL FISHERIES RESOURCE NOTES:

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

MD DNR, Environmental Review Unit signature

_____

DATE: ----------
PHONE: 410-260-8334



Snow Property Site Evaluation Project
Damascus, MD

Figure 1. Project Location Map

July 2013

1" = 3,500'

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

July 9, 2013

Mr. Roland Limpert
Maryland Department of Natural Resources
Environmental Review
Tawes State Office Building, E-1
580 Taylor Avenue
Annapolis, Maryland 21401

Project: Site Evaluation -- Snow Property

Subject: Request for Project Area Fisheries Resources Information

Dear Mr. Limpert:

We are providing site evaluation planning services to the Montgomery County Department of Transportation for the Snow property. This site is being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study project. The 103-acre Snow property is located in Damascus, Maryland, west of MD Route 27/Ridge Road. The northeastern corner of the property is adjacent to Bellison Road.

We are requesting information regarding the potential presence of state fisheries resources within or near the project area. Project location maps are enclosed for the site to aid your review.

If you have any questions concerning this project, please contact me at msigrist@rkk.com (410) 462-9174. Thank you for your assistance.

Sincerely,
Rummel, Klepper & Kahl, LLP

Madeline Sigrist
Environmental Scientist

Enclosure

cc: Rick Adams (RK&K)
Paul Wettlaufer (RK&K)

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

July 9, 2013

Ms. Lori Byrne
Wildlife and Heritage Division
Department of Natural Resources
580 Taylor Avenue
Tawes State Office Building, E-1
Annapolis, Maryland 21401

Project: Site Evaluation - Snow Property

Subject: Request for State Listed Rare, Threatened and Endangered Species Information

Dear Ms. Byrne:

We are providing site evaluation planning services to the Montgomery County Department of Transportation for the Snow property. This site is being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study project. The 103-acre Snow property is located in Damascus, Maryland, west of MD Route 27/Ridge Road. The northeastern corner of the property is adjacent to Bellison Road.

We are requesting information regarding the potential presence of Maryland listed rare, threatened or endangered species within or near the project area. Project location maps are enclosed to aid your review.

If you have any questions concerning this project, please contact me at msigrist@rkk.com (410) 462-9174. Thank you for your assistance.

Sincerely,
Rummel, Klepper & Kahl, LLP

Madeline Sigrist
Environmental Scientist

Enclosure

cc: Rick Adams (RK&K)
Paul Wettlaufer (RK&K)

81 Mosher Street | Baltimore, MD 21217 | P 410.728.2900 | T 800.787.3755 | www.rkk.com

July 9, 2013

Mr. J. Rodney Little
State Historic Preservation Officer
Maryland Historic Trust
100 Community Place
Crownsville, Maryland 21032-2023

ATTN: Ms. Elizabeth Cole

Project: Snow Property Site Evaluation
Damascus, MD

Subject: Request for Cultural Resource Information

Dear Ms. Cole:

On behalf of the Montgomery County Department of Transportation, Rummel, Klepper & Kahl, LLP is providing site evaluation planning services for the 103-acre Snow property adjacent to Bellison Road in Damascus, Maryland. The aim of the project is to determine the extent and condition of the forest stands and the portion of Bennett Creek and its tributary on the Snow property. This site is being considered for forest, park, stream, and/or wetland mitigation as part of the Midcounty Corridor Study (MCS) project, however the Snow property is not in the Area of Potential Effect of the MCS. The enclosed maps show the location of the current project area.

We are requesting information regarding the presence of any important cultural resources in the project area. If you have any questions concerning this project and/or the information requested, please contact me at 410-462-9125. Thank you for your assistance.

Sincerely,
Rummel, Klepper and Kahl, LLP

Madeline Sigrist
Environmental Scientist

Enclosures: Project Location Map
Aerial Map

cc: Rick Adams & Paul Wettlaufer – RK&K

APPENDIX C

Forest Stand Summary Sheets

Waters of the U.S. Data Sheet

Wetland Data Sheets

FOREST STAND ANALYSIS BETHEL CHURCH - A
TULIP POPLAR ASSOC. (FS-1)

Date: 5/20/13 Crew: ET, WMM

Project.: _____

KEY	TYPE OF COMMUNITY	AREA*	EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
				Size (dbh) & Age	General Conditions	
			CHERRY 25 TULIP POPLAR 30 TREE OF HEAVEN 5 SASSAFRAS 5 RED MAPLE 20	6-12"	FAIR HEAVY INVASIVE BITTERSWEET, JAPAN HS. VINES IN all trees NO SHRUB LAYER	LOW RETENTION VALUE
			POCSIMMON 5 WALNUT 5		ALMOST NO TREES 24"+ OVER Lowl MED Qual forest	
			UNDERSTORY BITTERSWEET DOG WOOD VA CREEPER GREEN BRIER MF ROSE			
			POISON IVY			

- Area measured to the nearest 1/10 acre.

PHOTOS #1-3

WALK-THROUGH FOREST STAND ANALYSIS

Forest Stand ID: FS1		**Project:** MidCounty- Snow	
Owner/Applicant: Mont Co		**State:** Md	**County:** Mont
Date: 7/2/13	**Prepared by:** MBS/ESG	**Photos:** 4558-4559, 4565-4568, 4574-4576, 4579-4581, 4587-4594	

Type of Community: Oak-hickory Forest	**Forest Stand Area:**
Stand Successional Stage: ☐ Early ☑ Mid ☐ Mature	**Percent Canopy Closure:** 80-100

Existing Vegetation

Dominant Species in Canopy:	**Size Class:**	**Notes:**
Chestnut oak, northern red oak, white oak, pignut hickory, green ash, with inclusions of black gum, tulip poplar, and red maple.	☐ 2-6" ☐ 6-11" ☑ 12-20" ☐ 20-30" ☐ >30"	Some scattered specimen trees (NE), several borderline (20-23")
Dominant Species in Understory: Muscle wood, pignut hickory, red maple, black gum		**Notes:**
Dominant Species in Herbaceous Layer: Stilt grass, high bush blueberry, blackberry, Virginia creeper		**Notes:**

Downed Woody Debris:	**Invasive Species Cover:**	**Invasive Species Present:**
☐ High ☑ Medium ☐ Low	☐ High ☐ Medium ☑ Low	Some stilt grass, garlic mustard

General Stand Conditions:

Stand in good condition, low invasive cover, and trees healthy.

WALK-THROUGH FOREST STAND ANALYSIS

Forest Stand ID: FS2		**Project:** MidCounty- Snow	
Owner/Applicant: Mont Co		**State:** Md	**County:** Mont
Date: 7/2/13	**Prepared by:** MBS/ESG	**Photos:** 4560-4564, 4569-4571, 4573	

Type of Community: Tulip poplar Association	**Forest Stand Area:**
Stand Successional Stage: ☐ Early ☑ Mid ☐ Mature	**Percent Canopy Closure:** 60-80

Existing Vegetation

Dominant Species in Canopy:	**Size Class:**	**Notes:**
Tulip poplar, red maple, green ash	☐ 2-6" ☐ 6-11" ☑ 12-20" ☐ 20-30" ☐ >30"	Low number of Specimen Trees, some borderline (20-23")
Dominant Species in Understory:		**Notes:**
Musclewood, witch hazel, black cherry, red maple, spice bush		
Dominant Species in Herbaceous Layer:		**Notes:**
fern sp., jack-in-the pulpit, skunk cabbage, Virginia creeper, stilt grass		

Downed Woody Debris:	**Invasive Species Cover:**	**Invasive Species Present:**
☐ High ☑ Medium ☐ Low	☐ High ☐ Medium ☑ Low	Very few invasives: some multiflora rose, garlic mustard, stilt grass

General Stand Conditions:

Overall stand in good condition; forest is along the stream banks and includes numerous wetlands; low invasive cover, trees and vegetation healthy.

WALK-THROUGH FOREST STAND ANALYSIS

Forest Stand ID: FS3		**Project:** MidCounty- Snow	
Owner/Applicant: Mont Co		**State:** Md	**County:** Mont
Date: 7/2/13	**Prepared by:** MBS/ESG	**Photos:** 4596-4600, 4606-4608, 4610-4613	

Type of Community: Virginia Pine	**Forest Stand Area:**
Stand Successional Stage: ☑ Early ☐ Mid ☐ Mature	**Percent Canopy Closure:** 60-80

Existing Vegetation

Dominant Species in Canopy:	**Size Class:**	**Notes:**
black cherry, black walnut, Virginia pine, red cedar, scattered tulip poplar	☐ 2-6" ☑ 6-11" ☑ 12-20" ☐ 20-30" ☐ >30"	(8-14" size class)

Dominant Species in Understory:	**Notes:**
Red cedar, black locust, spice bush, tree of heaven, va pine, sassafras	More abundant understory than other forested areas

Dominant Species in Herbaceous Layer:	**Notes:**
Ground ivy, Virginia creeper, blackberry, multiflora rose, stilt grass, wine berry, garlic mustard, Russian olive, and greenbrier	

Downed Woody Debris:	**Invasive Species Cover:**	**Invasive Species Present:**
☑ High ☐ Medium ☐ Low	☑ High ☐ Medium ☐ Low	Wine berry, garlic mustard, stilt grass, multiflora rose, tree of heaven, Russian olive

General Stand Conditions:

Younger stand with prevalent pioneer species in understory; stand in fair condition with several declining trees; 1 specimen tree noted; higher invasive cover.

WALK-THROUGH FOREST STAND ANALYSIS

Forest Stand ID: FS4		**Project:** MidCounty- Snow	
Owner/Applicant: Mont Co		**State:** Md	**County:** Mont
Date: 7/2/13	**Prepared by:** MBS/ESG	**Photos:** 4601-4605	

Type of Community: Tulip poplar Assoc	**Forest Stand Area:**
Stand Successional Stage: ☑ Early ☑ Mid ☐ Mature	**Percent Canopy Closure:** 60-70

Existing Vegetation

Dominant Species in Canopy:	**Size Class:**	**Notes:**
Tulip poplar, red maple	☐ 2-6" ☑ 6-11" ☑ 12-20" ☐ 20-30" ☐ >30"	No specimen trees

Dominant Species in Understory:	**Notes:**
Musclewood, hickory, spicebush, witch hazel	

Dominant Species in Herbaceous Layer:	**Notes:**
Multiflora rose, greenbrier, stilt grass	

Downed Woody Debris:	**Invasive Species Cover:**	**Invasive Species Present:**
☑ High ☐ Medium ☐ Low	☑ High ☐ Medium ☐ Low	Stilt grass, multiflora rose

General Stand Conditions:

Fair condition with several declining trees, high invasives, high woody debris; adjacent to stream/wetland complex.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MCS SNOW City/County: MONT Sampling Date: 7/2/13

Applicant/Owner: MCDOT State: MD Sampling Point: W1

Investigator(s): KJH, WHM Section, Township, Range: ____

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: ____ Long: ____ Datum: ____

Soil Map Unit Name: Codorus silt loam NWI classification: ____

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? No Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (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 X No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X 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)
- X 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)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): >10"

Water Table Present? Yes ____ No X Depth (inches): >10"

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): >10"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

PHOTO 3322, 3324 SFPP wetland on [illegible] side of Bennett Creek
• Both sides of Bennett Creek trib.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: WP1

Tree Stratum (Plot size: 10 R)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	40	Y	FAC
2. CARPINUS CAROLINIANA	40	Y	FAC
3. LIRIODENDRON TULIPIFERA	10		FACU
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling/Shrub Stratum (Plot size: 10' R)			
1. LINDERA BENZOIN	60	Y	FACW
2. HAMAMELIS VIRGINIANA	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		
Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	25	Y	OBL
2. THELYPTERIS PALUSTRIS	T		FACW
3. PELTANDRA hydropiperoides	70	Y	OBL
4. LINDERA BENZOIN	T		FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	95 = Total Cover		
50% of total cover: 47.5	20% of total cover: 19		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W1

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
0-4	10YR 4/2	100					Clay loam	
4-10	2.5Y 5/1	70	10YR 4/6	30	C	PL	Silty clay loam	
10-11	2.5Y 6/1	100					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)
- X 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 X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MCS- SNOW City/County: MONT Sampling Date: 7/2/13

Applicant/Owner: MDOT State: MD Sampling Point: W2

Investigator(s): KSH, WMM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: Long: Datum:

Soil Map Unit Name: Codorus Silt loam NWI classification:

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? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X 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)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- X Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 12-1"

Water Table Present? Yes ____ No X Depth (inches): >12"

Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): >12"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

BOTTOMLESS TREE roots

• ABUTTING BENNETT CREEK N.B.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W2

Tree Stratum (Plot size: 20' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	30	Y	FAC
2. LIRIODENDRON TULIPIFERA	20	Y	FACU
3. PRUNUS SEROTINA	5		FACU
4.			
5.			
6.			
7.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		

Sapling/Shrub Stratum (Plot size: 20' R)			
1. LINDERA BENZOIN	70	Y	FACW
2. HAMAMELIS VIRGINIANA	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		

Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	40	Y	OBL
2. PELTANDRA hydrophyllides	50	Y	OBL
3. FERN	1		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W2

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
0-6"	10 YR 4/4	100					clay loam	
6-12"	2.5 Y 5/2	75	7.5 YR 5/6	25	C	PL, M	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)
- X 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 X No ___

Remarks:

Waters of the U.S. Data Sheet

Project: MID COUNTY		**Feature ID:** W3	**Stream Order:**
Date: 7/2/13	**State:** MD	**Photos:** 3325	
Crew: WMM, KJH	**County:** Mo	**Last Flag Number:**	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
Describe rational for hydrologic class: substantial flow at time of inventory			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)		Substrate			Vegetation
✓ Natural Channel Shape	Width: 5-10' Depth: 2-5'	✓ Silts	✓ Sands	☐ Muck	RB: Tulip poplar, red maple, cherry, spice bush, hickory, carpinus, witch hazel, fern sp.
☐ Artificial (man-made)	Bank Erosion/stability:	✓ Cobbles	✓ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Moderately unstable	☐ Bedrock	☐ Concrete		LB: Same as RB
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	✓ 3:1	☐ 4:1(*or less*)	
Notes: Bennett Creek tributary, bank depth 2-5'					

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	✓ No	Type: Forest Width: >100'	☐ Federally listed species
☐ Poorly/undefined channel	☐ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes: Moderate bank erosion throughout reach. 3-5' tall.			

