Wetland Delineation

Dulles South High School

PINs 247-17-3577, 247-17-8636, 247-28-4151 (Portion), 248-37-9082, 248-37-9637, 248-38-2718, 248-47-8234, 248-47-8669, 248-47-9789, and 248-48-6530
Loudoun County, Virginia

February 16, 2010

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Executive Summary

The waters of the U.S., including wetlands, identified during this investigation for the Dulles South High School property were delineated by Bowman Consulting Group, Ltd. (BCG) according to the *Corps of Engineers' Wetlands Delineation Manual* (1987), and represent those areas that are most likely within the regulatory purview of the U.S. Army Corps of Engineers (USACE). Based on the field investigation conducted on January 13 and 20, 2010, there are approximately 515 linear feet of perennial stream, 1,985 linear feet of intermittent stream, 0.24 acre of palustrine emergent wetlands, and 0.04 acre of palustrine forested wetlands located within the limits of the property.

Property Description

The approximately 97.2-acre Dulles South High School property, identified as PINs 247-17-3577, 247-17-8636, 248-37-9082, 248-37-9637, 248-38-2718, 248-47-8234, 248-47-8669, 248-47-9789, 248-48-6530, and a portion of 247-28-4151, is located along either side of Goshen Road between #24751 and #24939, and north of Braddock Road in Loudoun County, Virginia. More generally, the property is located at 38°55'51"N Latitude and -77°34'05"W Longitude on the Arcola, VA USGS Quadrangle Map (see Appendix A for the USGS Quadrangle Map).

As shown in the Aerial Photograph included as Appendix B, the property includes several existing residences with maintained lawn/open areas, as well as relatively mature, mixed hardwood forest along the western and southern boundaries and mixed cedar and pine regrowth forest in the central and eastern portions. The majority of the property drains towards South Fork Broad Run, which bisects PIN 247-17-3577 and is located within the Broad Run-Lenah Run watershed (PL17) of Hydrologic Unit Code (HUC) 02070008 (Middle Potomac-Catoctin). PIN 248-38-2718, and a portion of 248-37-9637 drain towards an unnamed tributary to Bull Run, which is located within the (Upper) Bull Run-Chestnut Lick watershed in HUC 02070010 (Middle Potomac-Anacostia-Occoquan).

It should be noted that the waters of the U.S. and wetland boundaries on the western side of Goshen Road (formerly known as the Westport 2 Parcel) were previously delineated by Williamsburg Environmental Group and confirmed by the USACE during a Jurisdictional Determination that has recently expired (USACE Project No. 04-R3789). The waters of the U.S. and wetland boundaries located on PIN 247-28-4151 on the eastern side of Goshen Road were previously delineated by Wetland Studies and Solutions, Inc., and are part of the greater Stone Ridge project covered by VWP General Permit No. WP4-08-0748 and SPGP-01 No. 2007-964; these boundaries remain valid.

Methodology

The *Corps of Engineers Wetlands Delineation Manual* (1987) follows a three-parameter approach to identifying wetlands: hydrophytic vegetation, hydric soils, and hydrologic indicators. All three parameters normally must be present for an area to be considered a jurisdictional wetland in accordance with Section 404 of the Clean Water Act. Wetlands are then classified according to the Cowardin System, as described in *Classification of Wetlands and Deepwater Habitats of the United States* (1979). This is a hierarchical system, which aids resource managers and others by providing uniformity of concepts and terms used to define wetlands according to hydrologic, geomorphologic, chemical, and biological factors.

A preliminary evaluation of the three parameters was performed by BCG prior to the field investigation by examination of existing conditions and topographic mapping, the Arcola, VA USGS Quadrangle Map (Photoinspected 1981, see Appendix A), available aerial photography (see Appendix B), the U.S. Fish and Wildlife Service National Wetlands Inventory information obtained from the Wetlands Online Mapper (*http://www.fws.gov/wetlands/data/Mapper.html*, see Appendix C), and the *USDA Loudoun County, Virginia Soils Survey* (USDA Natural Resources Conservation Service, Web Soil Survey, *http://websoilsurvey.nrcs.usda.gov*, Survey Area Data: Version 9, November 17, 2009, see Appendix D). The reference information was verified by a site inspection conducted by BCG on January 13 and 20, 2010 to characterize soils, vegetation, and hydrology, and to define the boundaries of waters of the U.S., including wetlands, that may be present within the limits of investigation.

Soils:
A hydric soil is defined as a "soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part" (Federal Register, July 13, 1994). According to the USACE's Manual, common hydric soil indicators include the presence of organic soils, histic epipedon, hydrogen sulfide odor, aquic or peraquic moisture regime, reducing soil conditions, gleyed soils, soils with bright mottles and/or low matrix chroma of ≤ 2, concretions, or listing on hydric soils lists. The National Hydric Soils List for Loudoun County, Virginia, published by the USDA Natural Resources Conservation Service, was reviewed to determine if any of the mapped soils are classified as hydric. The *USDA Loudoun County, Virginia Soils Survey* maps the following soil types within the Project area (see Appendix D for the Soils Map):

Table 1: Soils Summary Table

Map Unit	Map Unit Name	Drainage Class [1]	National Hydric Soils List [2]	Hydric Component[2]
6A	Bowmansville silt loam, 0 to 2 percent slopes, occasionally flooded	PD	Yes	Bowmansville (85%)
14B	Manassas silt loam, 0 to 7 percent slopes	MWD	No	N/A
60C	Sycoline-Catlett complex, 7 to 15 percent slopes	SPD	Yes	Albano (5%)
62B	Sycolie-Kelly complex, 2 to 7 percent slopes	SPD	Yes	Albano (5%)
63A	Kelly silt loam 0 to 2 percent slopes	SPD	Yes	Albano (5%)
67B	Jackland and Haymarket soils, 2 to 7 percent slopes	WD	Yes	Waxpool (4%) Elbert (2%)
69A	Elbert silty clay loam, 0 to 2 percent slopes, frequently flooded	PD	Yes	Elbert (85%) Waxpool (5%)
70B	Leedsville cobbly silt loam, 2 to 7 percent slopes	WD	No	N/A

Map Unit	Map Unit Name	Drainage Class [1]	National Hydric Soils List [2]	Hydric Component[2]
73B	Penn silt loam, 2 to 7 percent slopes	WD	No	N/A
76B	Sudley-Oatlands complex 2 to 7 percent slopes	WD	No	N/A
76C	Oatlands gravelly silt loam, 7 to 15 percent slopes	WD	No	N/A
77C3	Nestoria channery silt loam, 7 to 15 percent slopes, severely eroded	WD	Yes	Albano (5%)
77D3	Nestoria channery silt loam, 15 to 25 percent slopes, severely eroded	WD	Yes	Albano (5%)
79A	Albano silt loam, 0 to 2 percent slopes, frequently flooded	PD	Yes	Albano (85%)

[1] *VPD – Very Poorly Drained, PD – Poorly Drained, SPD – Somewhat Poorly Drained, MWD – Moderately Well Drained; WD – Well Drained, SED – Somewhat Excessively Drained, ED – Excessively Drained*
[2] *Per National Hydric Soils List for Loudoun County, Virginia published by USDA Natural Resources Conservation Service*

During the field investigation, soil cores were taken to a depth of 12+ inches to describe soil morphological characteristics. Soil characteristics including texture, color (hue, value, and chroma), and odor were inspected for each sample. *Munsell Soil Color Charts* were used for determining the soil color. Common hydric soil indicators observed within wetland areas during the field investigation included gleyed and low chroma matrix colors and mottling.

Vegetation:
Plant species observed on the site were identified and the wetland indicator status for each species was determined from the *National List of Plant Species That Occur in Wetlands: National Summary* (1988). The indicator status of a species indicates the probability that the species will occur in a wetland of the northeast region of the United States, as follows: Obligate Upland (UPL, <1%), Facultative Upland (FACU, 1-33%), Facultative (FAC, 34-66%), Facultative Wet (FACW, 67-99%), and Obligate (OBL, >99%). Normally, more than 50 percent of the dominant species must be FAC or wetter for the hydrophytic vegetation indicator to be considered satisfied.

The open portions of the property are characterized by existing residences and supporting structures and maintained grass areas. Wooded portions of the property are dominated by eastern red cedar and Virginia pine in the regrowth forested areas, and white oak and red oak in the relatively mature forested areas. Wetlands identified during the field investigation are dominated by green ash (*Fraxinus pennsylvanica*, FACW) and pin oak (*Quercus palustris*, FACW) in forested areas, and buttonbush (*Cephalanthus occidentalis*, OBL), arrow-leaf tearthumb (*Polygonum sagittatum*, OBL), soft rush (*Juncus effusus*, FACW+), wool-grass (*Scirpus cyperinus*, FACW+), strawcolored flatsedge (*Cyperus strigosus*, FACW), and cattail (*Typha latifolia*, OBL) in emergent areas.

Hydrology:
The USACE's Manual states that wetland hydrology encompasses all hydrologic characteristics of areas that are inundated or have soils that are saturated to the surface at some time during the growing season. Primary hydrologic indicators include, but are not limited to, visual inundation, saturated soils, water marks, drift lines, sediment deposits, and drainage patterns, and secondary indicators include water stained leaves, oxidized root channels in the upper 12 inches of soil, local soil survey data, and a positive FAC-neutral test. Evidence of these indicators is present even during dry periods, and therefore are useful indicators of a wetland. Dominant hydrologic indicators observed during the field investigation included visible inundation, soil saturation within the upper 12 inches, and drainage patterns in wetlands.

Results
Based on the results of the field investigation, there are approximately 515 linear feet of perennial stream, 1,985 linear feet of intermittent stream, 0.24 acre of palustrine emergent wetlands, and 0.04 acre of palustrine forested wetlands located within the limits of the property. The Wetland Delineation Map included as Appendix E depicts the flagged and surveyed boundaries of waters of the U.S. and wetlands located within the limits of investigation. The location of data points collected during the delineation are also included on this Map; data sheets for each data point are included as Appendix F. Representative photographs are included as Appendix G, and Appendix H contains a summary of general project information for a Jurisdictional Determination, including the Approved Jurisdictional Determination Forms.

South Fork Broad Run, flagged B1 through B34, flows for approximately 515 linear feet through PIN 247-17-3577 in the northern portion of the property. As shown in Photos #1 through #4, the stream is approximately 18 feet in width and is characterized by a broad grassed floodplain along its left bank and a steep wooded slope along its right bank. A small emergent wetland measuring 0.04 acre and flagged BA1 through BA8 originates from offsite to the west of the property and connects into South Fork Broad Run between Flags B5 and B7 (Photo #5). As described in Data Point DP-BA1, the vegetation is dominated by tearthumb, buttonbush, and false nettle, and the soils were saturated to the surface with visible inundation on the date of the field investigation and exhibit a low-chroma matrix with mottling. There is a second emergent wetland measuring 0.17 acre and flagged BB1 through BB8 located within the floodplain, ultimately connecting into South Fork Broad Run further downstream from the property. As shown in Photo #6 and described in Data Point DP-BB1, the vegetation is dominated by soft rush, wool-grass, tearthumb, cattail, buttonbush, and green ash saplings, and the soils were saturated to the surface on the date of the field investigation and display a low-chroma matrix with mottling.

An unnamed tributary to South Fork Broad Run, flagged A1 through A188, flows through the western portion of the property. The stream originates from offsite, extending along the western property boundary for approximately 430 linear feet between Flags A1 and A37 before flowing onto the property (Photo #7). The stream continues to the north for approximately 1,850 linear feet, connecting into South Fork Broad Run between Flags B22/B24. As shown in Photos #8 through #16, the stream is well-defined, averages 4 to 6 feet in width, is moderately incised with eroding banks, and exhibits varied substrate sorting. During the field investigation, the upper portion of the stream channel exhibited weak flow or ponded water, and the lower portion

exhibited moderate flow. There are existing culverts within the stream channel between Flags A115/A116 and A117/118 (Photo #11).

As shown in Photo #17, a small forested wetland flagged AC and measuring 0.01 acre is located just to the west of Stream A. As described in Data Point DP-AC1, vegetation is dominated by green ash and nannyberry. The soils were saturated with areas of visible inundation on the date of the field investigation, and display a low-chroma matrix with mottling. There does not appear to be a direct jurisdictional connection between this depression and the stream channel; rather, the wetland appears to drain via overland sheetflow towards Flags A88/A90. A second sampling location – Data Point DP-AC2 – was taken just upslope of Flag AC1 (Photo #18). While the vegetation is similar in this topographic feature, the soils do not exhibit hydric properties.

Connecting into this main stream channel at Flags A41 and A83are two small side tributaries flagged AB and AD, and measuring approximately 55 linear feet (Photo #19). Data Point DP-AD1 was taken upslope of Stream AD within a maintained field that exhibited visible saturation at the surface during the field investigation (Photo #20). It is apparent that this area is previously disturbed by mowing operations and vehicle use. While some hydrophyic vegetation is present, the soils do not appear to exhibit hydric characteristics. There is an existing 0.13-acre pond just to the north of this area (Photo #21), which outlets through a small overflow pipe and ultimately drains towards Stream A at Flag A101. It is apparent that this pond has been excavated within uplands, as evidenced by the surrounding topography, constructed berm, and the absence of a stream channel flowing into or out of the pond, and therefore, should not be considered jurisdictional waters of the U.S. However, the pond is still considered State surface waters subject to regulation by the Virginia Department of Environmental Quality.

Connecting in at Flag A133 is a 0.02-acre forested wetland flagged AE (Photo #22), which receives drainage from the adjacent field. As described in Data Point DP-AE1, vegetation is dominated by green ash and pin oak, and the soils were saturated to the surface on the date of the field investigation and exhibit a low-chroma matrix color with mottling.

There is a topographic feature on PIN 247-17-8636 that extends along the western side of Goshen Road near the northern portion of the property. As shown in Photo #23, jurisdictional areas are not present. Further upslope within the same parcel's lawn, there is a small extended detention dry pond that was excavated within uplands as evidenced by the surrounding topography and constructed berm (Photo #24). This pond was dry on the date of the field investigation, and would not be considered jurisdictional waters of the U.S.

Two other topographic features located on the western side of Goshen Road that drain towards its roadside ditch network were also investigated; no jurisdictional areas were previously identified in these areas. As shown in the Photo #25, the first feature is dominated by cedar forest. As described in Data Point DP-G1 and shown in Photo #26, the second feature had visible surface saturation on the date of the field investigation, likely due to the winter season, and recent snowfall and precipitation events. Vegetation includes Virginia pine, pin oak, cedar, Souther red oak, hickory, and young green ash, and the soils do not appear to exhibit hydric properties. This topographic feature drains to a low area along Goshen Road where the surface runoff ponds due to the presence of a slight berm adjacent to the road and ditch (Photo #27).

As shown in Photos #28 and #29, a short segment of intermittent stream flagged F and measuring 80 linear feet was identified near the southern property boundary. This stream channel drains offsite and ultimately under Goshen Road towards an unnamed tributary to Bull Run. Minor flow was present on the date of the field investigation, and the channel is weakly defined with hydric soils present.

On the eastern side of Goshen Road, the 23.2491-acre portion of PIN 247-28-4151 was previously delineated and is covered by existing permits for the Stone Ridge project. Photo #30 shows the portion of the stream reach flagged F that is located on the property and authorized as Impact #5 under VWP General Permit No. WP4-08-0748 and SPGP-01 No. 2007-964. As shown on the Wetland Delineation Map, the unnamed tributary system located just to the east of the property is within a recorded conservation easement for the Stone Ridge project (Instrument No. 20080617-0036988); the limits of this easement are just outside the property boundaries. There is a 0.01-acre forested wetland previously delineated and flagged F near the eastern property boundary that drains towards the offsite conservation easement (Photo #31). Data Point DP-D1 describes the topographic feature just upslope of this forested wetland. While there was visible surface saturation during the field investigation, it is likely due to the winter conditions and recent snowfall and precipitation events. Vegetation is dominated by red maple, pin oak, nannyberry and cedar, and the soils do not appear to be exhibit hydric properties (Photo #32).

Finally, there is a small emergent wetland flagged C and measuring 0.03 acre that is located at the rear of PIN 248-48-6530 in the southeastern corner of the property. This wetland has developed just below the outfall of an offsite pond to the south. As further described in Data Point DP-C1, vegetation is dominated by soft rush, umbrella sedge, elderberry, and tickseed, there was visible inundation on the date of the field investigation, and the soils display a low-chroma matrix color with mottling. The wetland continues along the fenceline and offsite, connecting into the above tributary within the conservation easement.