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 litter and 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: MCS-SNOW City/County: MONT Sampling Date: 7/2/13

Applicant/Owner: MC DOT State: MD Sampling Point: W4

Investigator(s): KJH, WMM Section, Township, Range: ______

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: ______ Long: ______ Datum: ______

Soil Map Unit Name: Codorus Silt loam NWI classification: ______

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

Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? No Are "Normal Circumstances" present? Yes X No ___

Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? No (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 X No ___	Is the Sampled Area within a Wetland? Yes X No ___
Hydric Soil Present?	Yes X No ___	
Wetland Hydrology Present?	Yes X No ___	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X Inundation Visible on Aerial Imagery (B7)
- X 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 X No ___ Depth (inches): 1/2-1"

Water Table Present? Yes X No ___ Depth (inches): 2"

Saturation Present? (includes capillary fringe) Yes X No ___ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ___

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

Remarks:

PHOTOS 330-332

- ABUTTING Bennett Creek trib

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W4

Tree Stratum (Plot size: 20' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. PRUNUS SEROTINA	10		FACU
2. LIRIODENDRON TULIPIFERA	40	Y	FACU
3. CARPINUS CAROLINIANA	40	Y	FAC
4.			
5.			
6.			
7.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		
Sapling/Shrub Stratum (Plot size: 20' R)			
1. ILEX VERTICILLATA	20	Y	FACW
2. CARPINUS CAROLINIANA	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		
Herb Stratum (Plot size:)			
1. CAREX LURIDA	15	Y	OBL
2. FALSE NETTLE (Boehmeria cylindrica)	10		FACW
3. STAPHYLEA TRIFOLIA	25	Y	OBL
4. SEEDLING (Aarostis gigantea)	5		FACW
5. RUBUS PHOENICOLASIUS	5		
6.			
7.			
8.			
9.			
10.			
11.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No __

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

SOIL

Sampling Point: W4

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
0-1	2.5Y 3/2	100					clay loam	
1-7	2.5Y 5/1	100					Sandy loam Gravel	
REFUSAL @ 7"								

[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)
- X 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 X No ____

Remarks:

REFUSAL @ 7"

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MLS - 5006 W City/County: MONT. Sampling Date: 7/2/13

Applicant/Owner: MC DOT State: MD Sampling Point: W5

Investigator(s): KJH, JWHM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: Long: Datum:

Soil Map Unit Name: Codorus Silt loam NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- X 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 X No ____ Depth (inches): 1/2-1"

Water Table Present? Yes X No ____ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

PHOTOS 3333-3334

WETLAND ABUTTING Bennett trib

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W5

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	50	Y	FAC
2. Liriodendron tulipifera	20	Y	FACU
3. Fraxinus pennsylvanica	10		FACW
4.			
5.			
6.			
7.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Sapling/Shrub Stratum (Plot size: 10)			
1. Lindera benzoin	40	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		

Herb Stratum (Plot size: 5)			
1. Symplocarpus foetidus	80	Y	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	80 = Total Cover		
50% of total cover: 40	20% of total cover: 16		

Woody Vine Stratum (Plot size:)			
1. None			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W5

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	2.5Y 5/1	80	10YR 5/6	20	C	PL	silt loam	
5-12	2.5Y 5/1	90	10YR 5/6	10	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)
- X 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 X No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MCS - SNOW City/County: MONT. Sampling Date: 7/2/13

Applicant/Owner: MC DOT State: MD Sampling Point: W6

Investigator(s): KSH, WHM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: Long: Datum:

Soil Map Unit Name: Codorus Silt loam NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): ½ - 1"

Water Table Present? Yes X No ____ Depth (inches): 6"

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 6"

Wetland Hydrology Present? Yes X No ____

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

Remarks:

PHOTO 3339

- ABUTTING BENNETT CREEK TRIB.

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W6

Tree Stratum (Plot size: 20)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20	Y	FAC
2. Carpinus caroliniana	20	Y	FAC
3.			
4.			
5.			
6.			
7.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		

Sapling/Shrub Stratum (Plot size:)			
1. Liriodendron tulipifera	30	Y	FACU
2. Carpinus caroliniana	10	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	40 = Total Cover		
50% of total cover: 20	20% of total cover: 8		

Herb Stratum (Plot size:)			
1. Symplocarpus foetidus	50	Y	OBL
2. Moss sp.	T		
3. Viburnum dentatum	5		FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 80% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W6

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	2.5Y 4/1	100					Silt loam	
5-12	2.5Y 5/1	70	10YR 5/6	30	C	PL	Silty 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)
- X 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 X No ____

Remarks:

Waters of the U.S. Data Sheet

Project: MID COUNTY		**Feature ID:** W7	**Stream Order:**
Date: 7/2/13	**State:** MD	**Photos:** 3348	
Crew: WMM, KJH	**County:** Mo	**Last Flag Number:**	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
○ 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 (*not jurisdictional*)
	◉ RPW – Perennial (Flowing year round)		○ Non-RPW erosional feature (*not jurisdictional*)
			○ Non-RPW with abutting wetland
			○ Non-RPW with adjacent wetland
			○ Non-RPW wetland adjacent or abutting upstream (outside of study area)

Describe rational for hydrologic class: Flowing in summer

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

Shape (with respect to top of bank)			Substrate					Vegetation
✓ Natural Channel Shape	Width: 5-20'	Depth: 2-5'	✓ Silts	✓ Sands	☐ Muck			RB: Tulip poplar, red maple, green ash, black walnut, spice bush, jap stiltgrass multiflora rose, persicaria
☐ Artificial (man-made)	Bank Erosion/stability:		✓ Cobbles	✓ Gravel	☐ Other:			
☐ Manipulated (man-altered)	Moderately unstable		☐ Bedrock	☐ Concrete				LB: Same as RB
☐ Other:	Side slope: ✓ 1:1(to *vertical*)		✓ 2:1	✓ 3:1	☐ 4:1(*or less*)			

Notes: Bennett creek, bank depth 2-5'

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	☐ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	✓ No	Type: Forest Width: >100'	☐ Federally listed species
☐ Poorly/undefined channel	☐ Unknown	✓ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas

Notes: Moderate bank erosion throughout reach. 3-5' tall.

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 litter and 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: MCS- SNOW City/County: MONT Sampling Date: 7/21/13

Applicant/Owner: ML DOT State: MD Sampling Point: W8

Investigator(s): KJH, WMM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: Long: Datum:

Soil Map Unit Name: HATBORO Silt loAM NWI classification:

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

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

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X No	Is the Sampled Area within a Wetland? Yes X No
Hydric Soil Present?	Yes X No	
Wetland Hydrology Present?	Yes X 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 X	No ___	Depth (inches): 1/4-1/2"
Water Table Present?	Yes X	No ___	Depth (inches): >8"
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): ≥8"

Wetland Hydrology Present? Yes X No

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

Remarks:

PHOTO 3349

- ABUTTING Bennett Creek

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W8

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	80	Y	FAC
2. LIRIODENDRON TULIPIFERA	20	Y	FACU
3.			
4.			
5.			
6.			
7.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Sapling/Shrub Stratum (Plot size: 10' R)			
1. ILEX VERTICILLATA	30	Y	FACW
2. LINDERA BENZOIN	60	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	90 = Total Cover		
50% of total cover: 45	20% of total cover: 18		

Herb Stratum (Plot size: 5' R)			
1. SYMPLOCARPUS FOETIDUS	60	Y	OBL
2. PERSICARIA HYDROPIPEROIDES	30	Y	OBL
3. LINDERA BENZOIN	10		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W8

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
0-4"	2.5Y 4/2	100					Silt loam	
4-8"	2.5Y 5/1	65	10YR 5/6	35	C	PL	Sandy 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)
- X 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 X No ____

Remarks:

REFUSAL @ 8"

Waters of the U.S. Data Sheet

Project: MID COUNTY		**Feature ID:** W9	**Stream Order:** 1
Date: 7/2/13	**State:** MD	**Photos:** 3351,3352	
Crew: WMM, KJH	**County:** Mo	**Last Flag Number:**	

Feature Hydrologic Class (check one):

Tidal	Perennial	Intermittent (SNE)	Ephemeral (SNE)
◯ 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 (*not jurisdictional*)
	◯ RPW – Perennial (Flowing year round)		◯ Non-RPW erosional feature (*not jurisdictional*)
			◯ Non-RPW with abutting wetland
			◯ Non-RPW with adjacent wetland
Describe rational for hydrologic class: Mostly dry, few areas of standing pools, seep in channel near trib to BC.			◯ Non-RPW wetland adjacent or abutting upstream (outside of study area)

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

Shape (with respect to top of bank)		Substrate			Vegetation
✓ Natural Channel Shape	Width: 2-6' Depth: 0.5'-6'	✓ Silts	✓ Sands	☐ Muck	RB: Tulip poplar, red maple, green ash, black walnut, spice bush, jap stiltgrass multiflora rose, persicaria
☐ Artificial (man-made)	Bank Erosion/stability:	✓ Cobbles	✓ Gravel	☐ Other:	
☐ Manipulated (man-altered)	Moderately unstable	☐ Bedrock	☐ Concrete		LB: Same as RB
☐ Other:	Side slope: ✓ 1:1(to *vertical*)	✓ 2:1	☐ 3:1	✓ 4:1(*or less*)	
Notes: bank depth: 0.5-6'					

Flow & Biological Characteristics: ***(check all that apply)***

Surface Flow	Subsurface Flow	Biological Characteristics	
✓ Single channel – confined	✓ Yes	✓ Riparian corridor	*Habitat for:*
☐ Multiple/braided channels	☐ No	Type: Forest Width: >100'	☐ Federally listed species
☐ Poorly/undefined channel	☐ Unknown	☐ Wetland fringe	☐ Fish/spawn areas
☐ Overland Sheetflow			☐ Other environmentally sensitive areas
Notes: Moderate bank erosion throughout reach. 3-5' tall.			

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 litter and 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: MCS – SNOW City/County: MONT. Sampling Date: 7/2/13

Applicant/Owner: MC DOT State: MD Sampling Point: W10

Investigator(s): KH, WHM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR or MLRA): MLRA 148 Lat: Long: Datum:

Soil Map Unit Name: HATBORO Silt loam NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X	No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	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)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): 7/2"
Water Table Present?	Yes ____	No X	Depth (inches): 7/2"
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): 7/2"

Wetland Hydrology Present? Yes X No ____

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

Remarks: PHOTO 3353
OVER INTO FLOW FROM PERENNIAL STREAM
• ABUTTING BENEATH CREEK

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: W10

Tree Stratum (Plot size: 10' R)	Absolute % Cover	Dominant Species?	Indicator Status
1. ACER RUBRUM	70	Y	FAC
2. ULMUS PACIFOLIA	30	Y	FACU
3.			
4.			
5.			
6.			
7.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Sapling/Shrub Stratum (Plot size: 10' R)			
1. LINDERA BENZOIN	30	Y	FACW
2. CORNUS CANADENSIS	20	Y	FAC
3. ROSA MULTIFLORA	10		FACU
4.			
5.			
6.			
7.			
8.			
9.			
	60 = Total Cover		
50% of total cover: 30	20% of total cover: 12		
Herb Stratum (Plot size: 5')			
1. JACK IN PULPIT (ARISAEMA TRIPHYLLUM)	5	Y	FACW
2. SYMPLOCARPUS FOETIDUS	10	Y	OBL
3. CAREX LURIDA	5	Y	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 86% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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

SOIL

Sampling Point: W1D

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
0-7	2.5Y 5/1	80	10YR 5/6	20	C	PL	silt loam	
7-12	2.5Y 6/3	85	10YR 5/6	15	C	PL	Sandy 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)
- X 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 X No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: MLS - SNOW City/County: MONT. Sampling Date: 7/2/13

Applicant/Owner: NC DOT State: NC Sampling Point: W11

Investigator(s): EJH, WMM Section, Township, Range:

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): NONE Slope (%): 0

Subregion (LRR or MLRA): MLRA 136 Lat: Long: Datum:

Soil Map Unit Name: HATBORO Silt loam NWI classification:

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

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? NO Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? NO (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 X No ____	Is the Sampled Area within a Wetland? Yes X No ____
Hydric Soil Present?	Yes X No ____	
Wetland Hydrology Present?	Yes X No ____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- X Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X 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)
- X 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)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): ½ - 7"

Water Table Present? Yes X No ____ Depth (inches): > 41

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

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

Remarks:

PHOTO 3357

- ABUTTING Beaucatt Creek

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: W11

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. RED MAPLE	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		

Sapling/Shrub Stratum (Plot size: 10' R)			
1. LINDERA BENZOIN	20	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
	20 = Total Cover		
50% of total cover: 10	20% of total cover: 4		

Herb Stratum (Plot size:)			
1. SYMPLOCARPUS FOETIDUS	15	Y	OBL
2. IMPATIENS CAPENSIS	30	Y	FACW
3. CAREX LURIDA	10		OBL
4. Tall Bearded leafed toothwort	10		
5. Creeping Jenny (LYSIMACHIA NUMMULARIA)	10		FACW
6.			
7.			
8.			
9.			
10.			
11.			
	75 = Total Cover		
50% of total cover: 37.5	20% of total cover: 15		

Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
50% of total cover:	20% of total cover:		

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% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 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 Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