The following table summarizes the data points that were collected during the field investigation:

Table 2: Data Point Summary Table

Data Point	Mapped Soil Unit	Hydrophytic Vegetation	Wetland Hydrology	Hydric Soils	Community ID
DP-AC1	79A	Yes	Yes	Yes	PFO
DP-AC2	79A	Yes	Yes	No	Upland
DP-AD1	79A	Yes	Yes	No	Upland
DP-AE1	60C	Yes	Yes	Yes	PFO
DP-BA1	6A	Yes	Yes	Yes	PEM
DP-BB1	6A	Yes	Yes	Yes	PEM
DP-C1	79A	Yes	Yes	Yes	PEM
DP-D1	79A	Yes	Yes	No	Upland
DP-G1	79A	No	Yes	No	Upland

The following table summarizes the waters of the U.S. and wetlands that were delineated within the limits of investigation for the property:

Table 3: Waters of the U.S. and Wetlands Summary Table

Classification	Length (LF)	Area (SF)	Area (Ac)
Perennial Streams (R3)	515	N/A	N/A
Intermittent Streams (R4)[1]	1,985	N/A	N/A
Palustrine Emergent Wetlands (PEM)	N/A	10,602	0.24
Palustrine Forested Wetlands (PFO)	N/A	1,694	0.04
Total Waters of the U.S.	**2,500**	**12,296**	**0.28**
Other State Surface Waters (Pond)[2]	*N/A*	*5,674*	*0.13*

[1] Excludes approximately 430 LF of intermittent stream located just offsite that parallels the western property boundary, and approximately 125 LF of intermittent stream located on the eastern side of Goshen Road that is authorized for impact under VWP General Permit No. WP4-08-0748 and SPGP-01 No. 2007-964.

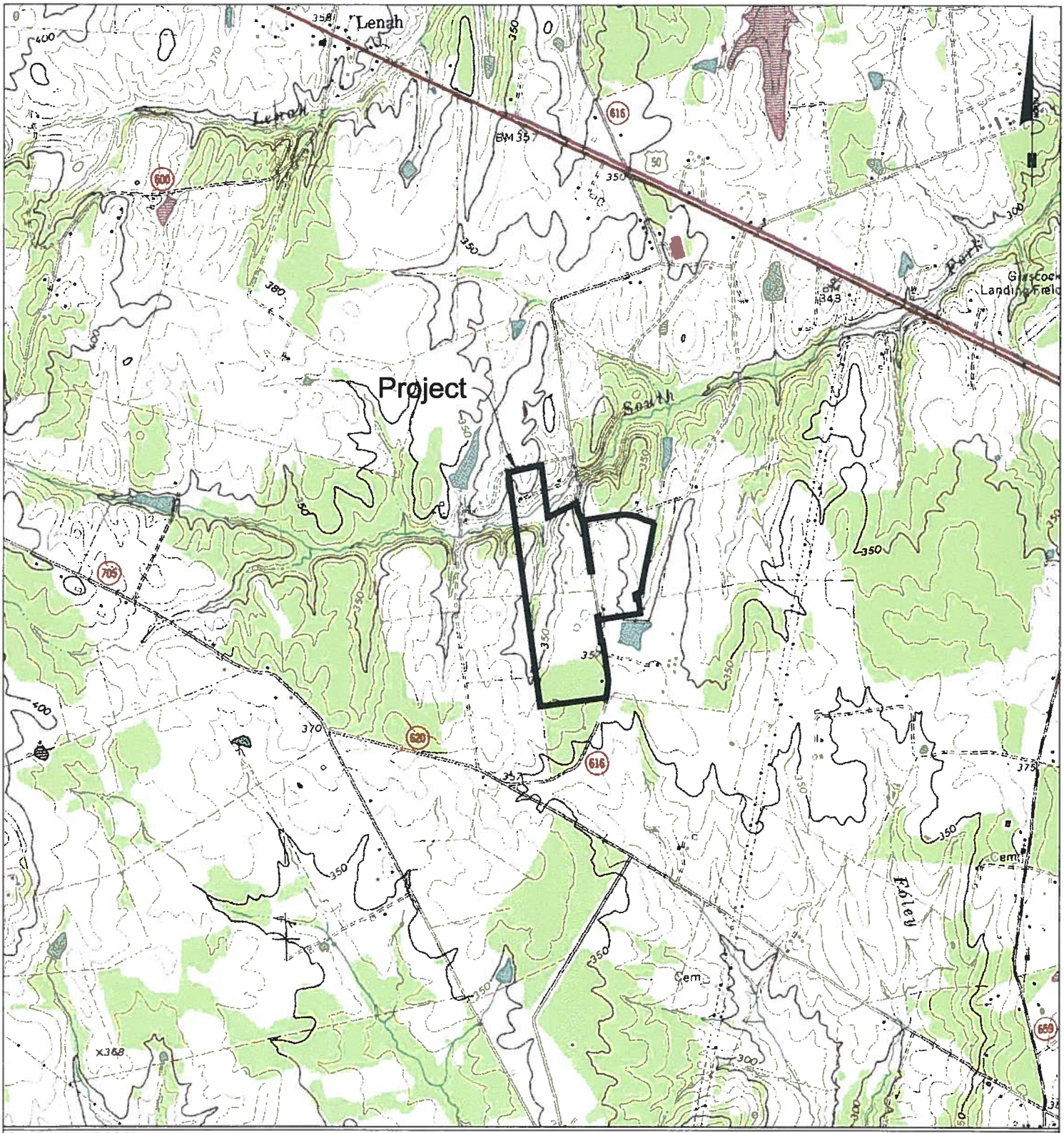
[2] The existing pond on PIN 248-47-8669 on the western side of Goshen Road appears to have been excavated within uplands; therefore, it should not be considered jurisdictional waters of the U.S., but will be considered State surface waters subject to regulation by the Virginia Department of Environmental Quality.

As noted in Table 3 above, the 0.13-acre pond located on PIN 248-47-8669 should not be considered jurisdictional waters of the U.S. given that it has been excavated within uplands; however, it would still be considered State surface waters subject to regulation by the Virginia Department of Environmental Quality.

The Wetland Delineation Map included as Appendix E reflects the flagged waters of the U.S. and wetland boundaries that were delineated and field-located by BCG in January 2010. The results of this wetland delineation study should be considered preliminary until they have been approved by the USACE during a Jurisdictional Determination site visit (see Appendix H for a summary of general project information and the Approved Jurisdictional Determination Form).

Appendix A

USGS Quadrangle Map



Scale: 1"=2000'

Source: USGS (Photoinspected 1981)

Bowman CONSULTING

USGS Quadrangle Map

Dulles South High School

38°55'51"N, -77°34'05"W Arcola, VA USGS Quadrangle Map
South Fork Broad Run, HUC 02070008 (Middle Potomac-Catoctin)
Loudoun County, Virginia

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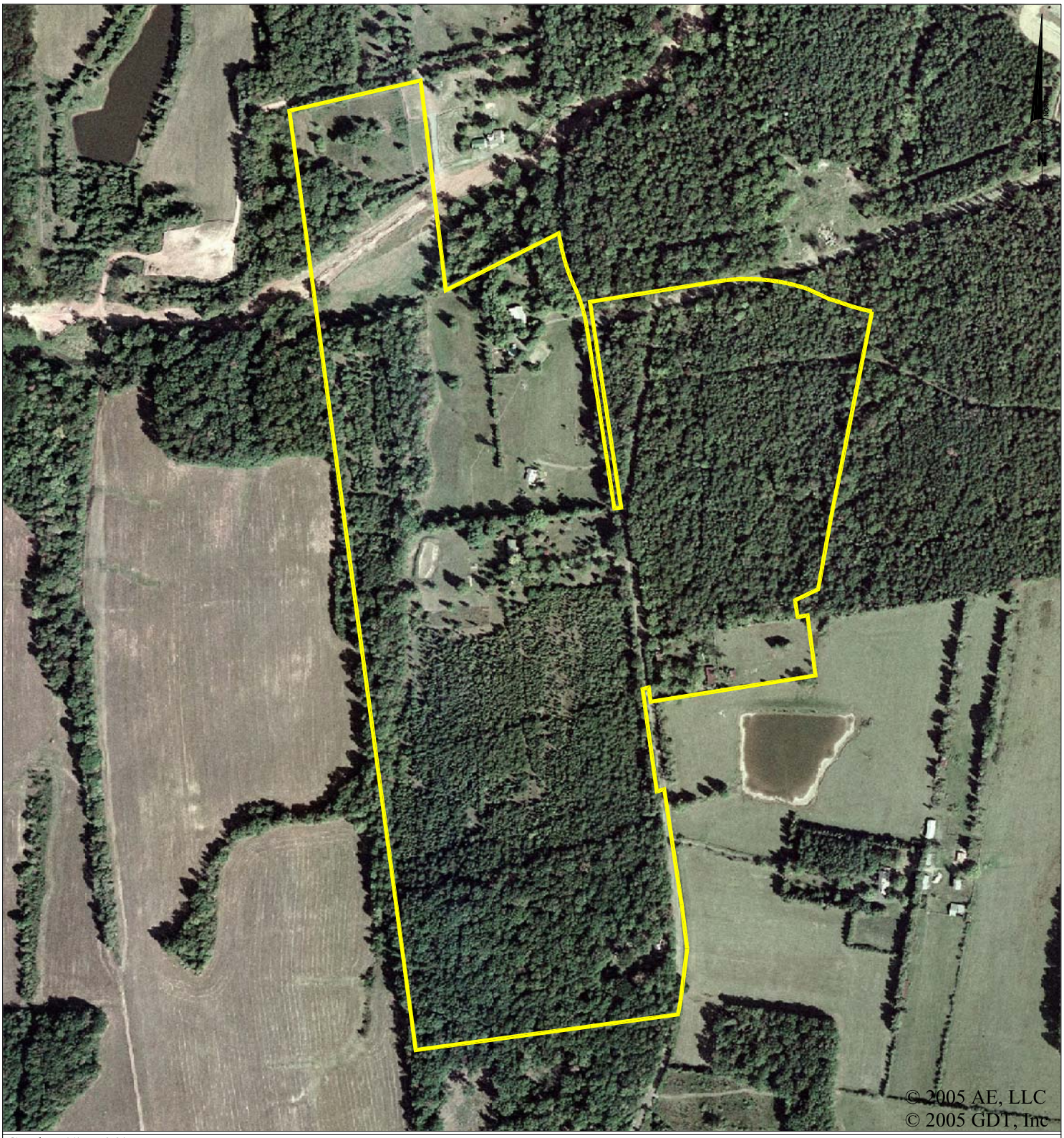
Appendix B

Aerial Photograph



Scale: 1"=500'

Source: Aerials Express, LLC (2007)

Bowman CONSULTING

Aerial Photograph

Dulles South High School

38°55'51"N, -77°34'05"W Arcola, VA USGS Quadrangle Map
South Fork Broad Run, HUC 02070008 (Middle Potomac-Catoctin)
Loudoun County, Virginia

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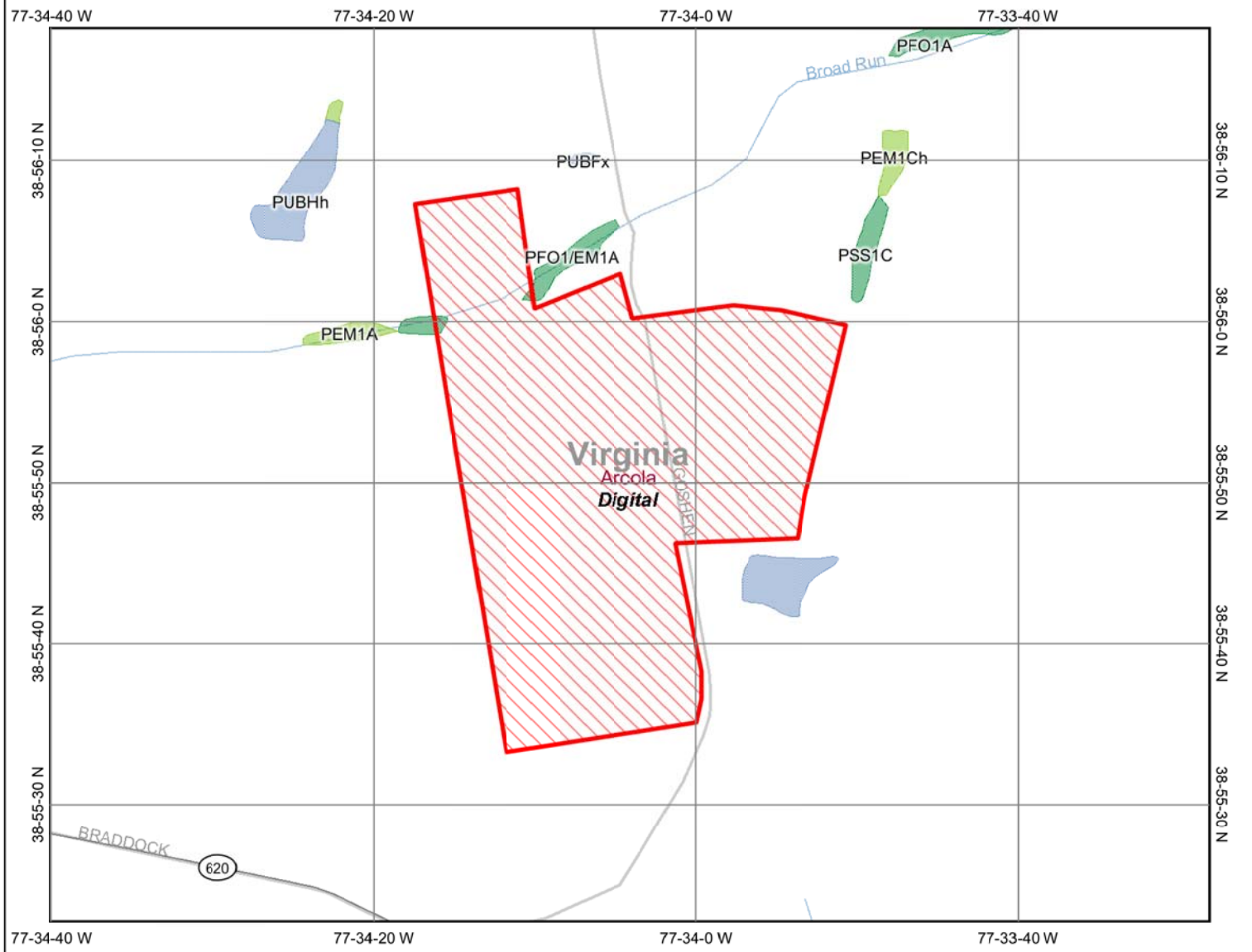
Appendix C

National Wetlands Inventory Map

Dulles South High School



Map center: 38° 55' 51" N, 77° 34' 4" W

Legend

Ohio_wet_scan
- 0
- 1
- Out of range

Interstate
Major Roads
- Other Road
- Interstate
- State highway
- US highway

Roads
Cities
USGS Quad Index 24K
Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan

NHD Streams
Counties 100K
States 100K
South America
North America

N

Scale: 1:12,000

This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.

Appendix D

Soils Map

Map Scale: 1:5,730 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1,200

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:5,730 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 18N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Loudoun County, Virginia
Survey Area Data: Version 9, Nov 17, 2009

Date(s) aerial images were photographed: 6/26/2003

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Loudoun County, Virginia (VA107)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
6A	Bowmansville silt loam, 0 to 2 percent slopes, occasionally flooded	3.3	3.3%
14B	Manassas silt loam, 0 to 7 percent slopes	2.8	2.9%
60C	Sycoline-Catlett complex, 7 to 15 percent slopes	6.6	6.8%
62B	Sycoline-Kelly complex, 2 to 7 percent slopes	29.9	30.5%
63A	Kelly silt loam, 0 to 2 percent slopes	1.2	1.3%
67B	Jackland and Haymarket soils, 2 to 7 percent slopes	13.4	13.6%
69A	Elbert silty clay loam, 0 to 2 percent slopes, frequently flooded	0.9	0.9%
70B	Leedsville cobbly silt loam, 2 to 7 percent slopes	0.3	0.3%
73B	Penn silt loam, 2 to 7 percent slopes	0.9	0.9%
76B	Sudley-Oatlands complex, 2 to 7 percent slopes	12.9	13.1%
76C	Oatlands gravelly silt loam, 7 to 15 percent slopes	2.5	2.5%
77C3	Nestoria channery silt loam, 7 to 15 percent slopes, severely eroded	5.7	5.8%
77D3	Nestoria channery silt loam, 15 to 25 percent slopes, severely eroded	3.2	3.3%
79A	Albano silt loam, 0 to 2 percent slopes, frequently flooded	14.4	14.7%
Totals for Area of Interest		**98.0**	**100.0%**

Appendix E

Wetland Delineation Map

Appendix F

Wetland Delineation Data Sheets

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	PFO
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-AC1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Fraxinus pennsylvanica* ASH, GREEN	Tree	FACW	9			
2	*Viburnum lentago* NANNYBERRY	Shrub	FAC	10			
3	*Smilax rotundifolia* GREENBRIER, COMMON	Vine	FAC	11			
4	*Lonicera japonica* HONEYSUCKLE, JAPANESE	Vine	FAC-	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 75.00%
FAC_Neutral: Yes (1:0)

Remarks:

HYDROLOGY

	Recorded Data (Describe in Remarks):
	Stream, Lake, or Tide Gauge
	Aerial Photographs
	Other (Explain in Remarks)
X	No Recorded Data Available

Field Observations:

Depth of Surface Water:		(in.)
Depth to Standing Water in Pit:	12	(in.)
Depth to Saturated Soil:	8	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

	Inundated
X	Saturated in Upper 12 inches
	Water Marks
	Drift Lines
	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)

X	Oxidized Root Channels in upper 12 inches
X	Water-Stained Leaf Litter
X	Local Soil Survey Data
X	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks: Depressional area that is poorly drained; included water-stained leaves

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-AC1

SOILS

Map Symbol: 79A
Drainage Class: PD
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-8	A	10YR5/2		Silt loam
8-14+	Btg	10YR5/2	10YR4/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	Yes
Hydric Soils Present?	Yes		

Remarks: Poorly drained depressional area located just to the west of the stream channel

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-AC2
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Fraxinus pennsylvanica* ASH, GREEN	Tree	FACW	9			
2	*Viburnum lentago* NANNYBERRY	Shrub	FAC	10			
3	*Smilax rotundifolia* GREENBRIER, COMMON	Vine	FAC	11			
4	*Lonicera japonica* HONEYSUCKLE, JAPANESE	Vine	FAC-	12			
5	*Rubus phoenicolasius* WINEBERRY	Vine	NI	13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 60.00%
FAC_Neutral: Yes (1:0)

Remarks:

HYDROLOGY

	Recorded Data (Describe in Remarks):	
	Stream, Lake, or Tide Gauge	
	Aerial Photographs	
	Other (Explain in Remarks)	
X	No Recorded Data Available	

Field Observations:

Depth of Surface Water:		(in.)
Depth to Standing Water in Pit:		(in.)
Depth to Saturated Soil:	10	(in.)