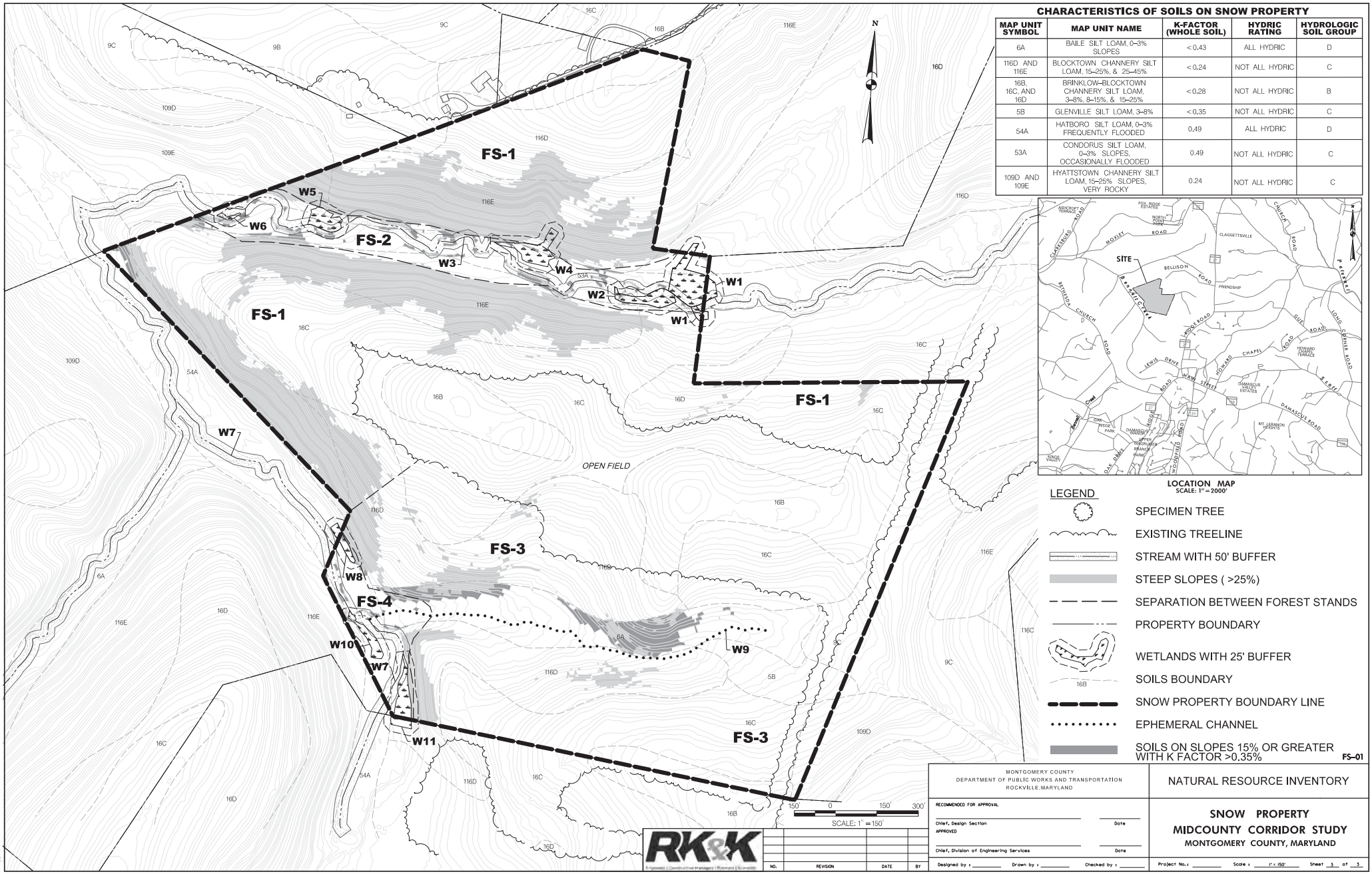
Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

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



CHARACTERISTICS OF SOILS ON SNOW PROPERTY

MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP
6A	BAILE SILT LOAM, 0–3% SLOPES	< 0.43	ALL HYDRIC	D
116D AND 116E	BLOCKTOWN CHANNERY SILT LOAM, 15–25%, & 25–45%	< 0.24	NOT ALL HYDRIC	C
16B, 16C, AND 16D	BRINKLOW–BLOCKTOWN CHANNERY SILT LOAM, 3–8%, 8–15%, & 15–25%	< 0.28	NOT ALL HYDRIC	B
5B	GLENVILLE SILT LOAM, 3–8%	< 0.35	NOT ALL HYDRIC	C
54A	HATBORO SILT LOAM, 0–3% FREQUENTLY FLOODED	0.49	ALL HYDRIC	D
53A	CONDORUS SILT LOAM, 0–3% SLOPES, OCCASIONALLY FLOODED	0.49	NOT ALL HYDRIC	C
109D AND 109E	HYATTSTOWN CHANNERY SILT LOAM, 15–25% SLOPES, VERY ROCKY	0.24	NOT ALL HYDRIC	C

LOCATION MAP
SCALE: 1" = 2000'

LEGEND

- SPECIMEN TREE
- EXISTING TREELINE
- STREAM WITH 50' BUFFER
- STEEP SLOPES (>25%)
- SEPARATION BETWEEN FOREST STANDS
- PROPERTY BOUNDARY
- WETLANDS WITH 25' BUFFER
- SOILS BOUNDARY
- SNOW PROPERTY BOUNDARY LINE
- EPHEMERAL CHANNEL
- SOILS ON SLOPES 15% OR GREATER WITH K FACTOR >0.35%

FS-01

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

NATURAL RESOURCE INVENTORY

RECOMMENDED FOR APPROVAL

Chief, Design Section — Date

APPROVED

Chief, Division of Engineering Services — Date

SNOW PROPERTY
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

Designed by : _____ Drawn by : _____ Checked by : _____

Project No.: _____ Scale : 1" = 150' Sheet 3 of 3

RK&K

NO.	REVISION	DATE	BY

MidCounty Corridor Study Potential Forest and Park Mitigation Sites

M-NCPPC - Parks Department

July 15, 2013

Purpose of Presentation

- Present three potential mitigation sites for forest and park impacts
- Obtain Parks Department feedback on potential mitigation sites

Project Schedule

- Draft EER available for public review May 2, 2013
- Joint Permit Application submitted to Corps and MDE April 30, 2013
- Public Hearing – August 7, 2013
- Project team meeting – September 15, 2013

Why Consider Mitigation Sites Now?

- Conceptual mitigation required to concur on a Preferred Alternative
- Difficult to find properties of this size
- Sites could mitigate for MCS, other DOT projects, or MS4 permit

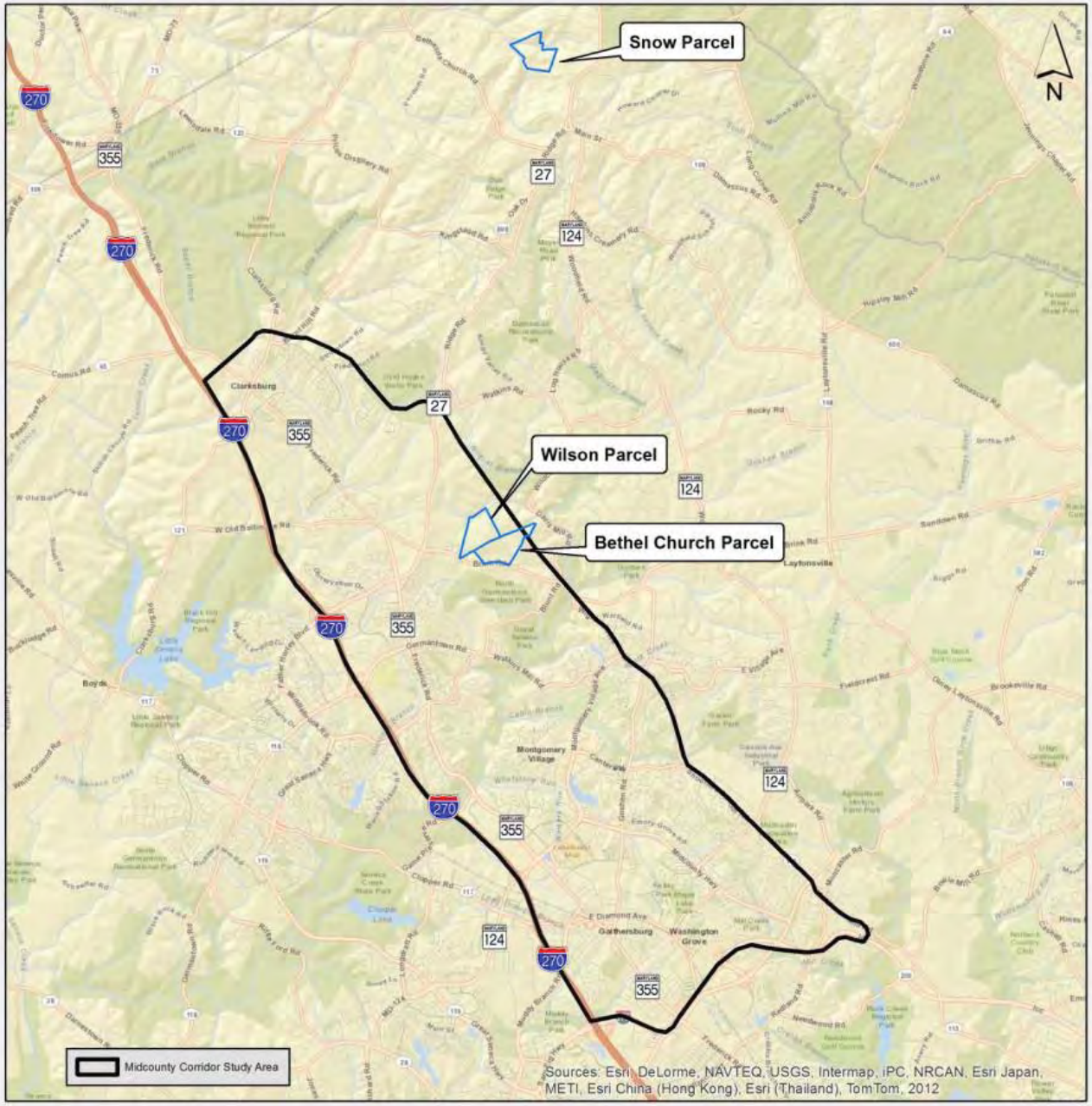
Potential Park Impacts

Alternative	2	4 Mod	5	8A	8B	8D	9A	9B	9D
M-NCPPC Parkland Impacts (acres)	0	15.4	0.2	43.3	28.7	27.2	45.5	30.9	29.9
Total Forest Impacts (acres)	0	31.0	2.0	57.6	52.5	61.4	72.9	67.7	76.7
Total Forested M-NCPPC Parkland Impacts (acres)	0	8.35	2.0	41.0	26.5	25.5	43.3	28.7	27.7

Site Overview

Three sites being investigated:

- Bethel Church Property
- Wilson Property
- Snow Property



Bethel Church Property

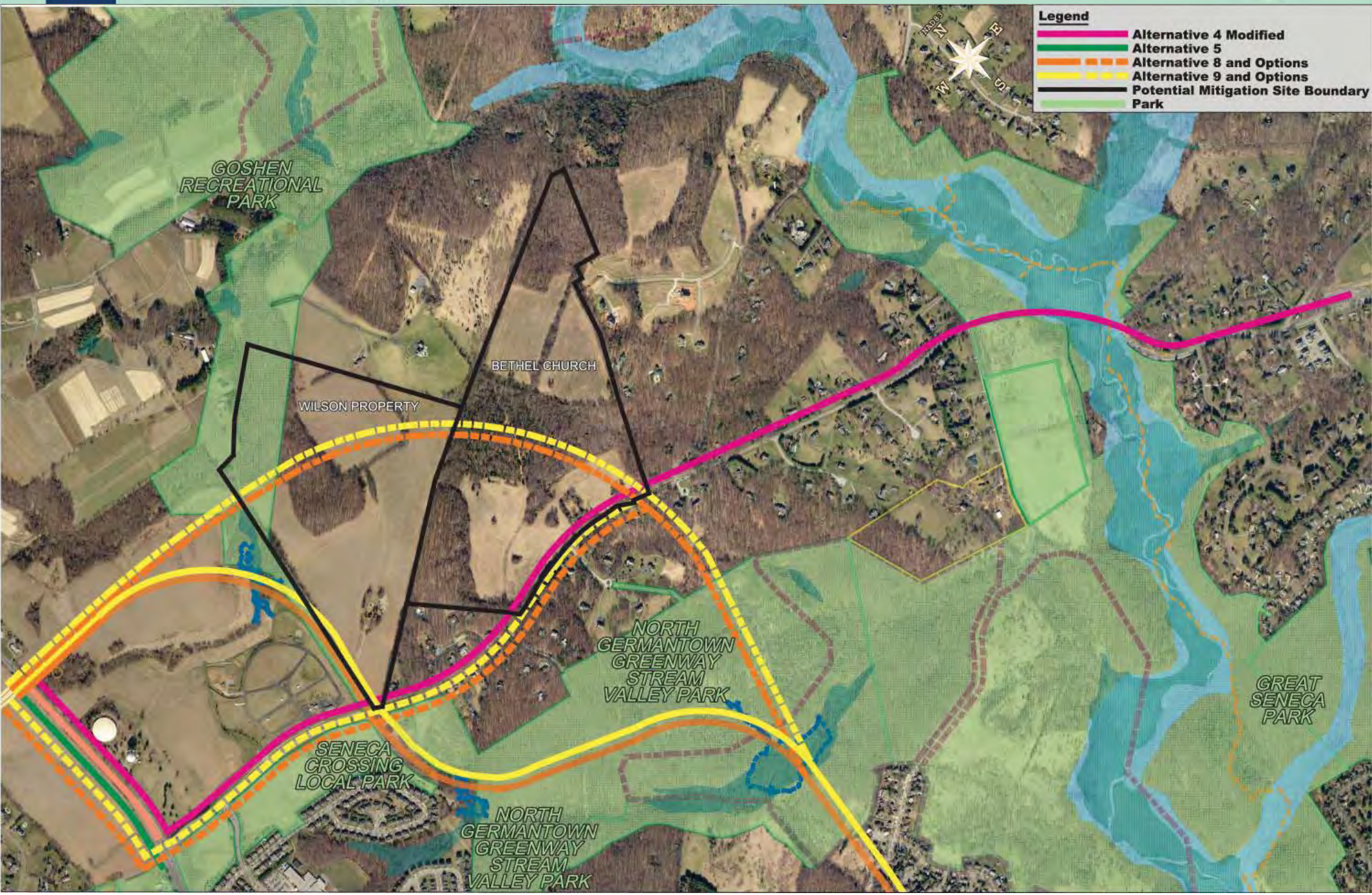
- 119-acre site, 66 acres forested
- Bounded on the north by Wilson property and residents of Wildcat Road
- Brink Road forms southern boundary
- Residences on Davis Mill Road located at the eastern boarder
- Residences on Treva Court located at the western boarder
- Surrounding land use is large-tract rural residential development and agriculture
- Located near the North Germantown Greenway