Wetland Hydrology Indicators:

	Primary Indicators:
	Inundated
X	Saturated in Upper 12 inches
	Water Marks
	Drift Lines
	Sediment Deposits
X	Drainage Patterns in Wetlands
	Secondary Indicators(2 or more required)
	Oxidized Root Channels in upper 12 inches
	Water-Stained Leaf Litter
X	Local Soil Survey Data
X	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-AC2

SOILS

Map Symbol: 79A
Drainage Class: PD
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-8	A	10YR5/3		Silt loam
8-12	B1	10YR4/3		Silt loam
12-14+	B2	10YR4/2	10YR5/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	No
Hydric Soils Present?	No		

Remarks: Point taken within topographic feature above flagged forested wetland area

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-AD1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Quercus palustris* OAK, PIN	Tree	FACW	9			
2	*Fraxinus pennsylvanica* ASH, GREEN	Tree	FACW	10			
3	*Juniperus virginiana* CEDAR, EASTERN RED	Shrub	FACU	11			
4	*Ulmus americana* ELM, AMERICAN	Tree	FACW-	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 75.00%
FAC_Neutral: Yes (3:1)

Remarks: Miscellaneous grasses, moss

HYDROLOGY

	Recorded Data (Describe in Remarks):
	Stream, Lake, or Tide Gauge
	Aerial Photographs
	Other (Explain in Remarks)
X	No Recorded Data Available

Field Observations:

Depth of Surface Water:		(in.)
Depth to Standing Water in Pit:		(in.)
Depth to Saturated Soil:	0	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

	Inundated
X	Saturated in Upper 12 inches
	Water Marks
	Drift Lines
	Sediment Deposits
	Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)

	Oxidized Root Channels in upper 12 inches
	Water-Stained Leaf Litter
X	Local Soil Survey Data
X	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-AD1

SOILS

Map Symbol: 79A
Drainage Class: PD
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-14	A	10YR5/3		Silt loam
14+	B	10YR5/2	10YR4/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	No
Hydric Soils Present?	No		

Remarks: Open field area that appears to be disturbed and maintained

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	PFO
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-AE1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Fraxinus pennsylvanica* ASH, GREEN	Tree	FACW	9			
2	*Quercus palustris* OAK, PIN	Tree	FACW	10			
3	*Smilax rotundifolia* GREENBRIER, COMMON	Vine	FAC	11			
4	*Lonicera japonica* HONEYSUCKLE, JAPANESE	Vine	FAC-	12			
5	*Dichanthelium commutatum* WITCHGRASS, DEER-TONGUE	Herb	FAC+	13			
6	*Rosa multiflora* ROSE, MULTIFLORA	Shrub	FACU	14			
7	*Rubus allegheniensis* BLACKBERRY, ALLEGHENY	Vine	FACU-	15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 57.14%
FAC_Neutral: No (2:2)

Remarks:

HYDROLOGY

	Recorded Data (Describe in Remarks):
	Stream, Lake, or Tide Gauge
	Aerial Photographs
	Other (Explain in Remarks)
X	No Recorded Data Available

Field Observations:

Depth of Surface Water:	1	(in.)
Depth to Standing Water in Pit:		(in.)
Depth to Saturated Soil:	0	(in.)

Wetland Hydrology Indicators:

Primary Indicators:

X	Inundated
X	Saturated in Upper 12 inches
	Water Marks
	Drift Lines
	Sediment Deposits
X	Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)

X	Oxidized Root Channels in upper 12 inches
	Water-Stained Leaf Litter
X	Local Soil Survey Data
X	FAC-Neutral Test
	Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-AE1

SOILS

Map Symbol: 60C
Map Unit Name (Series and Phase): Sycoline-Catlett complex, 7-15% slopes
Taxonomy (Subgroup): Ultic Hapludalfs
Drainage Class: SPD
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-12+	Btg	10YR5/2	10YR5/8 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	Yes
Hydric Soils Present?	Yes		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	PEM
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-BA1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Cephalanthus occidentalis* BUTTONBUSH, COMMON	Shrub	OBL	9			
2	*Quercus palustris* OAK, PIN	Tree	FACW	10			
3	*Boehmeria cylindrica* FALSE-NETTLE, SMALL-SPIKE	Herb	FACW+	11			
4	*Polygonum sagittatum* TEARTHUMB, ARROW-LEAF	Vine	OBL	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100.00%
FAC_Neutral: Yes (4:0)

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
_____ Stream, Lake, or Tide Gauge
_____ Aerial Photographs
_____ Other (Explain in Remarks)
X No Recorded Data Available

Field Observations:

Depth of Surface Water: 1 (in.)
Depth to Standing Water in Pit: _____ (in.)
Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
X Inundated
X Saturated in Upper 12 inches
_____ Water Marks
_____ Drift Lines
_____ Sediment Deposits
X Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)
X Oxidized Root Channels in upper 12 inches
_____ Water-Stained Leaf Litter
X Local Soil Survey Data
X FAC-Neutral Test
_____ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-BA1

SOILS

Map Symbol: 6A Drainage Class: PD
Map Unit Name (Series and Phase): Bowmansville silt loam, 0-2% slopes, occasionally flooded
Taxonomy (Subgroup): Aeric Fluvaquents
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-12+	Btg	10YR4/2	5YR4/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	Yes
Hydric Soils Present?	Yes		

Remarks: Located within floodplain of South Fork Broad Run

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	PEM
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-BB1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Cephalanthus occidentalis* BUTTONBUSH, COMMON	Shrub	OBL	9			
2	*Juncus effusus* RUSH, SOFT	Herb	FACW+	10			
3	*Scirpus cyperinus* WOOL-GRASS	Herb	FACW+	11			
4	*Polygonum sagittatum* TEARTHUMB, ARROW-LEAF	Vine	OBL	12			
5	*Fraxinus pennsylvanica* ASH, GREEN	Saplings	FACW	13			
6	*Typha latifolia* CATTAIL, BROAD-LEAF	Herb	OBL	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100.00%
FAC_Neutral: Yes (6:0)

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other (Explain in Remarks)
- X No Recorded Data Available

Field Observations:

Depth of Surface Water: ____ (in.)

Depth to Standing Water in Pit: ____ (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)
- X Oxidized Root Channels in upper 12 inches
- ____ Water-Stained Leaf Litter
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-BB1

SOILS

Map Symbol: 6A Drainage Class: PD
Map Unit Name (Series and Phase): Bowmansville silt loam, 0-2% slopes, occasionally flooded
Taxonomy (Subgroup): Aeric Fluvaquents
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-12+	Btg	10YR4/2	5YR4/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	Yes
Hydric Soils Present?	Yes		

Remarks: Located within floodplain of South Fork Broad Run

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	PEM
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-C1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Juncus effusus* RUSH, SOFT	Herb	FACW+	9			
2	*Cyperus strigosus* FLATSEDGE, STRAWCOLORED	Herb	FACW	10			
3	*Sambucus canadensis* ELDERBERRY	Shrub	FACW-	11			
4	*Coreopsis tripteris* TICKSEED	Herb	FAC	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 100.00%
FAC_Neutral: Yes (3:0)

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other (Explain in Remarks)
- X No Recorded Data Available

Field Observations:

Depth of Surface Water: ____ (in.)

Depth to Standing Water in Pit: ____ (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- X Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)
- X Oxidized Root Channels in upper 12 inches
- ____ Water-Stained Leaf Litter
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-C1

SOILS

Map Symbol: 79A
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs

Drainage Class: PD
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-12+	Btg	10YR4/2	7.5YR4/6 C/D	Clay loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
X	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	Yes
Hydric Soils Present?	Yes		

Remarks: Located below outfall for offsite pond

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-D1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Quercus palustris* OAK, PIN	Tree	FACW	9			
2	*Juniperus virginiana* CEDAR, EASTERN RED	Shrub	FACU	10			
3	Acer rubrum MAPLE, RED	Sapling	FAC	11			
4	*Viburnum lentago* NANNYBERRY	Shrub	FAC	12			
5				13			
6				14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 75.00%
FAC_Neutral: No (1:1)

Remarks:

HYDROLOGY

Recorded Data (Describe in Remarks):
- ____ Stream, Lake, or Tide Gauge
- ____ Aerial Photographs
- ____ Other (Explain in Remarks)
- X No Recorded Data Available

Field Observations:

Depth of Surface Water: ____ (in.)

Depth to Standing Water in Pit: ____ (in.)

Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:

Primary Indicators:
- ____ Inundated
- X Saturated in Upper 12 inches
- ____ Water Marks
- ____ Drift Lines
- ____ Sediment Deposits
- ____ Drainage Patterns in Wetlands

Secondary Indicators(2 or more required)
- ____ Oxidized Root Channels in upper 12 inches
- ____ Water-Stained Leaf Litter
- X Local Soil Survey Data
- X FAC-Neutral Test
- ____ Other (Explain in Remarks)

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-D1

SOILS

Map Symbol: 79A
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs

Drainage Class: PD
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-14+	B	10YR4/3		Silt loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No		Yes/ No
Hydrophytic Vegetation Present?	Yes		
Wetland Hydrology Present?	Yes	Is this Sampling Point Within a Wetland?	No
Hydric Soils Present?	No		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site:	Dulles South High School	Date:	1/13/2010
Applicant/Owner:	Loudoun County Public Schools	Co./City:	Loudoun
Investigator:	J. Fleming and P. Abell, BCG	State:	VA

	YES/NO		
Do Normal Circumstances exist on the site?	Yes	Community ID:	Upland
Is the site significantly disturbed (Atypical Situation)	Yes	Transect ID:	
Is the area a potential Problem Area?	No	Plot ID:	DP-G1
(If needed, explain on reverse)			

VEGETATION

	Dominant Plant Species	Stratum	Indicator		Dominant Plant Species	Stratum	Indicator
1	*Pinus virginiana* PINE, VIRGINIA	Tree	FACU	9			
2	*Quercus palustris* OAK, PIN	Tree	FACW	10			
3	*Fraxinus pennsylvanica* ASH, GREEN	Sapling	FACW	11			
4	*Juniperus virginiana* CEDAR, EASTERN RED	Shrub	FACU	12			
5	*Quercus falcata* OAK, SOUTHERN RED	Tree	FACU-	13			
6	*Carya tomentosa* HICKORY, MOCKERNUT	Tree	FACU	14			
7				15			
8				16			

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-): 33.33%
FAC_Neutral: No (2:4)

Remarks:

HYDROLOGY

	Recorded Data (Describe in Remarks):		Wetland Hydrology Indicators:
			Primary Indicators:
	Stream, Lake, or Tide Gauge		Inundated
	Aerial Photographs	X	Saturated in Upper 12 inches
	Other (Explain in Remarks)		Water Marks
			Drift Lines
X	No Recorded Data Available		Sediment Deposits
			Drainage Patterns in Wetlands
	Field Observations:		**Secondary Indicators(2 or more required)**
			Oxidized Root Channels in upper 12 inches
	Depth of Surface Water: (in.)		Water-Stained Leaf Litter
		X	Local Soil Survey Data
	Depth to Standing Water in Pit: (in.)	X	FAC-Neutral Test
			Other (Explain in Remarks)
	Depth to Saturated Soil: 0 (in.)		

Remarks:

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: Dulles South High School Date: 1/13/2010 Plot ID: DP-G1

SOILS

Map Symbol: 79A
Map Unit Name (Series and Phase): Albano silt loam, 0-2% slopes, frequently flooded
Taxonomy (Subgroup): Typic Ochraqualfs

Drainage Class: PD
Field Observations Confirmed Map Type? Yes/No: Yes

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Color/ Abund./ Contrast/ Size	Texture, Concretions Structures, etc..
0-8	A	10YR4/3		Silt loam
8-14+	B	10YR5/4		Silt loam

Hydric Soil Indicators:

	Histosol		Concretions
	Histic Epipedon		High Organic Content in Surface Layer in Sandy Soils
	Sulfidic Odor		Organic Streaking in Sandy Soils
	Aquic Moisture Regime	X	Listed on Local Hydric Soils List
	Reducing Conditions	X	Listed on National Hydric Soils List
	Gleyed or Low-Chrome Colors		Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

	Yes/ No
Hydrophytic Vegetation Present?	No
Wetland Hydrology Present?	Yes
Hydric Soils Present?	No

	Yes/ No
Is this Sampling Point Within a Wetland?	No

Remarks:

Appendix G

Photographs

Photo #1: Downstream view of South Fork Broad Run near Flags B5/B6 (January 20, 2010, by J. Fleming, BCG).

Photo #2: Upstream view of South Fork Broad Run near Flags B21/B22 (January 20, 2010, by J. Fleming, BCG).

Photo #3: View of the confluence of the unnamed tributary at Flags A187/A188 and South Fork Broad Run between Flags B22/B24 (January 20, 2010, by J. Fleming, BCG).

Photo #4: Downstream view of South Fork Broad Run looking towards the property boundary from Flags B23/B24 and the above confluence (January 20, 2010, by J. Fleming, BCG).

Photo #5: View of the emergent wetland flagged BA and Data Point DP-BA1, which are located within the floodplain of South Fork Broad Run near the western property boundary and connect in between Flags B5/B7 (January 20, 2010, by J. Fleming, BCG).

Photo #6: View of the emergent wetland flagged BB and Data Point DP-BB1, which are located within the floodplain of South Fork Broad Run and drain towards the property boundary and offsite (January 20, 2010, by J. Fleming, BCG).

Photo #7: Downstream view of the intermittent stream located just offsite along the western property boundary near Flag A19 (January 20, 2010, by J. Fleming, BCG).

Photo #8: Downstream view of the intermittent stream near Flags A43/A44 and just below the confluence of the small side tributary flagged AB (January 20, 2010, by J. Fleming, BCG).

Photo #9: Upstream view of the intermittent stream near Flags A75/A76 (January 20, 2010, by J. Fleming, BCG).

Photo #10: Upstream view of the unnamed intermittent stream near Flags A85/A86, showing the confluence of the small tributary flagged AD (January 20, 2010, by J. Fleming, BCG).

Photo #11: View of existing culverts between Flags A115/A116 and A117/A118 (January 20, 2010, by J. Fleming, BCG).

Photo #12: Downstream view of the stream channel, looking from the above culverts at Flags A117/A118 (January 20, 2010, by J. Fleming, BCG).

Photo #13: Upstream view of the stream channel at Flags A141/A142 (January 20, 2010, by J. Fleming, BCG).

Photo #14: Downstream view of the stream channel at Flags A141/A142 (January 20, 2010, by J. Fleming, BCG).

Photo #15: Downstream view of the stream channel near Flags A155/A156 (January 20, 2010, by J. Fleming, BCG).

Photo #16: Upstream view of the stream channel near Flags A171/A172 (January 20, 2010, by J. Fleming, BCG).

Photo #17: View of the forested wetland flagged AC and Data Point DP-AC1, which are located just to the west of the stream channel between Flags A80 and A84 (January 20, 2010, by J. Fleming, BCG).

Photo #18: Upslope view showing Data Point DP-AC2, which is located outside of the above forested wetland area (January 20, 2010, by J. Fleming, BCG).

Photo #19: Upstream view of the small intermittent tributary flagged AD that connects into the main stream system between Flags A83/A85 (January 20, 2010, by J. Fleming, BCG).

Photo #20: Upslope view of Data Point DP-AD1 that is located just to the east of the streams flagged A and AD and to the south of the existing pond (January 20, 2010, by J. Fleming, BCG).

Photo #21: View of the existing pond on PIN 248-47-8669 that has been excavated within uplands and should not be considered jurisdictional waters of the U.S.; however, it would still be considered State-regulated surface waters (January 20, 2010, by J. Fleming, BCG).

Photo #22: Upslope view of the forested wetland flagged AE and Data Point DP-AE1, which connect into the main stream system between Flags A131/A133 (January 20, 2010, by J. Fleming, BCG).

Photo #23: Upslope view of a topographic feature along the western side of Goshen Road near the property boundary; jurisdictional areas are not present (January 20, 2010, by J. Fleming, BCG).

Photo #24: View overlooking an existing detention pond on PIN 247-17-8636 that has been excavated within uplands; jurisdictional areas are not present (January 20, 2010, by J. Fleming, BCG).