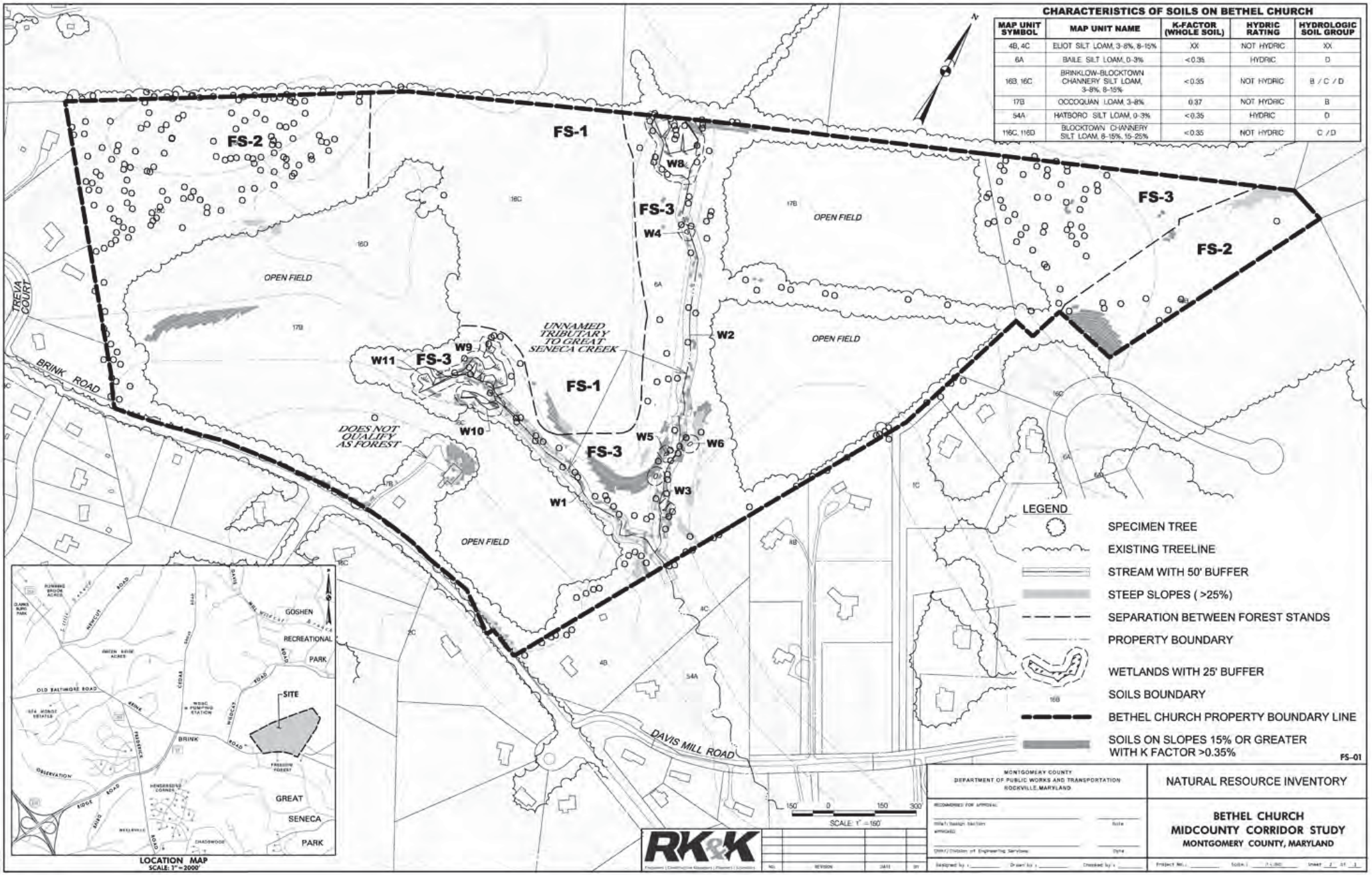
Montgomery County Department of Transportation

MidCounty Corridor Study

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION

http://www.montgomerycountymd.gov/midcountycorridorstudy





CHARACTERISTICS OF SOILS ON BETHEL CHURCH

MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP
4B, 4C	ELIOT SILT LOAM, 3-8%, 8-15%	XX	NOT HYDRIC	XX
6A	BAILE SILT LOAM, 0-3%	<0.35	HYDRIC	D
16B, 16C	BRINKLOW-BLOCKTOWN CHANNERY SILT LOAM, 3-8%, 8-15%	<0.35	NOT HYDRIC	B / C / D
17B	OCCOQUAN LOAM, 3-8%	0.37	NOT HYDRIC	B
54A	HATBORO SILT LOAM, 0-3%	<0.35	HYDRIC	D
116C, 116D	BLOCKTOWN CHANNERY SILT LOAM, 8-15%, 15-25%	<0.35	NOT HYDRIC	C / D

LEGEND

- SPECIMEN TREE
- EXISTING TREELINE
- STREAM WITH 50' BUFFER
- STEEP SLOPES (>25%)
- SEPARATION BETWEEN FOREST STANDS
- PROPERTY BOUNDARY
- WETLANDS WITH 25' BUFFER
- SOILS BOUNDARY
- BETHEL CHURCH PROPERTY BOUNDARY LINE
- SOILS ON SLOPES 15% OR GREATER WITH K FACTOR >0.35%

FS-01

LOCATION MAP
SCALE: 1" = 2000'

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

NATURAL RESOURCE INVENTORY

BETHEL CHURCH
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

RK&K

Bethel Church
Forest Stands

Forest Retention Value Rating Characteristics

High Retention Value	Intermittent and perennial streams and their forest buffers
	Slopes > 25%
	Nontidal wetlands and buffers
	Erodible soils on slopes > 25%
	100-year floodplains
	Habitat for rare, threatened and endangered (RTE) species or County Watchlist Species
	Large contiguous forest tracts especially those w/ FIDS habitat
	Forest stands w/ multiple specimen trees
	Forest with County Green infrastructure
Moderate Retention Value	Stands with good structural diversity
	Corridor +300' foot wide
	Forest stream buffers
	Tree buffers between incompatible land uses
	>24" dbh trees
Low Retention Value	Stands with poor structural diversity
	Stands with moderate to high exotic/ invasive plant cover

Bethel Church – Forest Stand 1

Bethel Church – Forest Stand 1

Bethel Church – Forest Stand 2

Bethel Church – Forest Stand 2

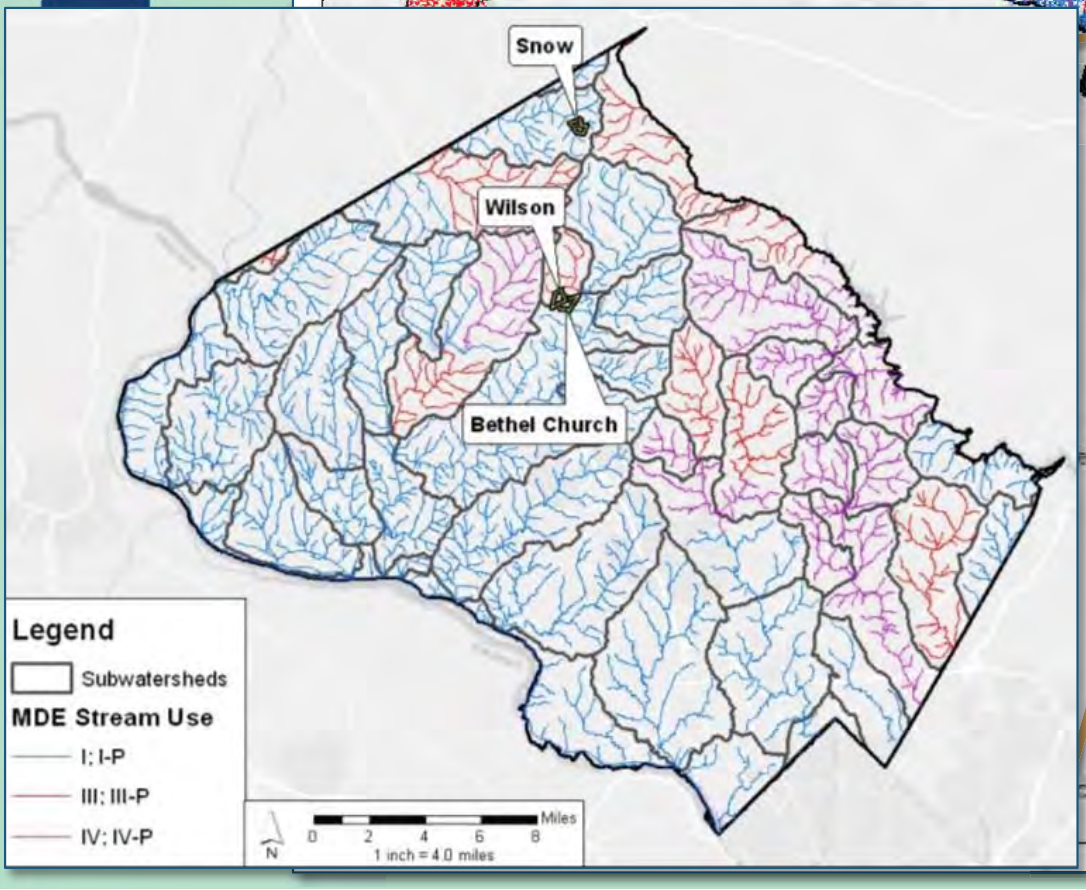
Bethel Church – Forest Stand 2

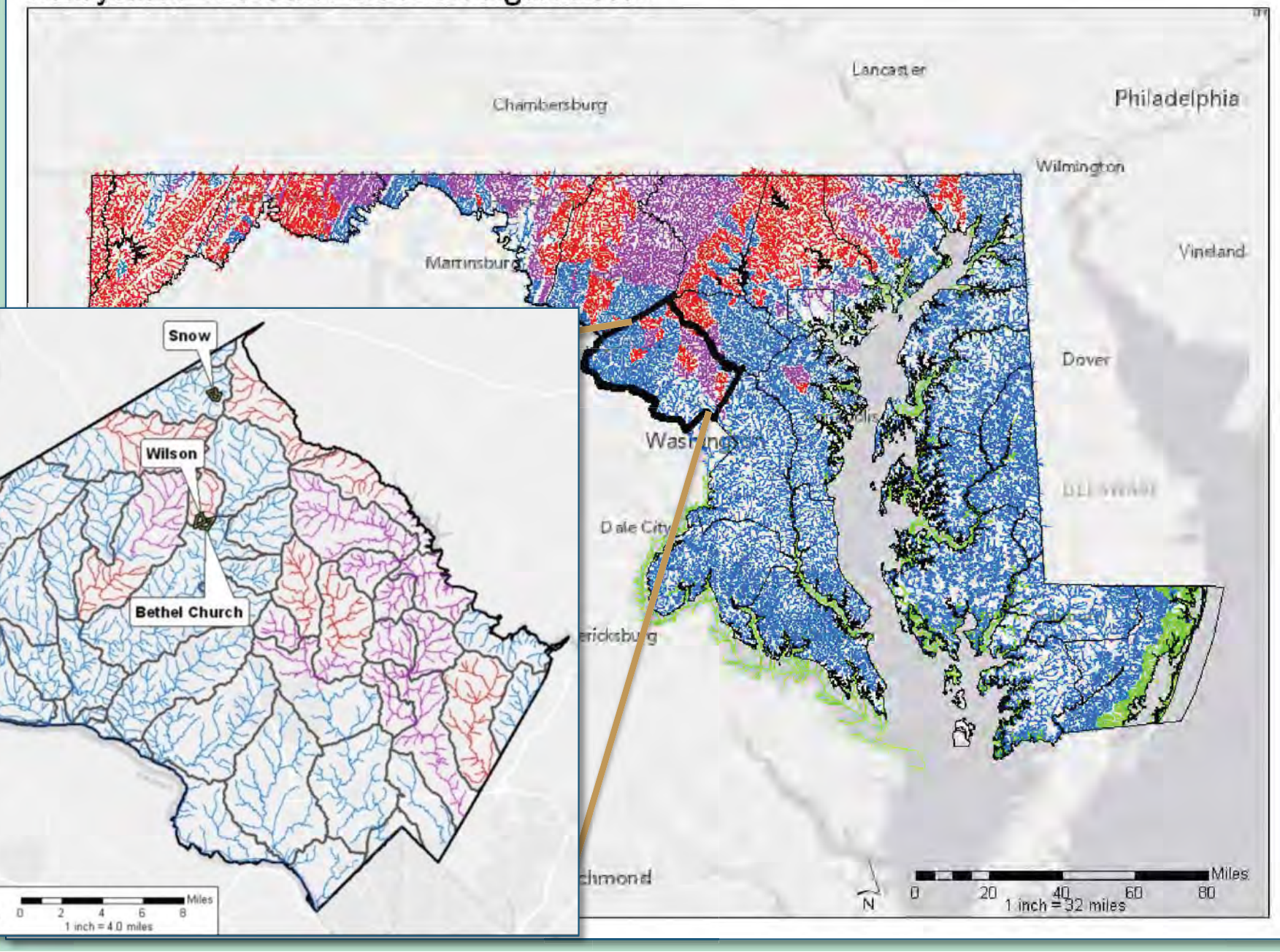
Bethel Church – Forest Stand 3

Bethel Church – Forest Stand 3

Bethel Church
Wetlands and Waterways

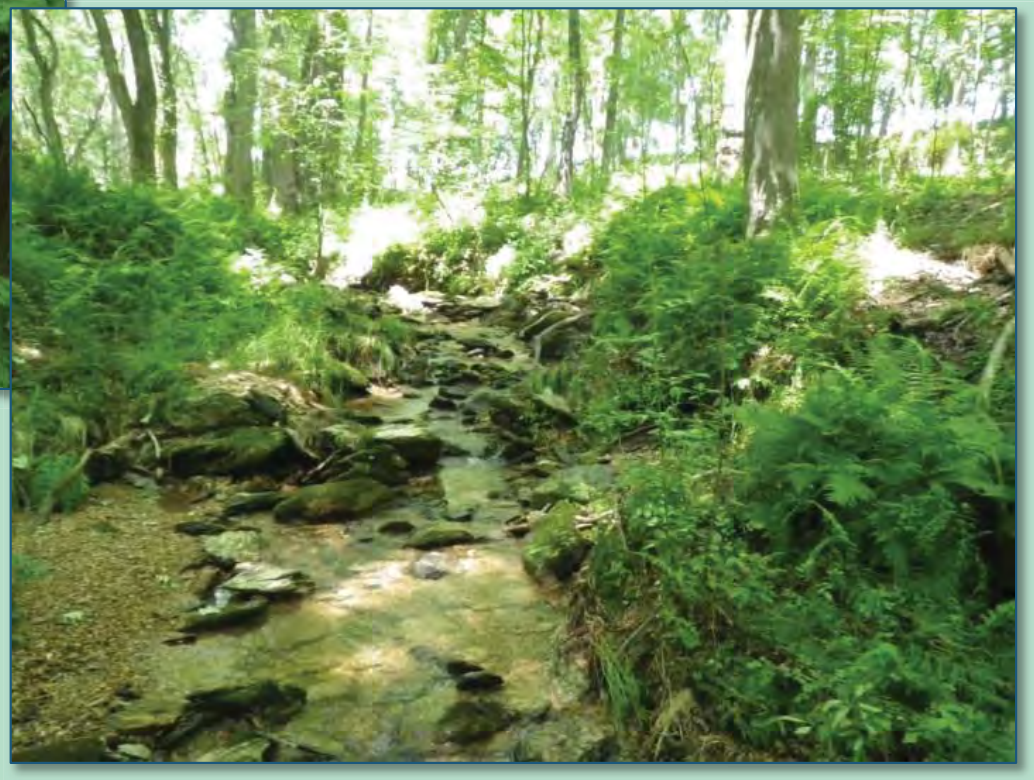
Maryland Stream Use Designations





Bethel Church – W1: Tributary to Great Seneca Creek

Bethel Church – W2: Tributary to Great Seneca Creek



Bethel Church – W3-W6

Bethel Church – W8

Bethel Church – W9-W10

Bethel Church – W11

Bethel Church - Unique Features

- Located near the North Germantown Greenway
- Unique Plants
- Good wildlife habitat

Bethel Church - Unique Features

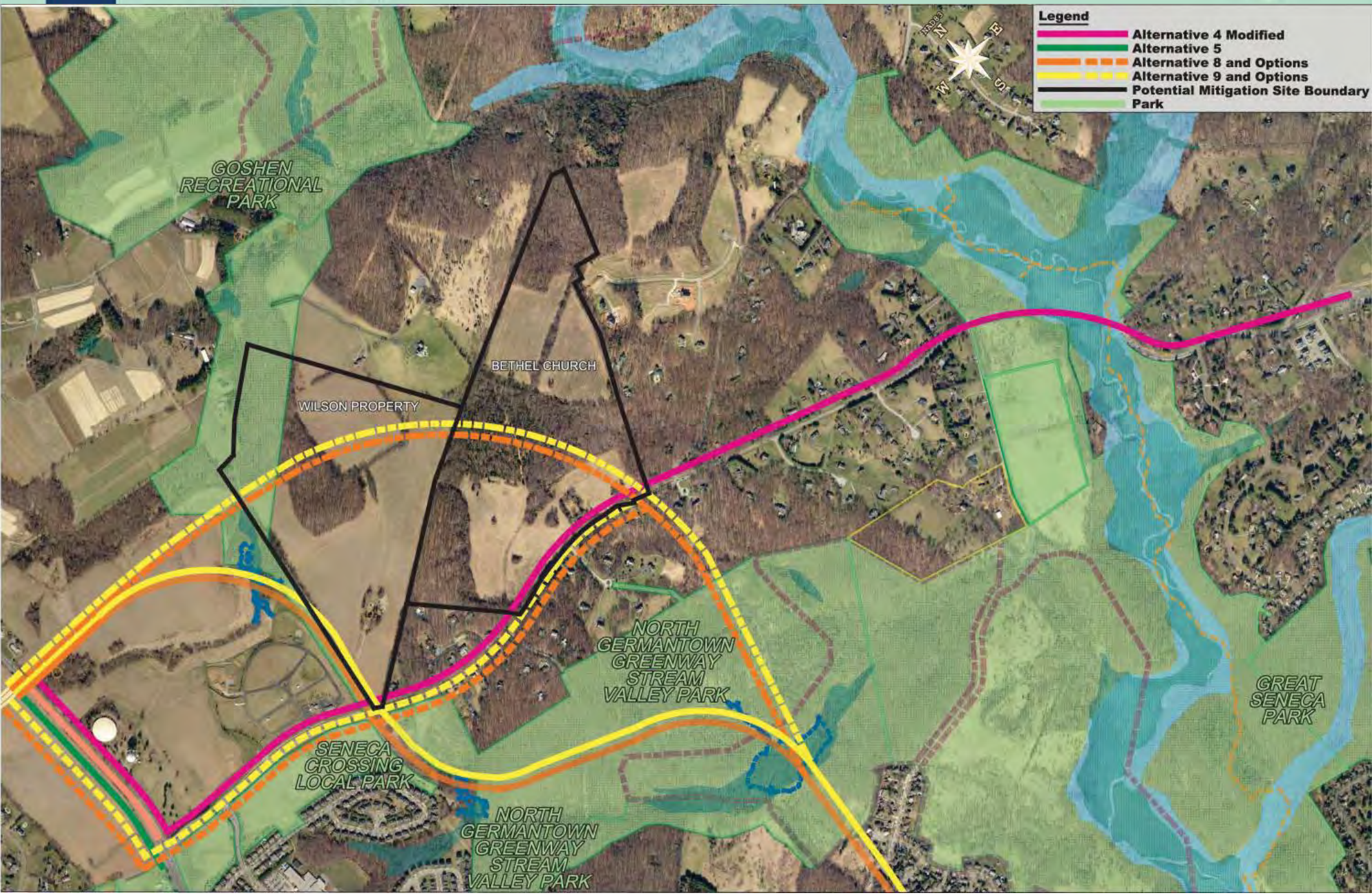
- Seep fed wetlands
- 397 Specimen Trees

Montgomery County Department of Transportation

MidCounty Corridor Study

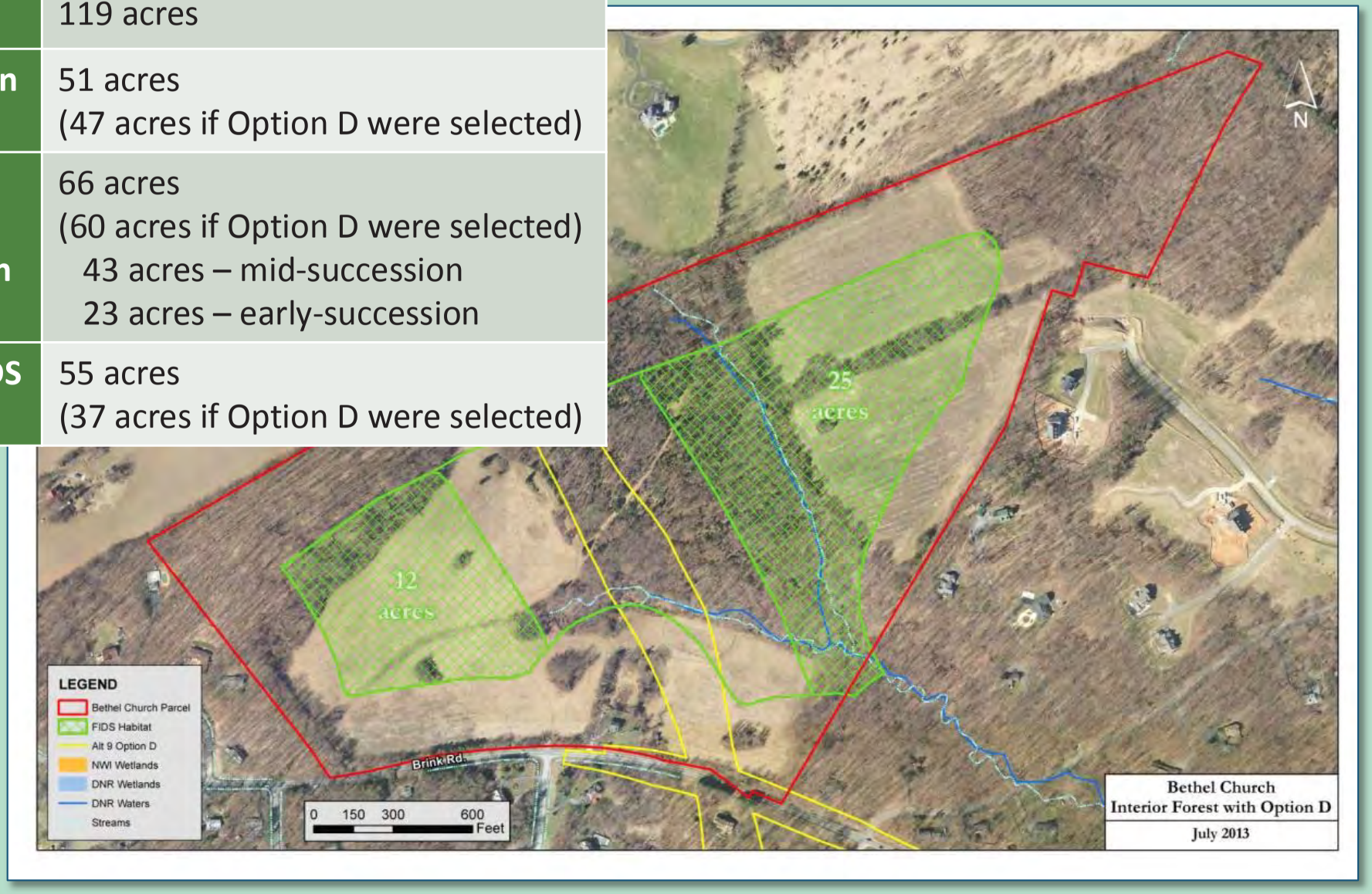
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION

http://www.montgomerycountymd.gov/midcountycorridorstudy



Bethel Church – Forest Mitigation Potential

Parcel Area	119 acres
Reforestation Potential	51 acres (47 acres if Option D were selected)
Forest Preservation	66 acres (60 acres if Option D were selected) 43 acres – mid-succession 23 acres – early-succession
Potential FIDS Habitat	55 acres (37 acres if Option D were selected)



Wilson Property

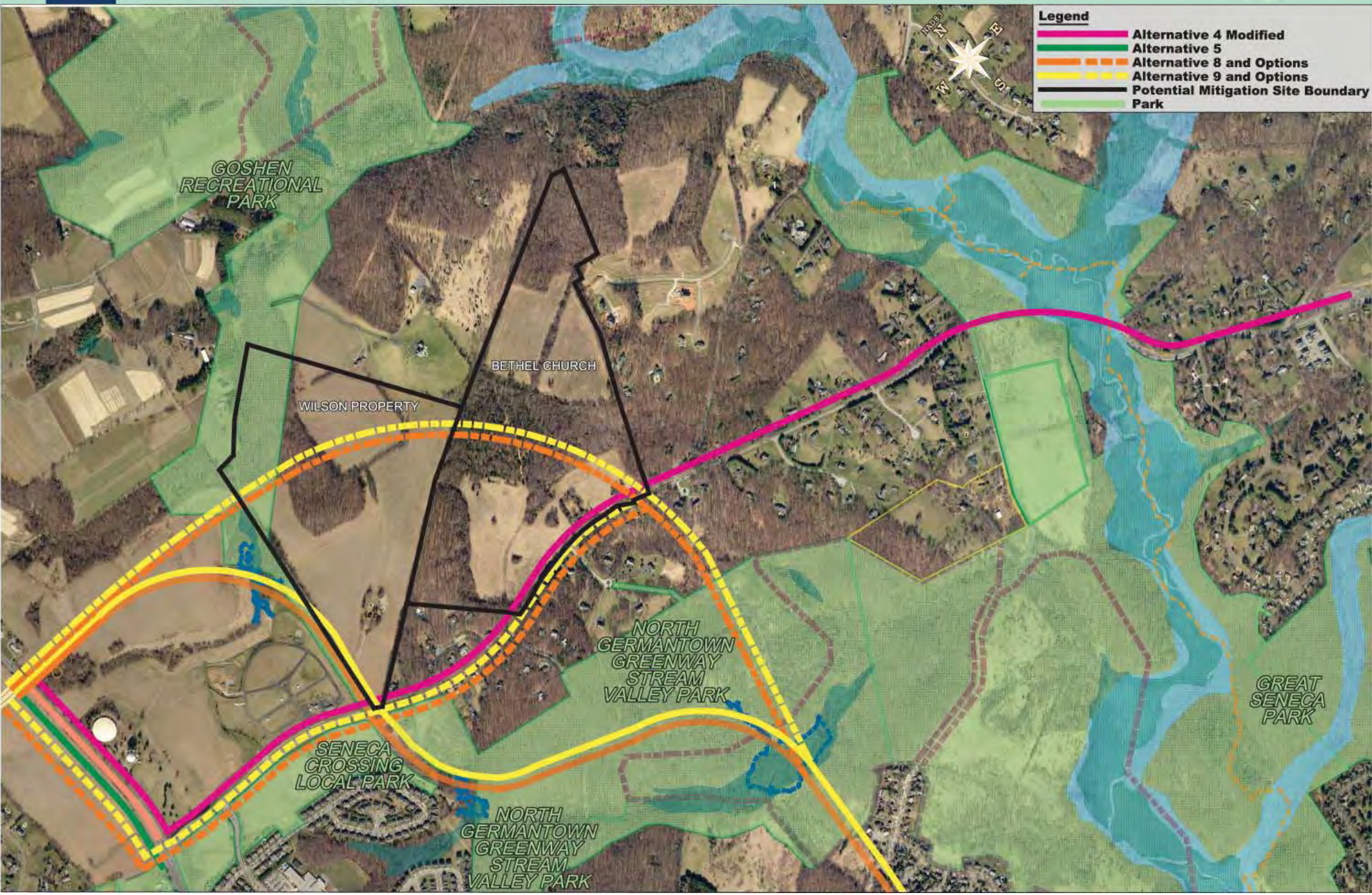
- 105-acre site, 34 acres forested
- Northeast of Brink Road and Wildcat Road intersection
- Bounded on the north by an unnamed tributary to Wildcat Branch
- Residences on Treva Court and the Bethel Church property at southern boundary
- Residences at 22001 and 22005 Wildcat Road at east boundary
- To the west, bounded by Wildcat Road
- Surrounding land use - agriculture, large-tract rural residential development, and a cemetery
- Located opposite the Seneca Crossing Local Park

Montgomery County Department of Transportation

MidCounty Corridor Study

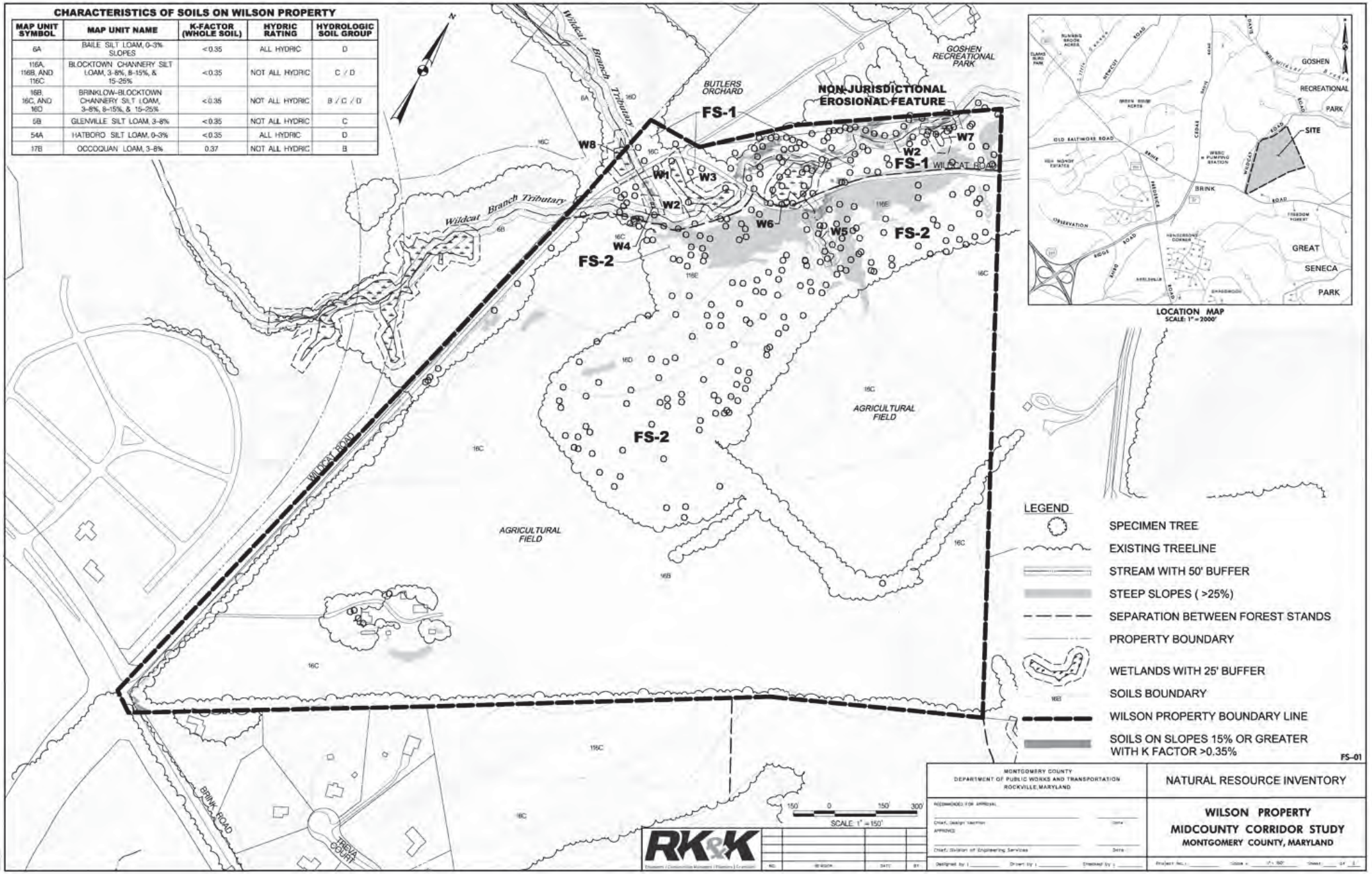
MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION

http://www.montgomerycountymd.gov/midcountycorridorstudy



CHARACTERISTICS OF SOILS ON WILSON PROPERTY

MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP
6A	BAILE SILT LOAM, 0-3% SLOPES	<0.35	ALL HYDRIC	D
116A, 116B, AND 116C	BLOCKTOWN CHANNERY SILT LOAM, 3-8%, 8-15%, & 15-25%	<0.35	NOT ALL HYDRIC	C / D
16B, 16C, AND 16D	BRINKLOW-BLOCKTOWN CHANNERY SILT LOAM, 3-8%, 8-15%, & 15-25%	<0.35	NOT ALL HYDRIC	B / C / D
5B	GLENVILLE SILT LOAM, 3-8%	<0.35	NOT ALL HYDRIC	C
54A	HATBORO SILT LOAM, 0-3%	<0.35	ALL HYDRIC	D
17B	OCCOQUAN LOAM, 3-8%	0.37	NOT ALL HYDRIC	B



FS-01

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

NATURAL RESOURCE INVENTORY

WILSON PROPERTY
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

RK&K

Wilson Property Forest Stands

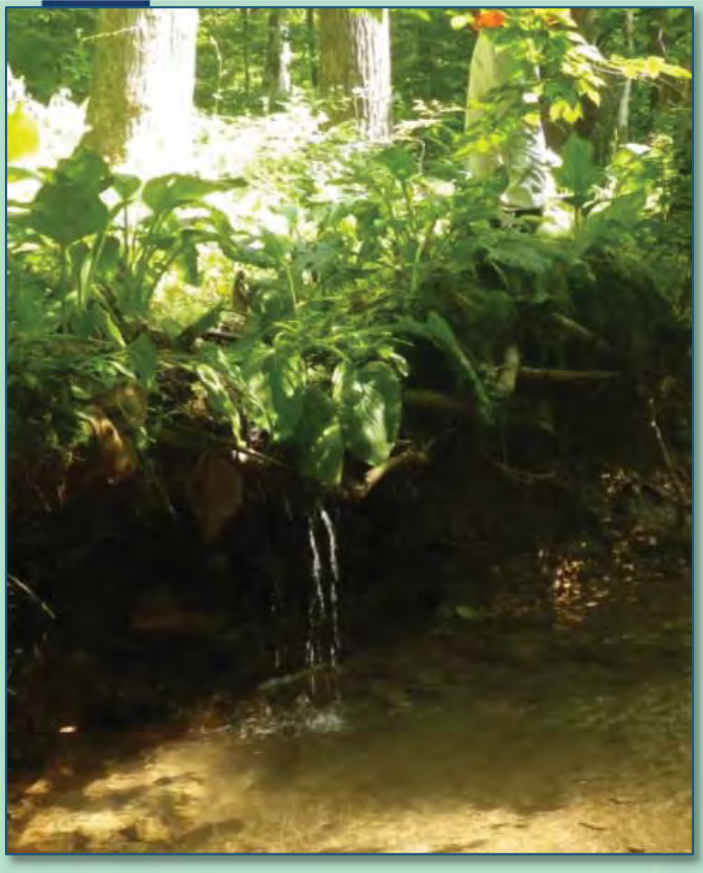
Wilson Property– Forest Stand 1

Wilson Property– Forest Stand 1

Wilson Property– Forest Stand 2

Wilson Property– Forest Stand 2

Wilson Property
Wetlands and Waterways



Wilson Property - W1: Wildcat Branch Tributary

Wilson Property – W2: Wildcat Branch Tributary

Wilson Property – W3 & W4

Wilson Property – W5

Wilson Property – W6

Wilson Property – W7

Wilson Property – W8

Wilson Property Concerns

Wilson Property Unique Features

- Proximity to North Germantown Greenway & Goshen Recreation Park
- Wetland Seeps & Unique Stream Features
- Use III-P tributaries to Wildcat Branch

Wilson Property Unique Features

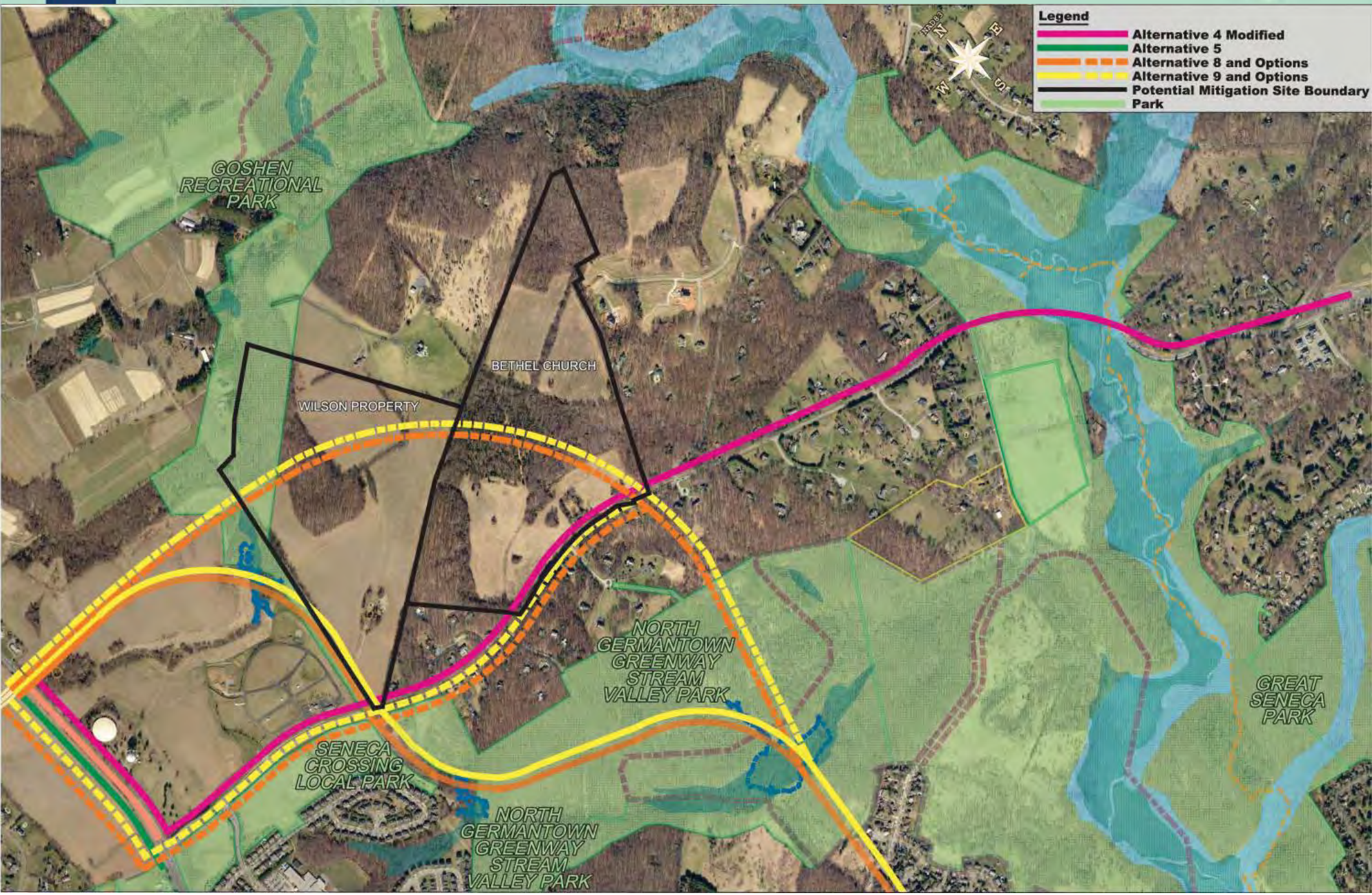
- 298 Specimen Trees
- Good wildlife habitat

Montgomery County Department of Transportation

MidCounty Corridor Study

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION

http://www.montgomerycountymd.gov/midcountycorridorstudy



Wilson Property – Forest Mitigation Potential

Parcel Area	105 acres
Reforestation Potential	71 acres (64 acres if Option D were selected)
Forest Preservation	34 acres mid-succession (29 acres if Option D were selected)
Potential FIDS Habitat	60 acres (28 acres if Option D were selected)

Snow Property

- 103-acre site, 75 acres forested
- Located west of Ridge Road (MD 27) and south of Bellison Road.
- Bounded on all sides by large privately owned parcels
- Understand M-NCPPC is considering acquiring adjacent parcels
- Surrounding land use consists of agricultural and large-tract rural residential development

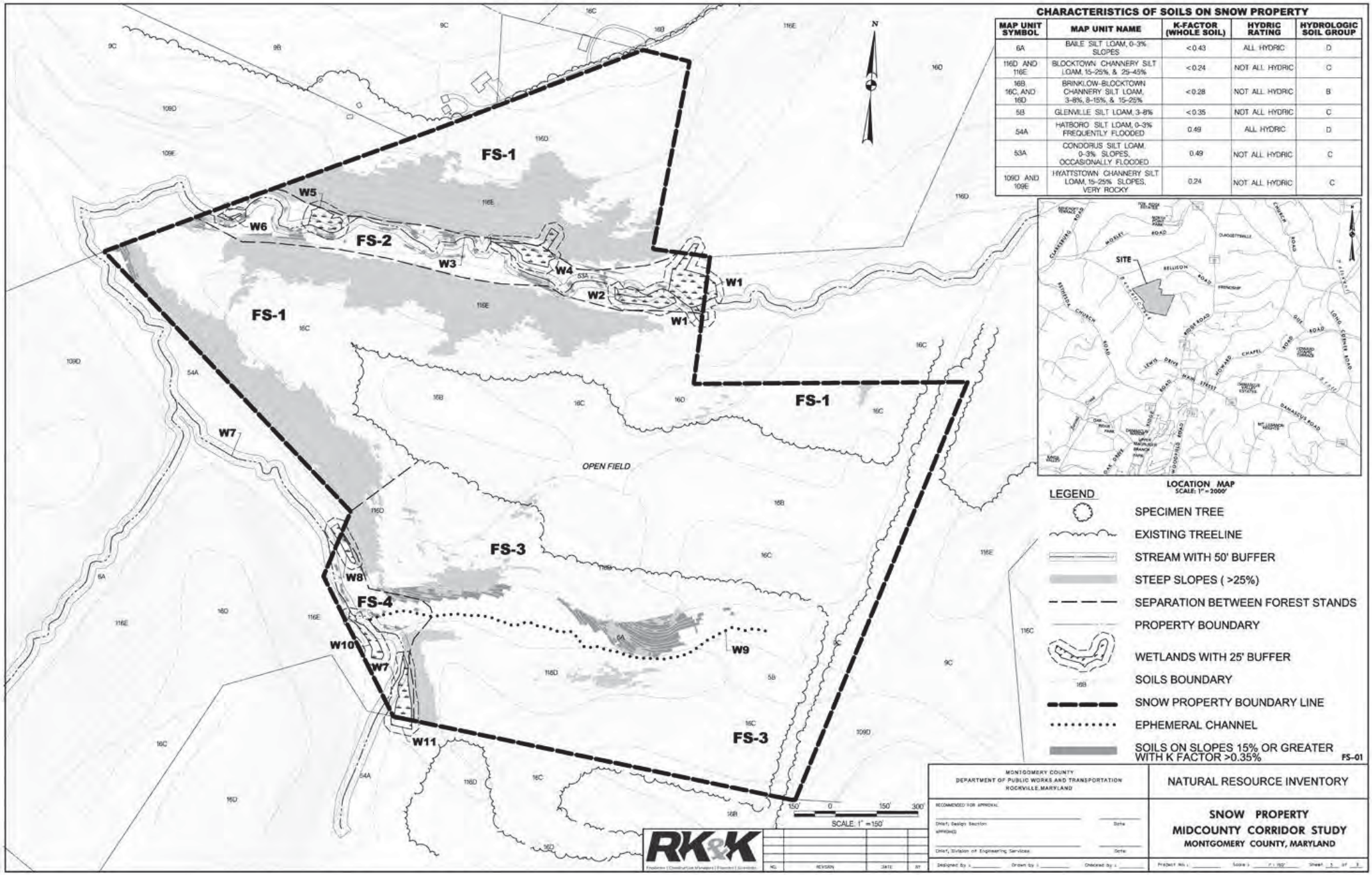
Montgomery County Department of Transportation

MidCounty Corridor Study

MONTGOMERY COUNTY DEPARTMENT OF TRANSPORTATION

http://www.montgomerycountymd.gov/midcountycorridorstudy

MONTGOMERY COUNTY 1776 MARYLAND



CHARACTERISTICS OF SOILS ON SNOW PROPERTY

MAP UNIT SYMBOL	MAP UNIT NAME	K-FACTOR (WHOLE SOIL)	HYDRIC RATING	HYDROLOGIC SOIL GROUP
6A	BAILE SILT LOAM, 0-3% SLOPES	<0.43	ALL HYDRIC	D
116D AND 116E	BLOCKTOWN CHANNERY SILT LOAM, 15-25% & 25-45%	<0.24	NOT ALL HYDRIC	C
16B, 16C, AND 16D	BRINKLOW-BLOCKTOWN CHANNERY SILT LOAM, 3-8%, 8-15%, & 15-25%	<0.28	NOT ALL HYDRIC	B
5B	GLENVILLE SILT LOAM, 3-8%	<0.35	NOT ALL HYDRIC	C
54A	HATBORO SILT LOAM, 0-3% FREQUENTLY FLOODED	0.49	ALL HYDRIC	D
53A	CONDORUS SILT LOAM, 0-3% SLOPES, OCCASIONALLY FLOODED	0.49	NOT ALL HYDRIC	C
109D AND 109E	HYATTSTOWN CHANNERY SILT LOAM, 15-25% SLOPES, VERY ROCKY	0.24	NOT ALL HYDRIC	C

LOCATION MAP
SCALE: 1" = 2000'

LEGEND

- SPECIMEN TREE
- EXISTING TREELINE
- STREAM WITH 50' BUFFER
- STEEP SLOPES (>25%)
- SEPARATION BETWEEN FOREST STANDS
- PROPERTY BOUNDARY
- WETLANDS WITH 25' BUFFER
- SOILS BOUNDARY
- SNOW PROPERTY BOUNDARY LINE
- EPHEMERAL CHANNEL
- SOILS ON SLOPES 15% OR GREATER WITH K FACTOR >0.35%

FS-01

MONTGOMERY COUNTY
DEPARTMENT OF PUBLIC WORKS AND TRANSPORTATION
ROCKVILLE, MARYLAND

NATURAL RESOURCE INVENTORY

RECOMMENDED FOR APPROVAL:
Chief, Design Section — Date
APPROVED:
Chief, Division of Engineering Services — Date
Designed By: _____ Drawn by: _____ Checked by: _____

SNOW PROPERTY
MIDCOUNTY CORRIDOR STUDY
MONTGOMERY COUNTY, MARYLAND

Project No.: _____ Scale: 1" = 150' Sheet 1 of 1

RK&K
Engineers | Construction Managers | Planners | Scientists

NO.	REVISION	DATE	BY

Snow Property
Forest Stands

Snow Property -- Forest Stand 1

Snow Property -- Forest Stand 2

Snow Property -- Forest Stand 3

Snow Property -- Forest Stand 4

Snow Property Wetlands and Waterways

Snow Property – W1-2

Snow Property – W3:Bennett Creek Tributary

Snow Property – W4-6

Snow Property – W7: Bennett Creek

Snow Property – W8-11

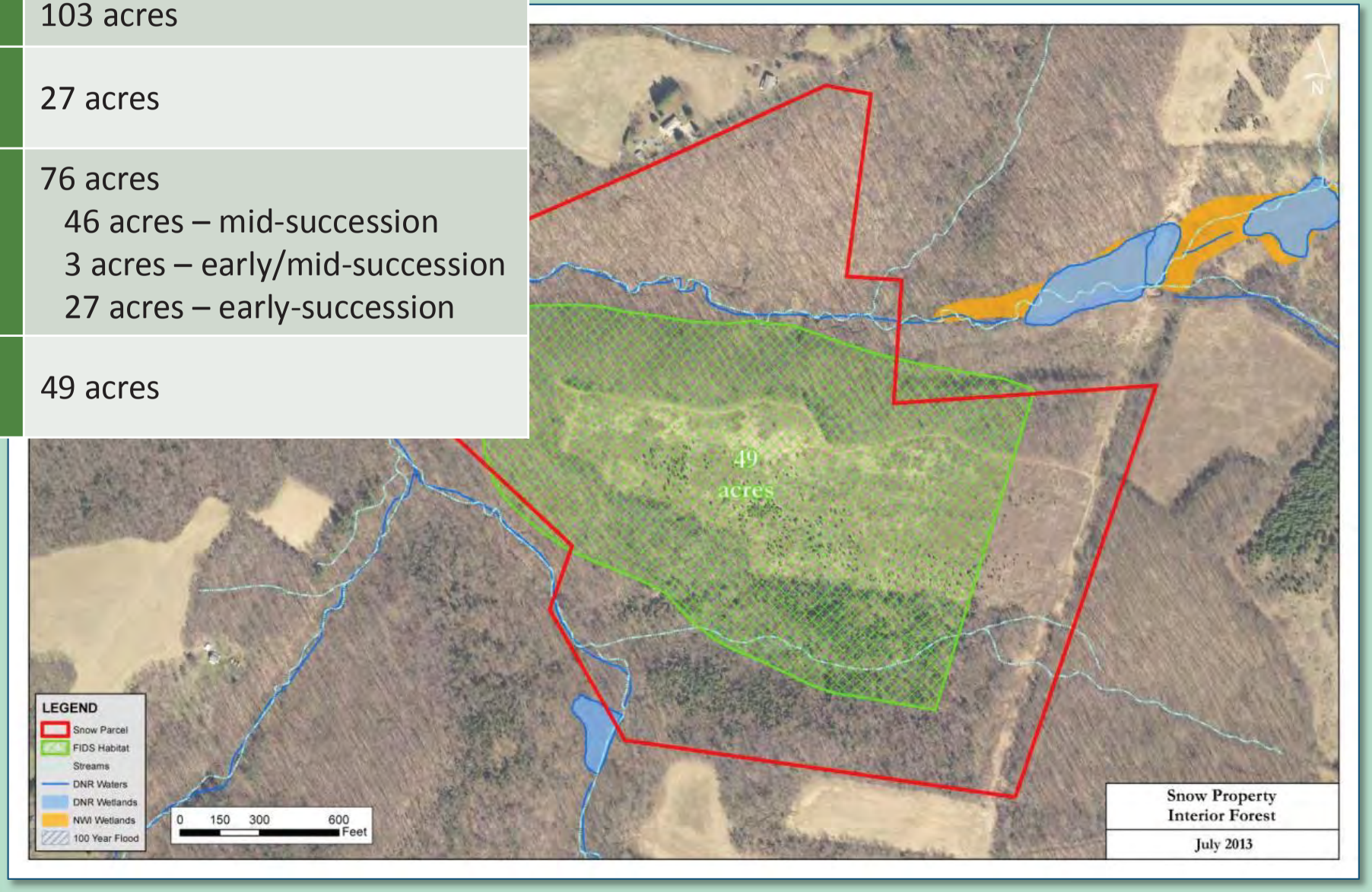
Snow Property Unique Features

- Wetlands originating from slope seeps
- Unusual Plants
- Good wildlife habitat

Snow Property – Park Connectivity

Snow Property – Forest Mitigation Potential

Parcel Area	103 acres
Reforestation Potential	27 acres
Forest Preservation	76 acres 46 acres – mid-succession 3 acres – early/mid-succession 27 acres – early-succession
Potential FIDS Habitat	49 acres



Summary of Mitigation Potential

	Bethel Church Property		Wilson Property		Snow Property
	w/Opt D	w/o Opt D	w/ Opt D	w/o Opt D	
Acreage to be Conveyed to M-NCPPC	109	119	93	105	103
Reforestation Potential	47	51	64	71	27
Forest Preservation	42 Mid Suc 18 Early Suc **60 Total**	43 Mid Suc 23 Early Suc **66 Total**	29 Mid Suc **29 Total**	34 Mid Suc **34 Total**	46 Mid Suc 3 Early-Mid Suc 27 Early Suc **76 Total**
Potential FIDS Habitat	37	55	28	60	49
Watershed	Tributaries to Great Seneca Creek, Use I-P		Wildcat Branch, Use III-P		Bennett Creek, Use I-P

FEEDBACK

Next Steps:

- Review Mitigation Site Reports and provide comments/input by August 15
- MCDOT cannot ensure that a preferred site will be selected
- Agency input is helpful prior to negotiations for site acquisition
- Negotiations would likely begin late summer/early fall

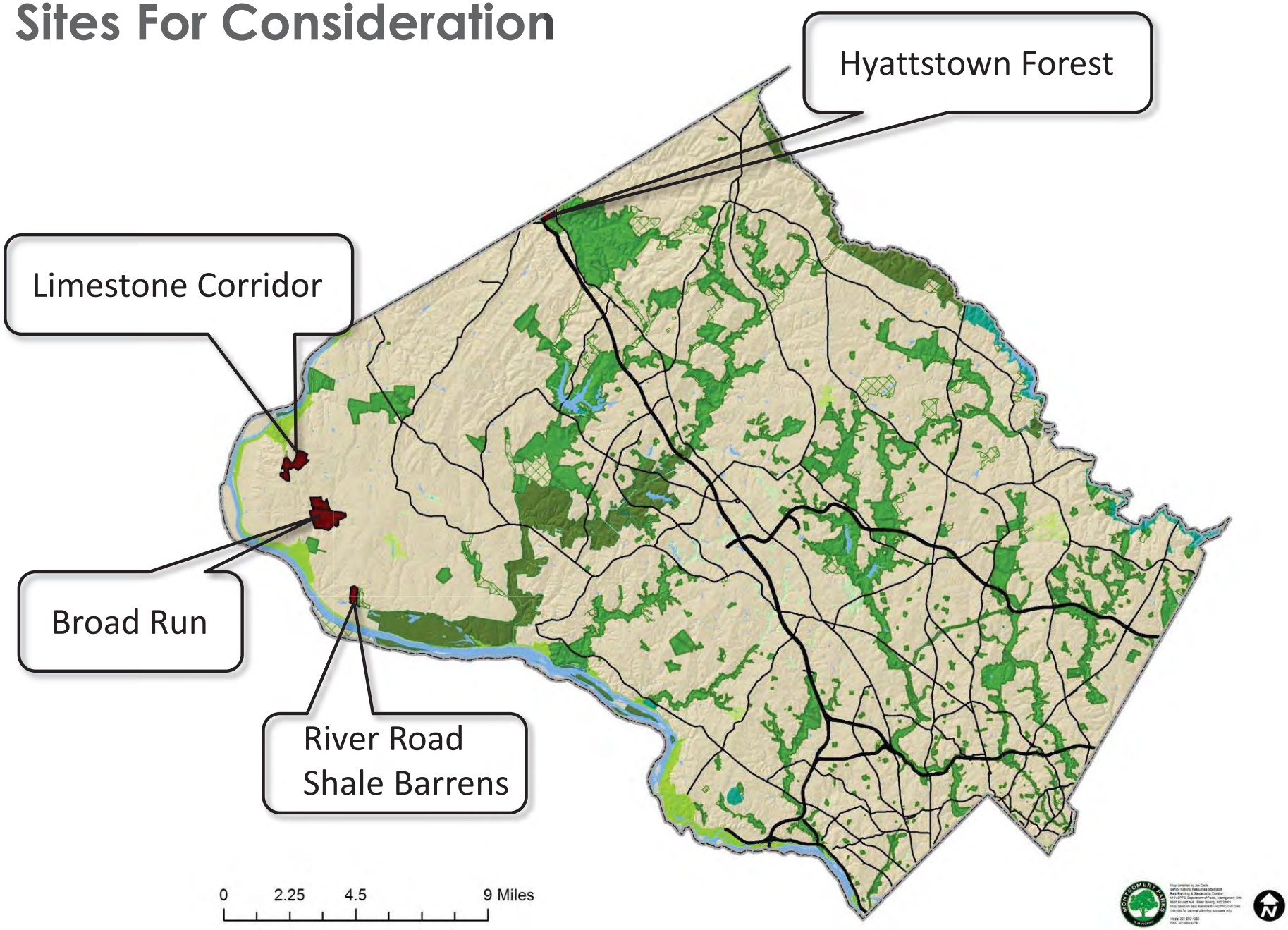
Park Planning & Stewardship Division

Potential mitigation sites for M-83 project impacts to M-NCPPC parkland

M-NCPPC Montgomery Parks

September 5, 2013

Sites For Consideration



Staff Proposal

Property Name	Size	Master Plan Designation
River Road Shale Barrens (Goldberg and Wilmot Properties)	89.18 acres	Legacy Open Space
Hyattstown Forest (Signal Knob)	69.46 acres	Legacy Open Space
Limestone Corridor of Broad Run	263.17 acres	Legacy Open Space
Broad Run (Beverly Properties)	519.29 acres	Legacy Open Space

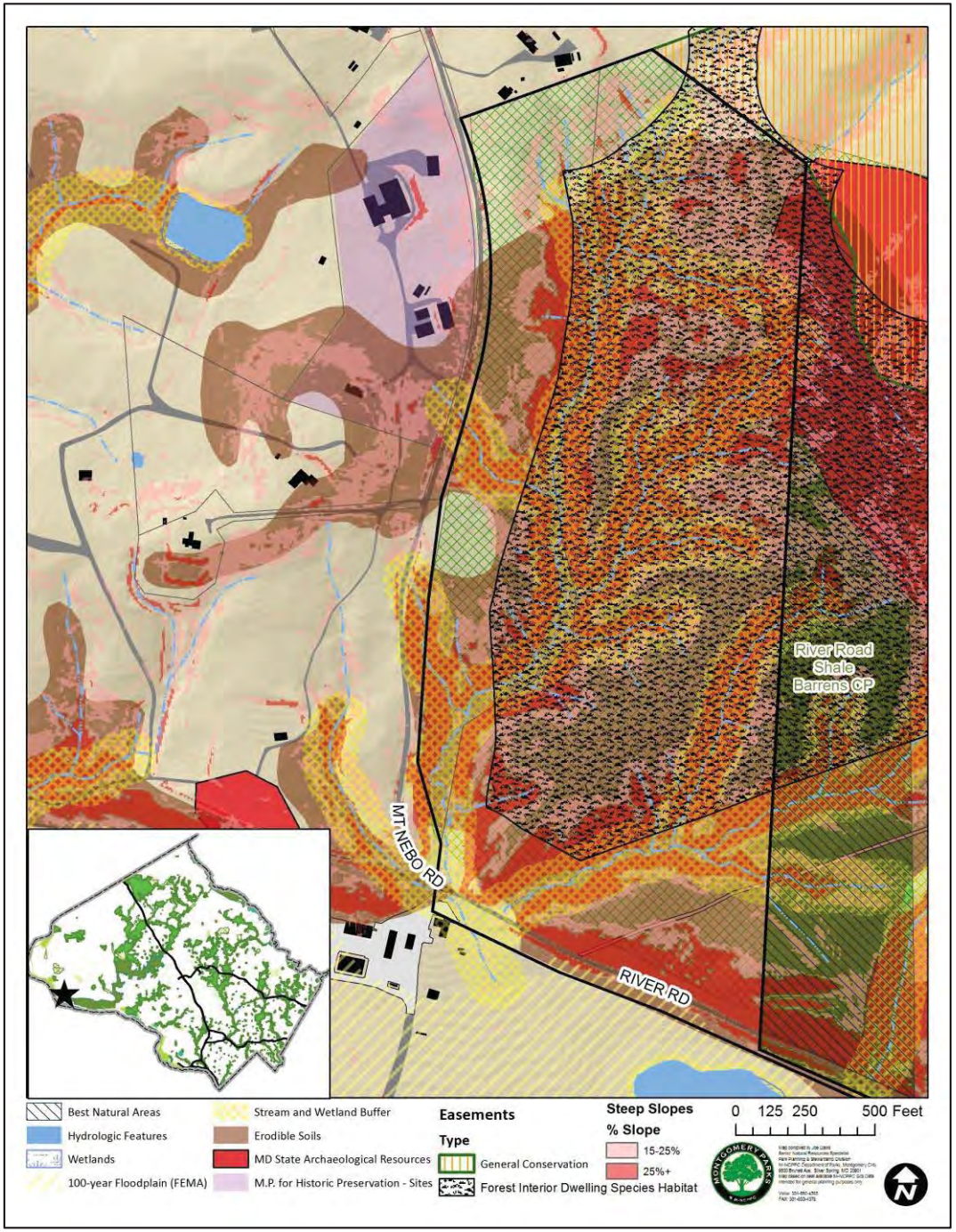
River Road Shale Barrens

Quantitative Information

- *89.18 acres*
- *15,406 ft. of Streams*
- *42.38 acres Stream Buffer*
- *87.06 acres Forest*
- *54.12 acres Forest Interior Dwelling Species Habitat*
- *1 possible archaeological resource*

Qualitative Information

- *Unique plant community supported by shale bedrock*
- *Known locations of rare, threatened, endangered or watch-list species*
- *Expands existing Best Natural Area*
- *Completes Conservation Park experience with space for trailheads and parking*



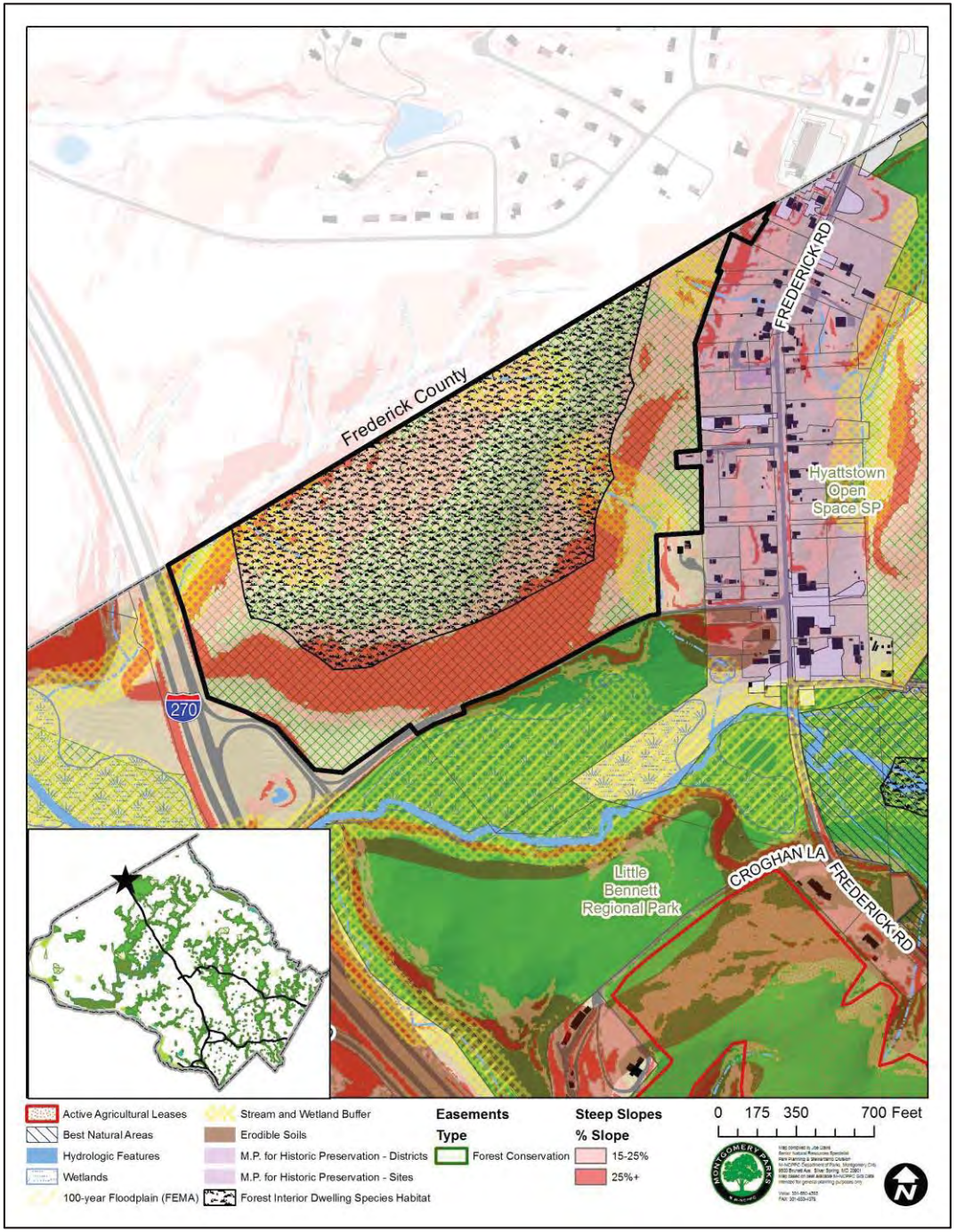
Hyattstown Forest

Quantitative Information

- *69.46 acres*
- *1,825 ft. of Streams*
- *13.97 acres Stream Buffer*
- *66.20 acres Forest*
- *37.64 acres Forest Interior Dwelling Species Habitat*

Qualitative Information

- *Excellent upland forest community*
- *Known locations of rare, threatened, endangered or watch-list species*
- *Abundant anecdotal evidence for presence of significant cultural resources*



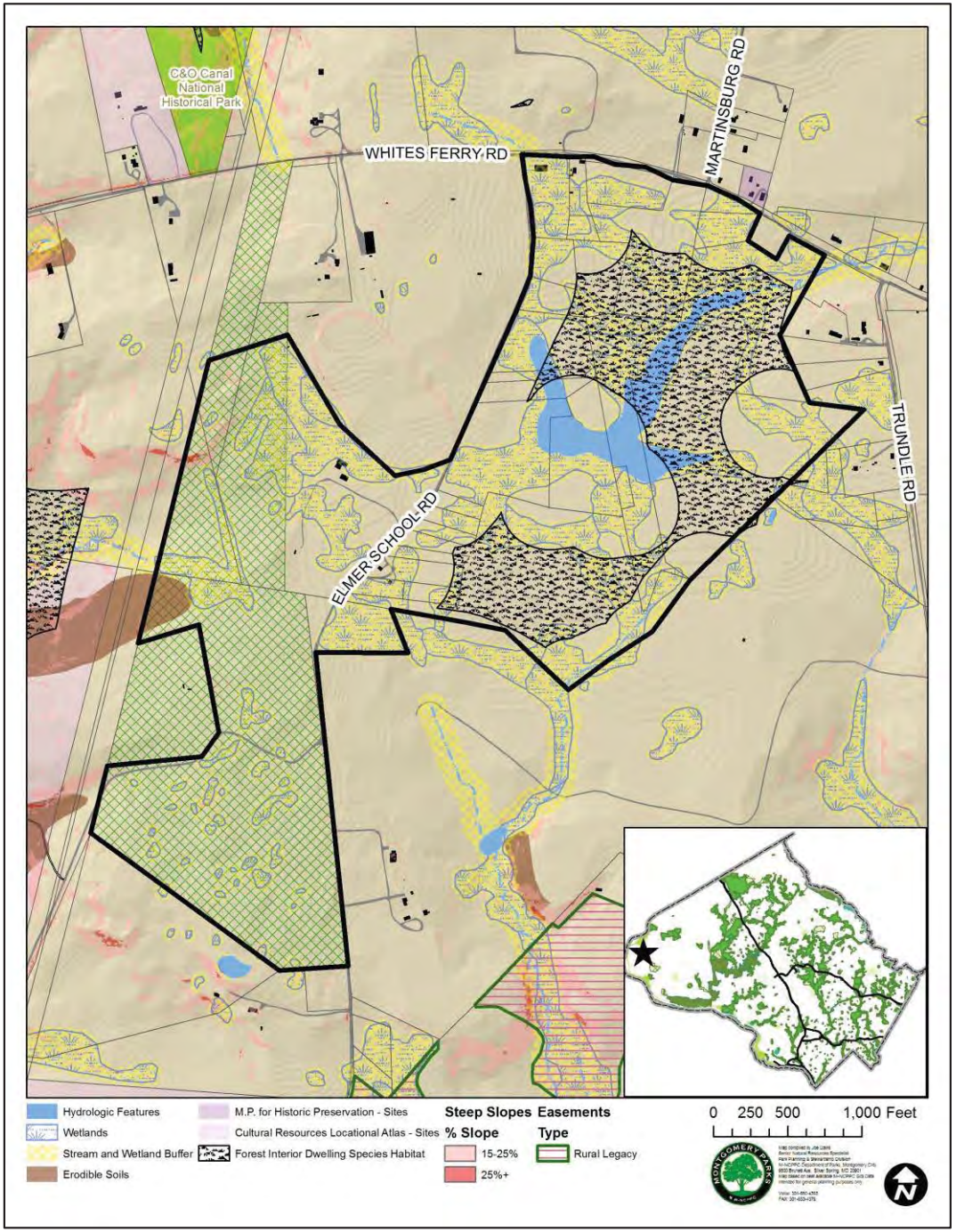
Limestone Corridor

Quantitative Information

- *263.17 acres*
- *1,323 ft. of Streams*
- *8.31 acres Stream Buffer*
- *101.34 acres Wetlands*
- *129.76 acres Wetland Buffer*
- *235.23 acres Forest*
- *57.34 acres Forest Interior Dwelling Species Habitat*

Qualitative Information

- *Unique plant and wetland community supported by limestone bedrock*
- *Known locations of rare, threatened, endangered or watch-list species*
- *Trail connection to C&O Canal & Broad Run*



Broad Run

Quantitative Information

- *519.29 acres*
- *31,982 ft. of Streams*
- *100.53 acres Stream Buffer*
- *21.26 acres Wetlands*
- *28.58 acres Wetland Buffer*
- *335.75 acres Forest*
- *183.17 acres Forest Interior Dwelling Species Habitat*
- *1-2 Historic Sites Listed on the Locational Atlas of Historic Sites*

Qualitative Information

- *Continues acquisition up the stream valley from existing parkland*
- *Provides connectivity for planned trail system*