Photo #25: Upslope view of a minor topographic feature on PIN 248-47-8234 that drains to the east towards the ditch along Goshen Road; jurisdictional areas are not present (January 20, 2010, by J. Fleming, BCG).

Photo #26: Upslope view of a topographic feature on PIN 248-37-9637 and Data Point DP-G1; while the soils were saturated at the surface outside of the growing season, they do not appear to be hydric (January 20, 2010, by J. Fleming, BCG).

Photo #27: View of a poorly drained area resulting from a slight berm along the ditch on the western side of Goshen Road and towards which the above topographic feature drains; this area ultimately drains across Goshen Road to an offsite pond (January 20, 2010, by J. Fleming, BCG).

Photo #28: Upstream view of the intermittent stream at Flags F9/F10, showing the headwaters of the system that drain towards the southern property boundary (January 20, 2010, by J. Fleming, BCG).

Photo #29: Downstream view of the intermittent stream near Flags F5/F6, looking towards the southern property boundary (January 20, 2010, by J. Fleming, BCG).

Photo #30: Downslope view of authorized Impact #5 located on the eastern side of Goshen Road, flagged E and covered by the existing Stone Ridge permits (January 20, 2010, by J. Fleming, BCG).

Photo #31: Downslope view of the forested wetland flagged D and covered by the existing Stone Ridge permits, looking towards the eastern property boundary (January 20, 2010, by J. Fleming, BCG).

Photo #32: View of Data Point DP-D1, which is located upslope of the above forested wetland area flagged D within the property covered by the existing Stone Ridge permits (January 20, 2010, by J. Fleming, BCG).

Photo #33: View of the emergent wetland flagged C and Data Point DP-C1, which are located just downstream of the offsite pond and in the southeastern corner of the property on PIN 248-48-6530 (January 20, 2010, by J. Fleming, BCG).

Photo #34: Downstream view of the above emergent wetland flagged C that is located on PIN 248-48-6530 and continues offsite (January 20, 2010, by J. Fleming, BCG).

Appendix H

General Project Information and Approved Jurisdictional Determination Forms

GENERAL PROJECT INFORMATION FOR A USACE JURISDICTIONAL DETERMINATION

Property Name: Dulles South High School

Locality: Loudoun County, Virginia

Location: 38°55'51"N Latitude, -77°34'05"W Longitude

USGS Quadrangle: Arcola, VA

HUC Code: 02070008 (Middle Potomac-Catoctin)
02070010 (Middle Potomac-Anacostia-Occoquan)

Tributary: South Fork Broad Run
UT to Bull Run

Applicant/Agent Information:

Applicant:

Loudoun County Public Schools
21000 Education Court, 2nd Floor
Ashburn, Virginia 20148
Attn: Mr. Kenneth Theurich
Phone: 571.252.1000
Fax: 571.252.1296

Agent:

Bowman Consulting Group, Ltd.
14020 Thunderbolt Place, Suite 300
Chantilly, Virginia 20151
Attn: Ms. Jessica L. Fleming
Phone: 703.464.1000
Fax: 703.481.9720

Inventory of jurisdictional areas located within the Project area:

Classification	Length (LF)	Area (SF)	Area (Ac)
Perennial Streams (R3)	515	N/A	N/A
Intermittent Streams (R4)[1]	1,985	N/A	N/A
Palustrine Emergent Wetlands (PEM)	N/A	10,602	0.24
Palustrine Forested Wetlands (PFO)	N/A	1,694	0.04
Total Waters of the U.S.	**2,500**	**12,296**	**0.28**
Other State Surface Waters (Pond)[2]	*N/A*	*5,674*	*0.13*

[1] *Excludes approximately 430 LF of intermittent stream located just offsite that parallels the western property boundary, and approximately 125 LF of intermittent stream located on the eastern side of Goshen Road that is authorized for impact under VWP General Permit No. WP4-08-0748 and SPGP-01 No. 2007-964.*

[2] *The existing pond on PIN 248-47-8669 on the western side of Goshen Road appears to have been excavated within uplands; therefore, it should not be considered jurisdictional waters of the U.S., but will be considered State surface waters subject to regulation by the Virginia Department of Environmental Quality.*

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Washington Gas Route 50 Transmission Main Extension - Phase II

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Virginia County/parish/borough: Loudoun City:
Center coordinates of site (lat/long in degree decimal format): Lat. 38.930833° **N**, Long. -77.568056° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: South Fork Broad Run
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Potomac River
Name of watershed or Hydrologic Unit Code (HUC): 02070008 (Middle Potomac-Catoctin)

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☐ Non-RPWs that flow directly or indirectly into TNWs
   - ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: 515 linear feet: 18 width (ft) and/or acres.
   Wetlands: 0.22 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

---

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 1,425 **acres**
Drainage area: 2.2 **square miles**
Average annual rainfall: 41.8 inches
Average annual snowfall: 21.2 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **2** tributaries before entering TNW.

Project waters are **15-20** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **10-15** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: South Fork Broad Run to Broad Run to Potomac River.
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☒ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: Portion has riprap at sanitary sewer crossing.

Tributary properties with respect to top of bank (estimate):
Average width: 18 feet
Average depth: 3 feet
Average side slopes: **Vertical (1:1 or less).**

Primary tributary substrate composition (check all that apply):

☒ Silts	☒ Sands	☐ Concrete
☒ Cobbles	☒ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some erosion along both banks.
Presence of run/riffle/pool complexes. Explain: well developed.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 1 %

(c) Flow:
Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: strong flow.
Other information on duration and volume: Flow observed May 18, 2009, January 13 and 20, 2010.

Surface flow is: **Discrete and confined**. Characteristics: .

Subsurface flow: **Yes**. Explain findings: Perennial.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☒ vegetation matted down, bent, or absent	☒ sediment sorting
☐ leaf litter disturbed or washed away	☒ scour
☒ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: water relatively clear during field investigation on January 13 and 20, 2010.
Identify specific pollutants, if known: Unknown.

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☒ Riparian corridor. Characteristics (type, average width): grass along LB, mixed hardwood forest along RB.
☐ Wetland fringe. Characteristics: .
☒ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings: typical woodland and field-type birds and animals.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: 0.22 acres
Wetland type. Explain:palustrine emergent.
Wetland quality. Explain: located within floodplain, portion affected by existing sanitary sewer easement.
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Intermittent flow**. Explain: some groundwater influence that is seasonal.

Surface flow is**: Discrete and confined**
Characteristics: surface flow tends to be concentrated.

Subsurface flow: **Yes**. Explain findings: hydric soils and groundwater influence.
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☒ Directly abutting
☐ Not directly abutting
- ☐ Discrete wetland hydrologic connection. Explain: .
- ☐ Ecological connection. Explain: .
- ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **15-20** river miles from TNW.
Project waters are **10-15** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **50 - 100-year** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: portion of wetlands within maintained grassed areas and adjacent to sanitary sewer easement.
Identify specific pollutants, if known: Unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☒ Riparian buffer. Characteristics (type, average width): streamside trees, maintained grass field.
☒ Vegetation type/percent cover. Explain: herbaceous .
☒ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings:typical floodplain wildlife and birds.

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **2**
Approximately (0.22) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
BA: Y	0.04		
BB: Y	0.17		

Summarize overall biological, chemical and physical functions being performed: surface water filtering, pollutant removal, wildlife and aquatic habitat.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Major perennial stream and documented flow on May 18, 2009 and January 13 and 20, 2010.
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **515** linear feet **18** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☒ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Direct connection present at Flags BA1/BA2 and A5; offsite direct connection to stream for wetland flagged BB.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **0.22** acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Wetland Delineation Map by Bowman Consulting Group, Ltd. dated February 16, 2010.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1"=2000', Arcola.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Web Soil Survey, http://websoilsurvey.nrcs.usda.gov, Survey Area Data: Version 9, November 17, 2009.
☒ National wetlands inventory map(s). Cite name:Wetlands Online Mapper (http://www.fws.gov/wetlands/data/Mapper.html.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):From Aerials Express, 2005.
or ☒ Other (Name & Date):Site photos by J.Fleming, BCG, January 20, 2010.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Washington Gas Route 50 Transmission Main Extension - Phase II

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Virginia County/parish/borough: Loudoun City:
Center coordinates of site (lat/long in degree decimal format): Lat. 38.930833° **N**, Long. -77.568056° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: South Fork Broad Run

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Potomac River
Name of watershed or Hydrologic Unit Code (HUC): 02070008 (Middle Potomac-Catoctin)

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☒ Non-RPWs that flow directly or indirectly into TNWs
   - ☒ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☒ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: 1,905 linear feet: 4-6 width (ft) and/or acres.
   Wetlands: 0.07 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **1987 Delineation Manual**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 80 **acres**
Drainage area: 0.13 **square miles**
Average annual rainfall: 41.8 inches
Average annual snowfall: 21.2 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **3** tributaries before entering TNW.

Project waters are **15-20** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **10-15** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: UT to South Fork Broad Run to Broad Run to Potomac River.
Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☒ Natural
- ☐ Artificial (man-made). Explain: .
- ☒ Manipulated (man-altered). Explain: Ex. culverts between Flags A115/A116 and A117/A118.

Tributary properties with respect to top of bank (estimate):
Average width: 6 feet
Average depth: 3 feet
Average side slopes: **Vertical (1:1 or less).**

Primary tributary substrate composition (check all that apply):

☒ Silts	☒ Sands	☐ Concrete
☒ Cobbles	☒ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: some incision and erosion.
Presence of run/riffle/pool complexes. Explain: moderate.
Tributary geometry: **Meandering**
Tributary gradient (approximate average slope): 1 %

(c) Flow:
Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: weak to moderate.
Other information on duration and volume: Flow observed May 18, 2009 and January 13 and 20, 2010.

Surface flow is: **Discrete and confined**. Characteristics: .

Subsurface flow: **Yes**. Explain findings: Evidence of groundwater influence.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
- ☒ Bed and banks
- ☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☒ destruction of terrestrial vegetation
☐ shelving	☒ the presence of wrack line
☒ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☒ scour
☒ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Relatively clear as observed on May 18, 2009 and January 13 and 20, 2010.
Identify specific pollutants, if known: Unknown.

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☒ Riparian corridor. Characteristics (type, average width): open field, mature mixed hardwood forest, cedar/pine forest.
☐ Wetland fringe. Characteristics: .
☒ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings: typical woodland animals and field wildlife and birds.

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: 0.07 acres
Wetland type. Explain: palustrine emergent and forested.
Wetland quality. Explain: forested areas diverse in vegetation, emergent areas adjacent to maintained field.

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Intermittent flow**. Explain: some groundwtaer influence that is seasonal.

Surface flow is**: Discrete and confined**
Characteristics: surface flow tends to be concentrated.

Subsurface flow: **Yes**. Explain findings: hydric soils and groundwater influence.
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☒ Directly abutting
☒ Not directly abutting
- ☐ Discrete wetland hydrologic connection. Explain: .
- ☒ Ecological connection. Explain: overland sheetflow, no jurisdictional connection on Wetland AC.
- ☒ Separated by berm/barrier. Explain: slight upland area on Wetland AC.

(d) Proximity (Relationship) to TNW

Project wetlands are **15-20** river miles from TNW.
Project waters are **10-15** aerial (straight) miles from TNW.
Flow is from: **Wetland to navigable waters.**
Estimate approximate location of wetland as within the **2-year or less** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: Wetland AC is forested, Wetland AE receives runoff from adjacent maintained grass, Wetland C receives pond discharge and runoff from field, Wetland D is forested.

Identify specific pollutants, if known: Unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☒ Riparian buffer. Characteristics (type, average width): maintained fields, cedar/pine forest, mixed hardwood forest.
☒ Vegetation type/percent cover. Explain: herbaceous or wooded.
☒ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings:typical woodland animals.

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **4**
Approximately (0.07) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)
AC: N	0.014		
AE: Y	0.019		
C: Y	0.027		
D: Y	0.005		

Summarize overall biological, chemical and physical functions being performed: surface water filtering, pollutant removal, wildlife and aquatic habitat.

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: Upper portion Stream A and Streams AB and AD provide for pollutant removal potential, nutrient transfer.

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: Wetland AC provides for pollutant removal, nutrient transfer, aquatic habitat, overland sheet flows to connect into Stream A.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☒ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: observed flow/ponding during field investigations on May 18, 2009 and January 13 and 20, 2010, hydric soils.

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **800** linear feet **4-6** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☒ Tributary waters: **1,105** linear feet **2-6** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☒ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **Direct connection present for Wetland AE between Flags A131/A133; Wetland C located just below outfall of existing offsite pond and continues to north to unnamed tributary; Wetland D connects directly into offsite stream to east of property.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: **0.05** acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☒ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: **0.014** acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: **.**
☐ Other: (explain, if not covered above): **.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Wetland Delineation Map by Bowman Consulting Group, Ltd. dated February 16, 2010.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1"=2000', Arcola.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Web Soil Survey, http://websoilsurvey.nrcs.usda.gov, Survey Area Data: Version 9, November 19, 2009.
☒ National wetlands inventory map(s). Cite name:Wetlands Online Mapper (http://www.fws.gov/wetlands/data/Mapper.html.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):From Aerials Express, 2005.
or ☒ Other (Name & Date):Site photos by J.Fleming, BCG, January 20, 2010.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Washington Gas Route 50 Transmission Main Extension - Phase II

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: Virginia County/parish/borough: Loudoun City:
Center coordinates of site (lat/long in degree decimal format): Lat. 38.930833° **N**, Long. -77.568056° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Bull Run

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Occoquan River
Name of watershed or Hydrologic Unit Code (HUC): 02070010 (Middle Potomac-Anacostia-Occoquan)

- ☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
- ☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☐ Office (Desk) Determination. Date:
- ☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

- ☐ Waters subject to the ebb and flow of the tide.
- ☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   - ☐ TNWs, including territorial seas
   - ☐ Wetlands adjacent to TNWs
   - ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   - ☒ Non-RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   - ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   - ☐ Impoundments of jurisdictional waters
   - ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: 80 linear feet: 4 width (ft) and/or acres.
   Wetlands: N/A acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
   Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   - ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: 4 **acres**
Drainage area: 0.01 **square miles**
Average annual rainfall: 41.8 inches
Average annual snowfall: 21.2 inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☒ Tributary flows through **3** tributaries before entering TNW.

Project waters are **25-30** river miles from TNW.
Project waters are **1 (or less)** river miles from RPW.
Project waters are **20-25** aerial (straight) miles from TNW.
Project waters are **1 (or less)** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: UT to UT to Bull Run to Occoquan River.
Tributary stream order, if known: .

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[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☒ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: 4 feet
Average depth: 2 feet
Average side slopes: **3:1 .**

Primary tributary substrate composition (check all that apply):

☒ Silts	☐ Sands	☐ Concrete
☒ Cobbles	☒ Gravel	☒ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: little incision and erosion.
Presence of run/riffle/pool complexes. Explain: absent.
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): 1 %

(c) Flow:
Tributary provides for: **Seasonal flow**
Estimate average number of flow events in review area/year: **11-20**
Describe flow regime: weak .
Other information on duration and volume: Flow observed January 13 and 20, 2010.

Surface flow is: **Discrete and confined.** Characteristics: .

Subsurface flow: **Yes**. Explain findings: Evidence of groundwater influence.
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☒ Bed and banks
☒ OHWM[6] (check all indicators that apply):

☒ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☒ destruction of terrestrial vegetation
☐ shelving	☒ the presence of wrack line
☒ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☒ scour
☒ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: Relatively clear as observed on January 13 and 20, 2010.
Identify specific pollutants, if known: Unknown.

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

☒ Riparian corridor. Characteristics (type, average width): mature mixed hardwood forest.
☐ Wetland fringe. Characteristics: .
☒ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☒ Aquatic/wildlife diversity. Explain findings: typical woodland animals .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:
Properties:
Wetland size: acres
Wetland type. Explain: .
Wetland quality. Explain: .
Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:
Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**
Characteristics: .

Subsurface flow: **Pick List**. Explain findings: hydric soils and groundwater influence.
☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:
☐ Directly abutting
☐ Not directly abutting
- ☐ Discrete wetland hydrologic connection. Explain: .
- ☐ Ecological connection. Explain: .
- ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW
Project wetlands are **Pick List** river miles from TNW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Flow is from: **Pick List.**
Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .
Identify specific pollutants, if known: Unknown.

(iii) Biological Characteristics. Wetland supports (check all that apply):

☐ Riparian buffer. Characteristics (type, average width): .
☐ Vegetation type/percent cover. Explain: .
☐ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**
Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: Provides for pollutant removal potential, nutrient transfer.

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: N/A.

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: WN/A.

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☒ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☒ Tributary waters: **80** linear feet **4** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: **.**

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: **.**

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

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[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:Wetland Delineation Map by Bowman Consulting Group, Ltd. dated February 16, 2010.
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☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
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☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name:1"=2000', Arcola.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation:Web Soil Survey, http://websoilsurvey.nrcs.usda.gov, Survey Area Data: Version 9, November 19, 2009.
☒ National wetlands inventory map(s). Cite name:Wetlands Online Mapper (http://www.fws.gov/wetlands/data/Mapper.html.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):From Aerials Express, 2005.
or ☒ Other (Name & Date):Site photos by J.Fleming, BCG, January 20, 2010.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .