Stantec Consulting Services Inc.
150 Riverside Parkway, Suite 301
Fredericksburg, Virginia 22406

January 8, 2019
File: 203401138

Attention: Stuart Tyler
Parsons Transportation Group, Inc.
100 M Street SE, Suite 1200
Washington, D.C. 20003-3520

Dear Mr. Tyler,

Reference: Delineation of Waters of the U.S. (WOUS) Environmental Documentation for Route 28 Corridor, Prince William County, City of Manassas, City of Manassas Park, and Fairfax County, Virginia; Prince William County Department of Transportation

This report documents a delineation of WOUS, including wetlands, conducted by Stantec Consulting Services Inc. (Stantec) on the above-referenced project. The purpose of this delineation of WOUS was to identify and delineate the limits of wetlands and waters under potential jurisdiction of the U.S. Army Corps of Engineers (Corps) and/or the Virginia Department of Environmental Quality (DEQ) and quantify these resources within each of three current alternatives (2A, 2B & 4). The three alternatives that comprise the study area are located within the Bull Run and Flat Branch drainage basins in Prince William County, City of Manassas, Manassas Park, and Fairfax County, Virginia. Descriptions of each alternative are provided below.

Project Description

Parsons Transportation Group Inc. of Virginia, in coordination with the Prince William County Department of Transportation (PWC DOT) and Virginia Department of Transportation (VDOT), and in cooperation with the Federal Highway Administration (FHWA) as the lead federal agency, is preparing an Environmental Assessment (EA) to evaluate the potential social, economic, and environmental effects associated with proposed improvements in the Route 28 corridor between Godwin Drive in Prince William County and Compton Road in Fairfax County. The EA will evaluate three alternatives developed in the December 2017 Route 28 Corridor Feasibility Study. These alternatives, designated 2A, 2B, and 4, were the three highest ranked alternatives in the Feasibility Study based on criteria that included planning level costs, project benefits, and environmental and right of way impacts.

Alternative 2A would extend Godwin Drive north from the existing Godwin Drive/Sudley Road intersection, then turn east along the south side of Bull Run until joining existing Centreville Road. Centreville Road would be widened from this point north to tie into widening of Centreville Road planned by Fairfax County. Alternative 2B would follow the same alignment as Alternative 2A until reaching a point near Old Centreville Road, where it would turn northward and cross Bull Run at the existing crossing of Old Centreville Road, and tie into existing Centreville Road north of Bull Run where it would meet the Centreville Road widening planned by Fairfax County. Alternative 4 would widen existing Centreville Road on the existing alignment between Liberia Avenue and the Fairfax County/Prince William County Line.

Reference: Delineation of Waters of the U.S. (WOUS) Environmental Documentation for Route 28 Corridor, Prince William County, City of Manassas, City of Manassas Park, and Fairfax County, Virginia; Prince William County Department of Transportation

Off-site Evaluation

Prior to conducting fieldwork, Stantec consulted the U.S. Geological Survey (USGS) 7.5-minute Topographical Quadrangle Map for Manassas, Virginia (1998), the National Wetlands Inventory Interactive Mapper (NWI), administered by the U.S. Fish and Wildlife Service (USFWS), and the Web Soil Survey, administered by the Natural Resources Conservation Service (NRCS). The USGS quad map depicts a mix of forested, cleared, and developed land within the project area, situated on nearly level to moderately sloping terrain. The NWI depicts palustrine forested and emergent wetlands associated with stream channel as well as an open water feature within the project area. Additionally, the soil survey indicates that the project area is underlain primarily by Arcola silt loam, Arcola-Nestoria Complex, Dulles silt loam, Bermudian silt loam, Urban land-Udorthents Complex, Urban land, Manassas silt loam, Panorama silt loam, Rowland silt loam, and Albano silt loam. Albano silt loam is classified as hydric by the NRCS in Prince William County, Virginia. All other soils are classified as non-hydric; however, Arcola silt loam, Panorama silt loam, Dulles silt loam, Arcola-Nestoria complex, and Manassas silt loam may contain hydric inclusions.

On-site Evaluation

Fieldwork was conducted during June 2018 using the Routine Determination Method as outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* and methods described in the 2012 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0).* Wetland flags were placed in the field by Stantec and sequentially numbered to provide an on-site record of the delineation. The data sheets used in this investigation are attached along with the Delineation Map (Figure 1) showing the GPS located limits of wetlands and other water features, as well as data point locations.

Site Description

Jurisdictional features identified by Stantec within the project limits may be classified as palustrine forested, palustrine scrub-shrub, and palustrine emergent wetlands as well as perennial, intermittent, and ephemeral stream channels. Wetland vegetation is typified by red maple (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), boxelder (*Acer negundo*), black willow (*Salix nigra*), common rush (*Juncus effusus*), fox sedge (*Carex vulpinoidia*), shallow sedge (*Carex luridia*), Japanese stilt grass (*Microstegium vimineum*), and poison ivy (*Toxicodendron radicans*). The transition from wetland to upland is generally identified by the break from hydric to non-hydric soils, a shift in a vegetative community dominated by hydrophytes (OBL to FAC) to non-hydrophytes (FACU to UPL), and a loss of indicators of hydrology, due primarily to microtopographic variability. Table 1 shows the dimensions of the identified jurisdictional resources within each alternative.

Reference: Delineation of Waters of the U.S. (WOUS) Environmental Documentation for Route 28 Corridor, Prince William County, City of Manassas, City of Manassas Park, and Fairfax County, Virginia; Prince William County Department of Transportation

Table 1. Wetlands and WOUS Calculations

	Palustrine Emergent Wetland (PEM) (Acres)	**Palustrine Scrub Shrub Wetland (PSS)** (Acres)	**Palustrine Forested Wetland (PFO)** (Acres)	**Perennial Stream Channels (R3) Excluding Culverts*** Acres (LF)	**Perennial Stream Channels (R3) Including Culverts*** Acres (LF)	**Intermittent Stream Channels (R4)** Acres (LF)	**Ephemeral Stream Channels (R6)** Acres (LF)
Alternative 2A (165.81 Acres)	3.10	0	3.26	2.27 (4,102)	2.28 (4,271)	0.11 (1,668)	0.03 (437)
Alternative 2B (143.11 Acres)	3.75	0	5.28	3.05 (5,134)	3.06 (5,364)	0.10 (1,504)	0.15 (1,495)
Alternative 4 (109.89 Acres)	0.09	0.03	0.51	0.58 (472)	0.59 (606)	0.08 (954)	0.004 (63)

*All culvert lengths are assumed to be straight line calculations from inlet to outlet. Areas of stream resources within culverts were calculated assuming pipe diameters of 24 inches.

If you have any questions regarding these findings, please feel free to call at your convenience. Stantec appreciates the opportunity to provide environmental services on this project.

Regards,

Stantec Consulting Services Inc.

Jason Mann
Senior Ecologist

Phone: (540) 785-5544
Fax: (540) 785-1742
jason.mann@stantec.com

Attachment: Wetland Determination Data Forms & Delineation Map (Figure 1)

c. Carolyn Keeler – Stantec

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 1

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND IN DRAINAGEWAY NEAR FLAG BYP-7;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Prunus serotina	Shrub	FACU	15
Ulmus rubra	Shrub	FAC	10
Leonurus cardiaca	Herbaceous	UPL	85

Non-Dominant Species	Stratum	IND	%
Robinia pseudoacacia	Shrub	FACU	5

% Dominant species FAC or wetter: 33%

Prevalence Index: 4.7

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-4	10YR 3/4	100					CLAY LOAM
4-20	5YR 5/6	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 2

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE NORTH OF "BYQ" LINE;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Carex lurida	Herbaceous	OBL	20
Cyperus echinatus	Herbaceous	FACU	15
Typha latifolia	Herbaceous	OBL	15
Lonicera japonica	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Carex vulpinoidea	Herbaceous	OBL	10
Lespedeza cuneata	Herbaceous	FACU	10
Juncus effusus	Herbaceous	FACW	5

% Dominant species FAC or wetter: 75%

Prevalence Index: 2.1

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 4/6	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 3

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	MANASSAS SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE SOUTH OF "BYS" LINE;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Vitis rotundifolia	Vine	FAC	10
Lonicera japonica	Vine	FAC	5
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 100%

Prevalence Index: 3.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-2	7.5YR 3/4	100					SILT LOAM
2-12	7.5YR 3/3	100					CLAY LOAM
12-20	5Y 4/6	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 4

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	S. WENDER	Site Longitude:	-77.458450°
Date:	7/6/2018	Soil Map Unit Name:	DULLES SILT LOAM, 0-4% SLOPES

Summary of Findings: **UPLAND SOUTH OF "BYU" LINE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Robinia pseudoacacia	Sapling	FACU	70
Juniperus virginiana	Shrub	FACU	20
Lespedeza cuneata	Herbaceous	FACU	40
Schedonorus arundinaceus	Herbaceous	FACU	30
Lonicera japonica	Vine	FAC	20

Non-Dominant Species	Stratum	IND	%
Pyrus calleryana	Sapling	UPL	15
Pyrus calleryana	Shrub	UPL	5
Fraxinus pennsylvanica	Shrub	FACW	5
Rubus argutus	Herbaceous	FACU	10
Bidens aristosa	Herbaceous	FACW	5
Solidago altissima	Herbaceous	FACU	5
Trifolium pratense	Herbaceous	FACU	5

% Dominant species FAC or wetter: 20%

Prevalence Index: 3.9

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-7	7.5YR 6/4	100					SANDY LOAM

Hydric Soil Indicators:

___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	*Indicators for Problematic Hydric Soils*
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ 2cm Muck (A10)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Coast Prairie Redox (A16)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Piedmont Floodplain Soils (F19)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Red Parent Material (TF2)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Very Shallow Dark Surface (TF12)
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	___ Other
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type: BEDROCK
Depth (inches): >7"

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 5

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	7/10/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYW-18;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Sapling	FACW	10
Juncus tenuis	Herbaceous	FAC	25
Carex vulpinoidea	Herbaceous	OBL	10
Juncus effusus	Herbaceous	FACW	10
Lonicera japonica	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Bidens aristosa	Herbaceous	FACW	5
Carex lurida	Herbaceous	OBL	5
Toxicodendron radicans	Herbaceous	FAC	5
Solidago rugosa	Herbaceous	FAC	3

% Dominant species FAC or wetter: 100%
Prevalence Index: 2.3
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-15	7.5YR 4/4	90	10YR 4/6	10	C	M	CLAY LOAM
15-20	5YR 5/6	100					CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	X Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 6

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	7/10/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYX-5;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Juniperus virginiana	Tree	FACU	25
Pinus virginiana	Tree	UPL	10
Juniperus virginiana	Sapling	FACU	10
Kalmia latifolia	Shrub	FACU	15
Lonicera japonica	Vine	FAC	10

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 20%

Prevalence Index: 4.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	2.5YR 6/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 7

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYAE-2;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Microstegium vimineum	Herbaceous	FAC	25
Solanum carolinense	Herbaceous	FACU	10
Lespedeza cuneata	Herbaceous	FACU	10

Non-Dominant Species	Stratum	IND	%
Juncus effusus	Herbaceous	FACW	5

% Dominant species FAC or wetter: 33%

Prevalence Index: 3.3

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-14	7.5YR 6/4	80	7.5YR 4/4	20	INCLUSIONS	M	GRAVELLY CLAY
14-20	7.5YR 3/4	95	2.5YR 4/6	5	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 8

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYAE-2;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	X Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 4
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Carex lurida	Herbaceous	OBL	20
Juncus effusus	Herbaceous	FACW	15
Carex vulpinoidea	Herbaceous	OBL	15

Non-Dominant Species	Stratum	IND	%
Carex frankii	Herbaceous	OBL	5
Verbesina alternifolia	Herbaceous	FAC	5

% Dominant species FAC or wetter: 100%

Prevalence Index: 1.4

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation: X
Dominance Test >50%: X
Prevalence Index is ≤ 3.0: X
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	5YR 4/3	90	2.5YR 4/8	5	C	M	CLAY LOAM
			2.5YR 4/8	5	C	PL	
8-12	10YR 4/2	97	2.5YR 4/8	3	C	M	CLAY
12-20	7.5YR 6/6	97	7.5YR 3/3	3	D	M	GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	X Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 9

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYAI-24;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	**X** Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 12
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Ulmus americana	Tree	FACW	30
Acer rubrum	Tree	FAC	20
Ulmus americana	Sapling	FACW	20
Acer rubrum	Sapling	FAC	15
Fraxinus pennsylvanica	Shrub	FACW	5
Dulichium arundinaceum	Herbaceous	OBL	25
Carex vulpinoidea	Herbaceous	OBL	15
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Tree	FACW	10

% Dominant species FAC or wetter: 100%

Prevalence Index: 2.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-4	7.5YR 4/2	95	7.5YR 6/6	5	C	M	CLAY LOAM
4-9	7.5YR 5/2	90	7.5YR 6/8	10	C	M	CLAY
9-20	7.5YR 6/2	70	7.5YR 5/8	30	C	M	CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	**X** Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 10

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYAI-24;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONVEX
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus alba	Tree	FACU	45
Quercus alba	Sapling	FACU	10
Celtis occidentalis	Sapling	FACU	10
Microstegium vimineum	Herbaceous	FAC	15
Lonicera japonica	Vine	FAC	20
Parthenocissus quinquefolia	Vine	FACU	15

Non-Dominant Species	Stratum	IND	%
Juniperus virginiana	Tree	FACU	10
Carya tomentosa	Tree	UPL	5

% Dominant species FAC or wetter: 33%

Prevalence Index: 3.8

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	7.5YR 3/4	100					CLAY LOAM
8-20	5YR 4/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 11

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	PANORAMA SILT LOAM, 2-7% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYAO-6;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	PFO1A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	**X** Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water: ___
Water Table: ___
Saturated soil: O

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Carex frankii	Herbaceous	OBL	20
Microstegium vimineum	Herbaceous	FAC	15

Non-Dominant Species	Stratum	IND	%
Juncus tenuis	Herbaceous	FAC	5
Impatiens capensis	Herbaceous	FACW	3
Verbesina alternifolia	Herbaceous	FAC	3

% Dominant species FAC or wetter: 100%

Prevalence Index: 2.1

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation: ___
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations: ___
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-12	5YR 4/4	85	5YR 2/2	15	D	M	CLAY LOAM
12-20	5YR 4/4	95	5YR 6/6	5	C	M	CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	**X** Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type: ___
Depth (inches): ___

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 12

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	PANORAMA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYAO-6;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 13

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Lespedeza cuneata	Herbaceous	FACU	35
Anthoxanthum odoratum	Herbaceous	FACU	10

Non-Dominant Species	Stratum	IND	%
Symphyotrichum pilosum	Herbaceous	FAC	5

% Dominant species FAC or wetter: O

Prevalence Index: 3.9

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 4/4	100					GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 13

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG & A. MCINTYRE	Site Longitude:	-77.458450°
Date:	6/29/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYAR-21;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	**X** Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 4
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Salix nigra	Tree	OBL	45
Acer negundo	Tree	FAC	20
Acer negundo	Sapling	FAC	20
Salix nigra	Sapling	OBL	15
Acer negundo	Shrub	FAC	10
Acer rubrum	Shrub	FAC	5
Microstegium vimineum	Herbaceous	FAC	10
Dichanthelium dichotomum	Herbaceous	FAC	5
Vitis rotundifolia	Vine	FAC	10
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 100%

Prevalence Index: 2.2

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 4/3	90	5YR 3/4	10	C	M	CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	**X** Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 14

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG & A. MCINTYRE	Site Longitude:	-77.458450°
Date:	6/29/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYAR-21;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Albizia julibrissin	Tree	UPL	30
Pyrus calleryana	Shrub	UPL	10
Acer rubrum	Shrub	FAC	5
Microstegium vimineum	Herbaceous	FAC	25
Lespedeza cuneata	Herbaceous	FACU	10
Securigera varia	Herbaceous	UPL	10

Non-Dominant Species	Stratum	IND	%
Rosa multiflora	Shrub	FACU	3
Cirsium arvense	Herbaceous	FACU	5

% Dominant species FAC or wetter: 33%

Prevalence Index: 4.2

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 3/4	100					GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 15

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG & A. MCINTYRE	Site Longitude:	-77.458450°
Date:	6/29/2018	Soil Map Unit Name:	URBAN LAND-UDORTHENTS COMPLEX, 0-7% SLOPES

Summary of Findings: **UPLAND IN SWALE NEAR FLAG BYAV-8;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	4-6

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Carya glabra	Tree	FACU	30
Quercus rubra	Tree	FACU	20
Quercus alba	Tree	FACU	15
Ulmus alata	Sapling	FACU	10
Liquidambar styraciflua	Sapling	FAC	10
Acer negundo	Sapling	FAC	10
Quercus rubra	Shrub	FACU	10
Prunus serotina	Shrub	FACU	10
Microstegium vimineum	Herbaceous	FAC	15
Quercus rubra	Herbaceous	FACU	10
Toxicodendron radicans	Vine	FAC	40
Parthenocissus quinquefolia	Vine	FACU	20
Lonicera japonica	Vine	FACU	15

Non-Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Shrub	FACW	5
Liquidambar styraciflua	Shrub	FAC	5

% Dominant species FAC or wetter: 31%

Prevalence Index: 3.6

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 3/3	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 16

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG & A. MCINTYRE	Site Longitude:	-77.458450°
Date:	6/29/2018	Soil Map Unit Name:	URBAN LAND-UDORTHENTS COMPLEX, 0-7% SLOPES

Summary of Findings: **UPLAND IN SWALE EAST OF "BYAV" LINE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	4-6

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus rubra	Tree	FACU	30
Ulmus alata	Tree	FACU	20
Prunus serotina	Sapling	FACU	20
Quercus rubra	Sapling	FACU	10
Ulmus rubra	Shrub	FAC	10
Rosa multiflora	Shrub	FACU	10
Acer negundo	Shrub	FAC	5
Rubus argutus	Herbaceous	FACU	10
Impatiens capensis	Herbaceous	FACW	3
Campsis radicans	Vine	FAC	10
Parthenocissus quinquefolia	Vine	FACU	10
Lonicera japonica	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Acer rubrum	Tree	FAC	10

% Dominant species FAC or wetter: 42%

Prevalence Index: 3.7

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-6	7.5YR 4/3	100					CLAY
6-20	5YR 4/4	100					CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 17

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	G. KILGORE	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	URBAN LAND-UDORTHENTS COMPLEX, 0-7% SLOPES

Summary of Findings: **UPLAND IN SWALE NEAR FLAG GKI-30;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Poa pratensis	Herbaceous	FACU	90

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: O

Prevalence Index: 4.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-10	7.5YR 3/4	100					CLAY LOAM
10-20	7.5YR 4/6	90	5YR 5/8	10	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 18

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	G. KILGORE	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG GKI-19;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 10
Saturated soil: 4

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Tree	FACW	20
Saururus cernuus	Herbaceous	OBL	40
Microstegium vimineum	Herbaceous	FAC	20
Typha latifolia	Herbaceous	OBL	15

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 100%
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Prevalence Index: 1.6
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	7.5YR 4/2	85	7.5YR 5/8	15	C	M	CLAY LOAM
8-20	7.5YR 4/4	80	7.5YR 5/8	20	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	X Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 19

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	G. KILGORE	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG GKG-12;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLOODPLAIN
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	**X** Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	**X** Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	**X** Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water: ___
Water Table: ___
Saturated soil: 3

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Tree	FACW	30
Carpinus caroliniana	Tree	FAC	25
Quercus bicolor	Tree	FACW	20
Fraxinus pennsylvanica	Sapling	FACW	20
Platanus occidentalis	Sapling	FACW	15
Boehmeria cylindrica	Herbaceous	FACW	20
Saururus cernuus	Herbaceous	OBL	25
Microstegium vimineum	Herbaceous	FAC	15

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 100%

Prevalence Index: 2.1

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation: ___
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations: ___
Problematic Hydrophytic Vegetation: ___

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-6	5YR 4/2	80	5YR 4/6	30	C	M	SILTY CLAY LOAM
6-20	5YR 4/4	85	5YR 5/8	15	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	**X** Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	**X** Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type: ___
Depth (inches): ___

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 20

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/27/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND IN LOW AREA SOUTH OF BULL RUN;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	TOE OF SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus alba	Tree	FACU	30
Fagus grandifolia	Tree	FACU	30
Fagus grandifolia	Sapling	FACU	10
Carpinus caroliniana	Sapling	FAC	10
Acer negundo	Sapling	FAC	10
Acer negundo	Shrub	FAC	20
Rosa multiflora	Shrub	FACU	10
Microstegium vimineum	Herbaceous	FAC	80

Non-Dominant Species	Stratum	IND	%
Platanus occidentalis	Tree	FACW	10
Juglans nigra	Tree	FACU	10
Liriodendron tulipifera	Tree	FACU	10
Ulmus rubra	Sapling	FAC	5
Parthenocissus quinquefolia	Herbaceous	FACU	15

% Dominant species FAC or wetter: 50%

Prevalence Index: 3.4

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-4	5YR 4/2	100					GRAVELLY SANDY CLAY LOAM
4-20	5YR 4/4	95	5YR 4/6	5	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	**X** Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 21

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/27/2018	Soil Map Unit Name:	ROWLAND SILT LOAM, 0-2% SLOPES

Summary of Findings: **UPLAND NEAR FLAG JMN-3;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Ulmus rubra	Tree	FAC	35
Acer negundo	Tree	FAC	20
Ulmus rubra	Sapling	FAC	5
Rosa multiflora	Shrub	FACU	10
Dichanthelium clandestinum	Herbaceous	FAC	30
Microstegium vimineum	Herbaceous	FAC	30
Lonicera japonica	Vine	FAC	10

Non-Dominant Species	Stratum	IND	%
Elymus hystrix	Herbaceous	UPL	10
Boehmeria cylindrica	Herbaceous	FACW	5

% Dominant species FAC or wetter: 86%

Prevalence Index: 3.2

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	5YR 3/4	100					CLAY LOAM
8-20	5YR 4/4	95	2.5YR 3/6	5	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	**X** Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 22

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/27/2018	Soil Map Unit Name:	ROWLAND SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG JMN-5;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	X Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water: ___
Water Table: ___
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Rosa multiflora	Shrub	FACU	10
Dichanthelium clandestinum	Herbaceous	FAC	25
Scirpus atrovirens	Herbaceous	OBL	25
Carex vulpinoidea	Herbaceous	OBL	25

Non-Dominant Species	Stratum	IND	%
Persicaria sagittata	Herbaceous	OBL	10

% Dominant species FAC or wetter: 75%

Prevalence Index: 1.8

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation: ___
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations: ___
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	5YR 4/2	85	5YR 4/6	15	C	M	CLAY LOAM
8-20	5YR 6/1	80	7.5YR 5/8	20	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type: ___
Depth (inches): ___

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 23

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	PENN SILT LOAM, 7-15% SLOPES

Summary of Findings: **UPLAND IN SWALE NORTH OF "JML" LINE;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Acer negundo	Tree	FAC	15
Juniperus virginiana	Tree	FACU	15
Microstegium vimineum	Herbaceous	FAC	50
Cinna arundinacea	Herbaceous	FACW	25

Non-Dominant Species	Stratum	IND	%
Boehmeria cylindrica	Herbaceous	FACW	5

% Dominant species FAC or wetter: 75%

Prevalence Index: 2.9

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-12	5YR 3/3	100					CLAY LOAM
12-20	5YR 4/3	95	2.5YR 4/6	5	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 24

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG JMI-4;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLOODPLAIN
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	X Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
X Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Acer negundo	Tree	FAC	15
Acer rubrum	Sapling	FAC	5
Rosa multiflora	Shrub	FACU	10
Acer negundo	Shrub	FAC	5
Dulichium arundinaceum	Herbaceous	OBL	35
Boehmeria cylindrica	Herbaceous	FACW	30

Non-Dominant Species	Stratum	IND	%
Cinna arundinacea	Herbaceous	FACW	15

% Dominant species FAC or wetter: 83%
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Prevalence Index: 2.1
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-6	5YR 4/2	80	5YR 4/4	20	C	M	SILTY CLAY LOAM
6-20	5YR 4/3	90	5YR 4/6	10	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 25

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	PANORAMA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE NEAR FLAG JMH-7;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus bicolor	Tree	FACW	20
Platanus occidentalis	Tree	FACW	20
Asimina triloba	Sapling	FAC	15
Lonicera maakii	Shrub	UPL	15
Berberis vulgaris	Shrub	FACU	15
Ligustrum sinense	Shrub	FACU	10
Asimina triloba	Shrub	FAC	10
Microstegium vimineum	Herbaceous	FAC	20
Lonicera japonica	Vine	FAC	15

Non-Dominant Species	Stratum	IND	%
Fagus grandifolia	Tree	FACU	15
Quercus stellata	Tree	UPL	15
Quercus pagoda	Tree	FACW	10
Juniperus virginiana	Sapling	FACU	5
Carya glabra	Sapling	FACU	5
Acer rubrum	Sapling	FAC	5

% Dominant species FAC or wetter: 67%
Prevalence Index: 3.3
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-3	2.5YR 3/3	100					CLAY LOAM
3-20	2.5YR 4/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 26

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	NESTORIA CHANNERY SILT LOAM, 25-45% SLOPES

Summary of Findings: **UPLAND IN SWALE NEAR FLAG JMG-8;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus palustris	Tree	FACW	25
Fraxinus pennsylvanica	Tree	FACW	25
Quercus alba	Sapling	FACU	5
Fraxinus pennsylvanica	Sapling	FACW	5
Viburnum prunifolium	Sapling	FACU	10
Asimina triloba	Sapling	FAC	5
Lonicera maakii	Shrub	UPL	15
Microstegium vimineum	Herbaceous	FAC	15

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 63%

Prevalence Index: 2.9

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-10	2.5YR 3/4	100					CLAY
10-20	2.5YR 4/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 27

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/26/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYI-4;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	FLOODPLAIN
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	**X** Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	**X** Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	**X** Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 7
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Ulmus americana	Tree	FACW	15
Acer negundo	Sapling	FAC	20
Acer rubrum	Sapling	FAC	10
Ulmus americana	Sapling	FACW	10
Acer negundo	Shrub	FAC	25
Fraxinus pennsylvanica	Shrub	FACW	10
Microstegium vimineum	Herbaceous	FAC	20
Carex vulpinoidea	Herbaceous	OBL	5
Vitis rotundifolia	Vine	FAC	5
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 100%

Prevalence Index: 2.6

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-3	2.5Y 4/1	85	10YR 3/6	15	C	M	SANDY LOAM
3-16	10YR 4/1	90	10YR 3/6	10	C	M	SANDY CLAY LOAM
16-20	7.5YR 4/2	97	7.5YR 5/8	3	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	**X** Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 28

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND IN LOW AREA SOUTH OF "JMD" LINE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Schedonorus arundinaceus	Herbaceous	FACU	50
Juncus tenuis	Herbaceous	FAC	30

Non-Dominant Species	Stratum	IND	%
Ambrosia artemisiifolia	Herbaceous	FACU	10

% Dominant species FAC or wetter: 50%

Prevalence Index: 3.7

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-3	5YR 3/4	100					GRAVELLY CLAY
3-20	2.5YR 4/4	75	2.5YR 4/6	25	C	M	GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	X Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 29

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	CALVERTON SILT LOAM, 0-7% SLOPES

Summary of Findings: **UPLAND NORTH OF ORCHARD BRANCH DRIVE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Cynodon dactylon	Herbaceous	FACU	35
Trifolium repens	Herbaceous	FACU	20

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: O

Prevalence Index: 4.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	10YR 3/6	100					SANDY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 30

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	7/10/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND IN SWALE WEST OF CENTRVILLE ROAD;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Ailanthus altissima	Tree	FACU	40
Acer negundo	Tree	FAC	15
Ailanthus altissima	Sapling	FACU	20
Acer negundo	Sapling	FAC	15
Acer negundo	Shrub	FAC	15
Acer rubrum	Shrub	FAC	10
Microstegium vimineum	Herbaceous	FAC	30
Glechoma hederacea	Herbaceous	FACU	30
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Carex intumescens	Herbaceous	FACW	5

% Dominant species FAC or wetter: 67%

Prevalence Index: 3.5

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-1	10YR 3/3	100					LOAM
1-12	7.5YR 4/6	100					CLAY LOAM
12-20	7.5YR 5/6	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 31

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	G. KILGORE	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	ARCOLA-NESTORIA COMPLEX, 7-15% SLOPES

Summary of Findings: **UPLAND EAST OF "GKE" LINE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Acer rubrum	Tree	FAC	25
Fagus grandifolia	Tree	FACU	20
Liriodendron tulipifera	Tree	FACU	15
Quercus alba	Tree	FACU	15
Fagus grandifolia	Sapling	FACU	20
Acer rubrum	Sapling	FAC	15
Baccharis halimifolia	Shrub	FACW	30
Schedonorus arundinaceus	Herbaceous	FACU	80
Verbesina alternifolia	Herbaceous	FAC	20

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 44%

Prevalence Index: 3.5

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-12	10YR 5/8	90	10YR 4/6	10	C	M	CLAY LOAM
12-20	10YR 6/8	90	10YR 4/6	10	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 32

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	G. KILGORE	Site Longitude:	-77.458450°
Date:	6/28/2018	Soil Map Unit Name:	BERMUDIAN SILT LOAM, 0-2% SLOPES

Summary of Findings: **WETLAND NEAR FLAG GKC-22;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	PFO1A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
X High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	X Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	X Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table: 1
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Fagus grandifolia	Tree	FACU	30
Platanus occidentalis	Tree	FACW	20
Asimina triloba	Tree	FAC	15
Asimina triloba	Sapling	FAC	30
Platanus occidentalis	Sapling	FACW	20
Fagus grandifolia	Sapling	FACU	15
Saururus cernuus	Herbaceous	OBL	80
Vitis rotundifolia	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Juncus effusus	Herbaceous	FACW	5
Solanum carolinense	Herbaceous	FACU	5

% Dominant species FAC or wetter: 75%

Prevalence Index: 2.3

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-8	10YR 3/2	95	5YR 5/8	5	C	M	CLAY LOAM
8-20	7.5YR 4/4	85	5YR 5/8	15	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	X Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 33

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	PANORAMA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND EAST OF CENTREVILLE ROAD;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Acer saccharinum	Tree	FACW	35
Celtis occidentalis	Tree	FACU	10
Acer negundo	Sapling	FAC	5
Rosa multiflora	Shrub	FACU	15
Rubus argutus	Herbaceous	FACU	5
Hedera helix	Vine	FACU	20
Lonicera japonica	Vine	FAC	15

Non-Dominant Species	Stratum	IND	%
Fraxinus pennsylvanica	Shrub	FACW	3
Toxicodendron radicans	Vine	FAC	5

% Dominant species FAC or wetter: 43%

Prevalence Index: 3.1

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	5YR 3/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 34

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	MANASSAS SILT LOAM, 2-7% SLOPES

Summary of Findings: **WETLAND NEAR FLAG BYD-11;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		*Secondary Indicators:*
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
X Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		X FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Liquidambar styraciflua	Tree	FAC	20
Alnus serrulata	Tree	OBL	10
Salix nigra	Sapling	OBL	25
Liquidambar styraciflua	Sapling	FAC	10
Liquidambar styraciflua	Shrub	FAC	15
Salix nigra	Shrub	OBL	15
Dichanthelium dichotomum	Herbaceous	FAC	15
Toxicodendron radicans	Vine	FAC	15
Parthenocissus quinquefolia	Vine	FACU	5

Non-Dominant Species	Stratum	IND	%
Arisaema triphyllum	Herbaceous	FACW	3
Solidago rugosa	Herbaceous	FAC	3

% Dominant species FAC or wetter: 89%
Prevalence Index: 2.3
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: **X**
Prevalence Index is ≤ 3.0: **X**
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-10	7.5YR 4/1	95	7.5YR 5/8	5	C	M	CLAY LOAM
10-20	7.5YR 3/4	100					CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 35

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	MANASSAS SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND NEAR FLAG BYD-10;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Ailanthus altissima	Tree	FACU	25
Ailanthus altissima	Sapling	FACU	20
Liquidambar styraciflua	Sapling	FAC	10
Rosa multiflora	Shrub	FACU	5
Solidago altissima	Herbaceous	FACU	10
Dichanthelium dichotomum	Herbaceous	FAC	5
Galium aparine	Herbaceous	FACU	5
Lonicera japonica	Vine	FAC	10
Toxicodendron radicans	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Acer rubrum	Sapling	FAC	5
Vitis rotundifolia	Vine	FAC	3

% Dominant species FAC or wetter: 44%
Prevalence Index: 3.6
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	7.5YR 3/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 36

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ALBANO SILT LOAM, 0-4% SLOPES

Summary of Findings: **WETLAND IN SWALE NEAR FLAG JMB-6;**

Hydrophytic Vegetation is Present:	X	Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:	X	Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:	X	Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:	X	Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
X Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 1

Remarks: **HYDROLOGY PARAMETER MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Salix nigra	Sapling	OBL	30
Rosa multiflora	Shrub	FACU	15
Microstegium vimineum	Herbaceous	FAC	35
Dichanthelium clandestinum	Herbaceous	FAC	10
Lonicera japonica	Vine	FAC	10

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 80%
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Prevalence Index: 2.6
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%: X
Prevalence Index is ≤ 3.0: X
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-2	7.5YR 3/2	100					CLAY LOAM
2-20	7.5YR 4/2	65	7.5YR 4/6	35	C	M	CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	X Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 37

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE NEAR FLAG JMB-7;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Acer negundo	Shrub	FAC	10
Quercus velutina	Shrub	UPL	10
Robinia pseudoacacia	Shrub	FACU	5
Toxicodendron radicans	Herbaceous	FAC	35
Schedonorus arundinaceus	Herbaceous	FACU	20
Plantago lanceolata	Herbaceous	UPL	15
Lonicera japonica	Vine	FAC	5

Non-Dominant Species	Stratum	IND	%
Solanum carolinense	Herbaceous	FACU	5

% Dominant species FAC or wetter: 43%
NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Prevalence Index: 3.8
Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-7	7.5YR 3/2	80	5YR 4/4	20	C	M	LOAM
7-20	7.5YR 4/3	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 38

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN DRAINAGEWAY EAST OF CENTREVILLE ROAD AND NORTH OF MAPLEWOOD DRIVE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONVEX
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	SLOPE
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	1-2

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Quercus phellos	Tree	FAC	35
Pinus viginiana	Tree	UPL	10
Quercus phellos	Sapling	FAC	15
Juniperus virginiana	Sapling	FACU	10
Pinus virginiana	Sapling	UPL	19
Quercus alba	Shrub	FACU	5
Juniperus virginiana	Shrub	FACU	5
Quercus phellos	Shrub	FAC	3
Solidago altissima	Herbaceous	FACU	10
Rubus argutus	Herbaceous	FACU	5
Parthenocissus quinquefolia	Vine	FACU	5
Toxicodendron radicans	Vine	FAC	5
Vitis rotundifolia	Vine	FAC	3

Non-Dominant Species	Stratum	IND	%
Quercus rubra	Sapling	FACU	5

% Dominant species FAC or wetter: 38%

Prevalence Index: 3.8

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	10YR 3/4	100					GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 39

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND EAST OF CENTREVILLE ROAD AND SOUTH OF MAPLEWOOD DRIVE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Cynodon dactylon	Herbaceous	FACU	85

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: O

Prevalence Index: 4.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	10YR 3/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 40

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE SOUTH OF OLD CENTREVILLE ROAD;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Euonymus alatus	Shrub	UPL	15
Poa pratensis	Herbaceous	FACU	90

Non-Dominant Species	Stratum	IND	%
Taraxacum officinale	Herbaceous	FACU	5

% Dominant species FAC or wetter: O

Prevalence Index: 4.1

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-3	7.5YR 3/2	100					LOAM
3-20	7.5YR 3/4	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 41

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE EAST OF CENTREVILLE ROAD AND SOUTH OF CONNER DRIVE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil: 13

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Achillea millefolium	Herbaceous	FACU	15
Solanum carolinense	Herbaceous	FACU	10

Non-Dominant Species	Stratum	IND	%
Rumex crispus	Herbaceous	FAC	5
Trifolium repens	Herbaceous	FACU	3

% Dominant species FAC or wetter: O

Prevalence Index: 3.8

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

UNIDENTIFIED DOMINANT SPECIES OF FESCUE PRESENT.

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-10	10YR 3/4	100					CLAY LOAM
10-20	5YR 3/4	100					SILTY CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 42

Stantec

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	J. MANN	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	ARCOLA SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN SWALE WEST OF CENTREVILLE ROAD AND NORTH OF BREEDEN AVENUE;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	NONE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	FLAT
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	___ Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Pinus strobus	Tree	FACU	15
Poa pratensis	Herbaceous	FACU	90

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: O

Prevalence Index: 4.0

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-3	7.5YR 3/4	100					LOAM
3-20	7.5YR 4/6	100					CLAY LOAM

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
___ Stratified Layers (A5)	___ Dark Surface (S7)	___ Iron-Manganese Masses (F12)	___ Very Shallow Dark Surface (TF12)
___ 2 cm Muck (A10)	___ Polyvalue Below Surface (S8)	___ Umbric Surface (F13)	___ Other
___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

Wetland Determination Data Form - Eastern Mountains and Piedmont Region

Sampling Point Number: 43

Project:	ROUTE 28 CORRIDOR		
Applicant:	PARSONS TRANSPORTATION GROUP INC.	Section/Township/Range:	N/A
City/County:	PRINCE WILLIAM COUNTY, CITY OF MANASSAS, MANASSAS PARK & FAIRFAX COUNTY	Subregion (LRR or MLRA):	LRR S
State:	VIRGINIA	Site Latitude:	38.795940°
Investigator(s):	B. YOUNG	Site Longitude:	-77.458450°
Date:	6/25/2018	Soil Map Unit Name:	MANASSAS SILT LOAM, 2-7% SLOPES

Summary of Findings: **UPLAND IN DEPRESSION NEAR FLAG BYA-13;**

Hydrophytic Vegetation is Present:		Normal Circumstances:	X	NWI Classification:	N/A
Hydric Soils are Present:		Disturbed Parameters (see Remarks):		Local Relief:	CONCAVE
Wetland Hydrology is Present:		Problematic Parameters (see Remarks):		Landform:	DRAINAGEWAY
Sampled Area is within a Wetland:		Atypical Climate/Hydrology (see Remarks):		Slope %:	0-1

Hydrology Parameter:

Primary Indicators:		***Secondary Indicators:***
___ Surface Water (A1)	___ Water Stained Leaves (B9)	___ Surface Soil Cracks (B6)
___ High Water Table (A2)	___ Aquatic Fauna (B13)	___ Sparsely Vegetated Concave Surface (B8)
___ Saturation (A3)	___ True Aquatic Plants (B14)	___ Drainage Patterns (B10)
___ Water Marks (B1)	___ Hydrogen Sulfide Odor (C1)	___ Moss Trim Lines (B16)
___ Sediment Deposits (B2)	___ Oxidized Rhizospheres on Living Roots (C3)	___ Dry-Season Water Table (C2)
___ Drift Deposits (B3)	___ Presence of Reduced Iron (C4)	___ Crayfish Burrows (C8)
___ Algal Mat or Crust (B4)	___ Recent Iron Reduction in Tilled Soils (C6)	___ Saturation Visible on Aerial Imagery (C9)
___ Iron Deposits (B5)	___ Thin Muck Surface (C7)	___ Stunted or Stressed Plants (D1)
___ Inundation Visible on Aerial Imagery (B7)	___ Other	X Geomorphic Position (D2)
		___ Shallow Aquitard (D3)
		___ Microtopographic Relief (D4)
		___ FAC-Neutral Test (D5)

Water Depths (inches):
Surface Water:
Water Table:
Saturated soil:

Remarks: **HYDROLOGY PARAMETER NOT MET.**

Vegetation Parameter:

Dominant Species	Stratum	IND	%
Prunus serotina	Tree	FACU	35
Rubus argutus	Herbaceous	FACU	15
Rumex crispus	Herbaceous	FAC	5
Taraxacum officinale	Herbaceous	FACU	5
Toxicodendron radicans	Vine	FAC	15

Non-Dominant Species	Stratum	IND	%

% Dominant species FAC or wetter: 40%

Prevalence Index: 3.7

NOTE: SPECIES INDICATOR STATUS ACCORDING TO 2016 NATIONAL WETLAND PLANT LIST

Calculated using all species present.

Rapid Test for Hydrophytic Vegetation:
Dominance Test >50%:
Prevalence Index is ≤ 3.0:
Morphological Adaptations:
Problematic Hydrophytic Vegetation:

Remarks: **VEGETATION PARAMETER NOT MET.**

Soil Parameter:

	Matrix		Redox Features				
Depth (inches)	**Color (Moist)**	**%**	**Color (Moist)**	**%**	**Type**	**Loc**	**Texture**
0-20	2.5Y 4/4	100					GRAVELLY CLAY

Hydric Soil Indicators:

			Indicators for Problematic Hydric Soils
___ Histosol (A1)	___ Sandy Mucky Mineral (S1)	___ Depleted Matrix (F3)	___ 2cm Muck (A10)
___ Histic Epipedon (A2)	___ Sandy Gleyed Matrix (S4)	___ Redox Dark Surface (F6)	___ Coast Prairie Redox (A16)
___ Black Histic (A3)	___ Sandy Redox (S5)	___ Depleted Dark Surface (F7)	___ Piedmont Floodplain Soils (F19)
___ Hydrogen Sulfide (A4)	___ Stripped Matrix (S6)	___ Redox Depressions (F8)	___ Red Parent Material (TF2)
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___ Depleted Below Dark Surface (A11)	___ Thin Dark Surface (S9)	___ Piedmont Floodplain Soils (F19)	
___ Thick Dark Surface (A12)	___ Loamy Gleyed Matrix (F2)		

Restrictive Layer (If Observed)
Type:
Depth (inches):

Remarks: **SOIL PARAMETER NOT MET.**

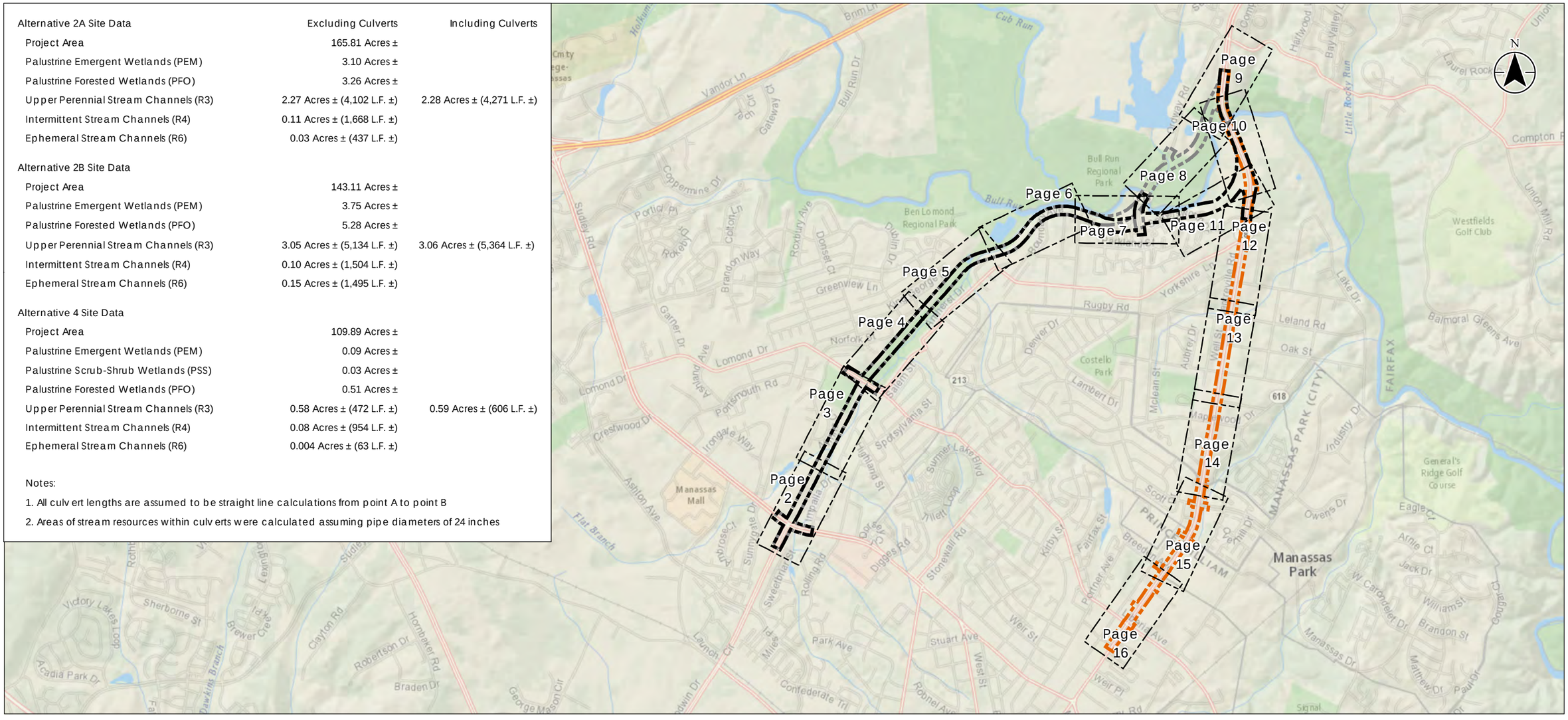
Alternative 2A Site Data	Excluding Culverts	Including Culverts
Project Area	165.81 Acres ±	
Palustrine Emergent Wetlands (PEM)	3.10 Acres ±	
Palustrine Forested Wetlands (PFO)	3.26 Acres ±	
Upper Perennial Stream Channels (R3)	2.27 Acres ± (4,102 L.F. ±)	2.28 Acres ± (4,271 L.F. ±)
Intermittent Stream Channels (R4)	0.11 Acres ± (1,668 L.F. ±)	
Ephemeral Stream Channels (R6)	0.03 Acres ± (437 L.F. ±)	

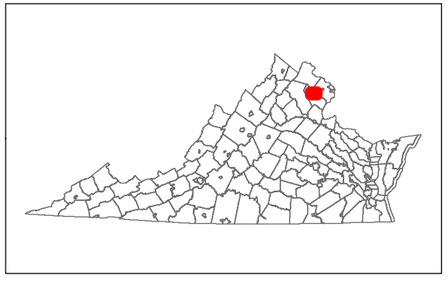
Alternative 2B Site Data		
Project Area	143.11 Acres ±	
Palustrine Emergent Wetlands (PEM)	3.75 Acres ±	
Palustrine Forested Wetlands (PFO)	5.28 Acres ±	
Upper Perennial Stream Channels (R3)	3.05 Acres ± (5,134 L.F. ±)	3.06 Acres ± (5,364 L.F. ±)
Intermittent Stream Channels (R4)	0.10 Acres ± (1,504 L.F. ±)	
Ephemeral Stream Channels (R6)	0.15 Acres ± (1,495 L.F. ±)	

Alternative 4 Site Data		
Project Area	109.89 Acres ±	
Palustrine Emergent Wetlands (PEM)	0.09 Acres ±	
Palustrine Scrub-Shrub Wetlands (PSS)	0.03 Acres ±	
Palustrine Forested Wetlands (PFO)	0.51 Acres ±	
Upper Perennial Stream Channels (R3)	0.58 Acres ± (472 L.F. ±)	0.59 Acres ± (606 L.F. ±)
Intermittent Stream Channels (R4)	0.08 Acres ± (954 L.F. ±)	
Ephemeral Stream Channels (R6)	0.004 Acres ± (63 L.F. ±)	

Notes:

1. All culvert lengths are assumed to be straight line calculations from point A to point B
2. Areas of stream resources within culverts were calculated assuming pipe diameters of 24 inches





- Page Index
- Alternative 2A Limits
- Alternative 2B Limits
- Alternative 4 Limits

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Notes
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2. Project limits provided by Parsons Transportation Group, Inc.
3. Base Map © National Geographic

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203401138
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Technical Review by MGS on 2019-01-03
Independent Review by JMM on 2019-01-03

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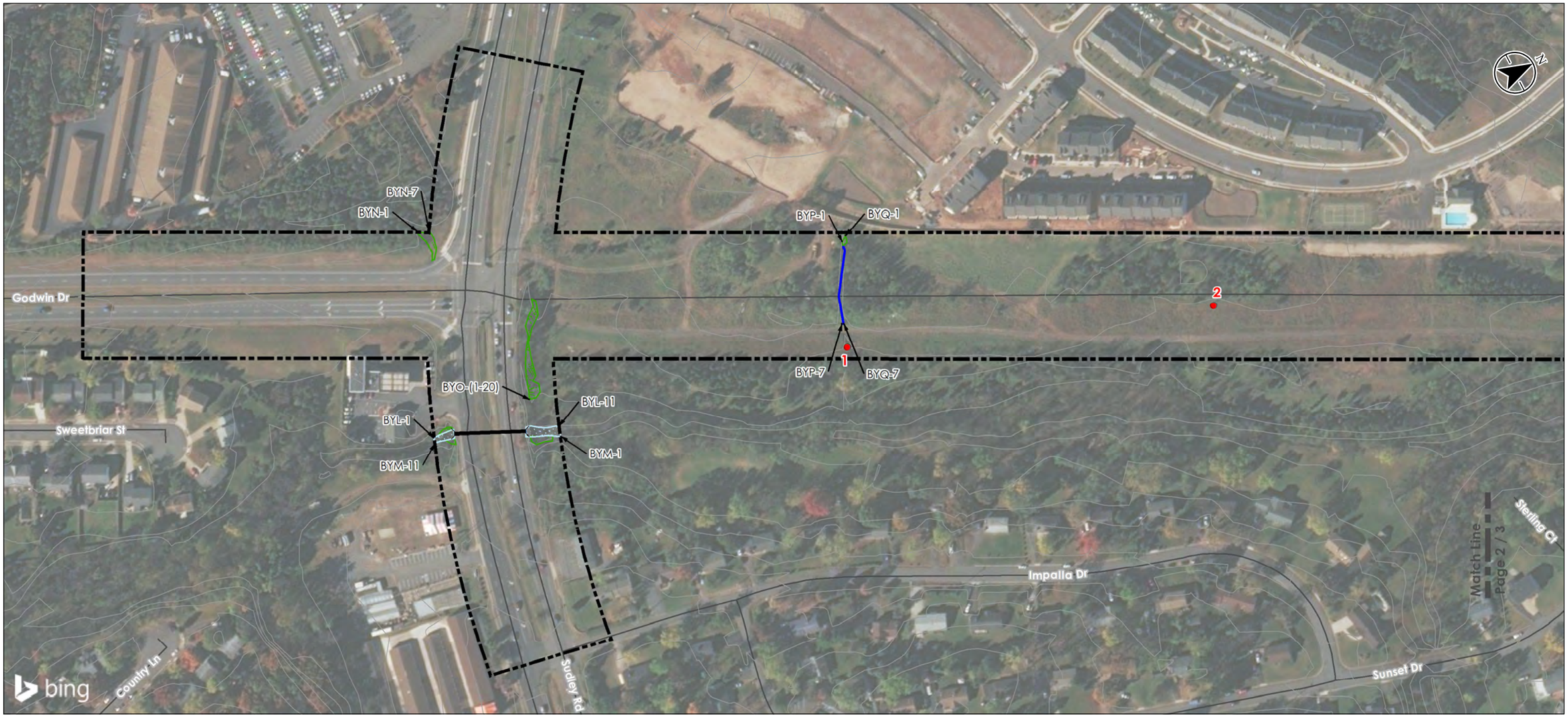
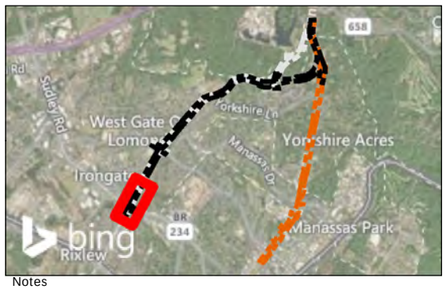
Environmental Documentation for Route 28 Corridor

Figure No.
1

Title
Delineation Map





A-1 Flag Location

1 Data Point Location

Alternative 2A Limits

Alternative 2B Limits

Alternative 4 Limits

Culvert

2-Foot Contour

Approximate Palustrine Emergent Wetland Limits (PEM)

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0 200 400 Feet

1:2,400 (At original document size of 11x17)

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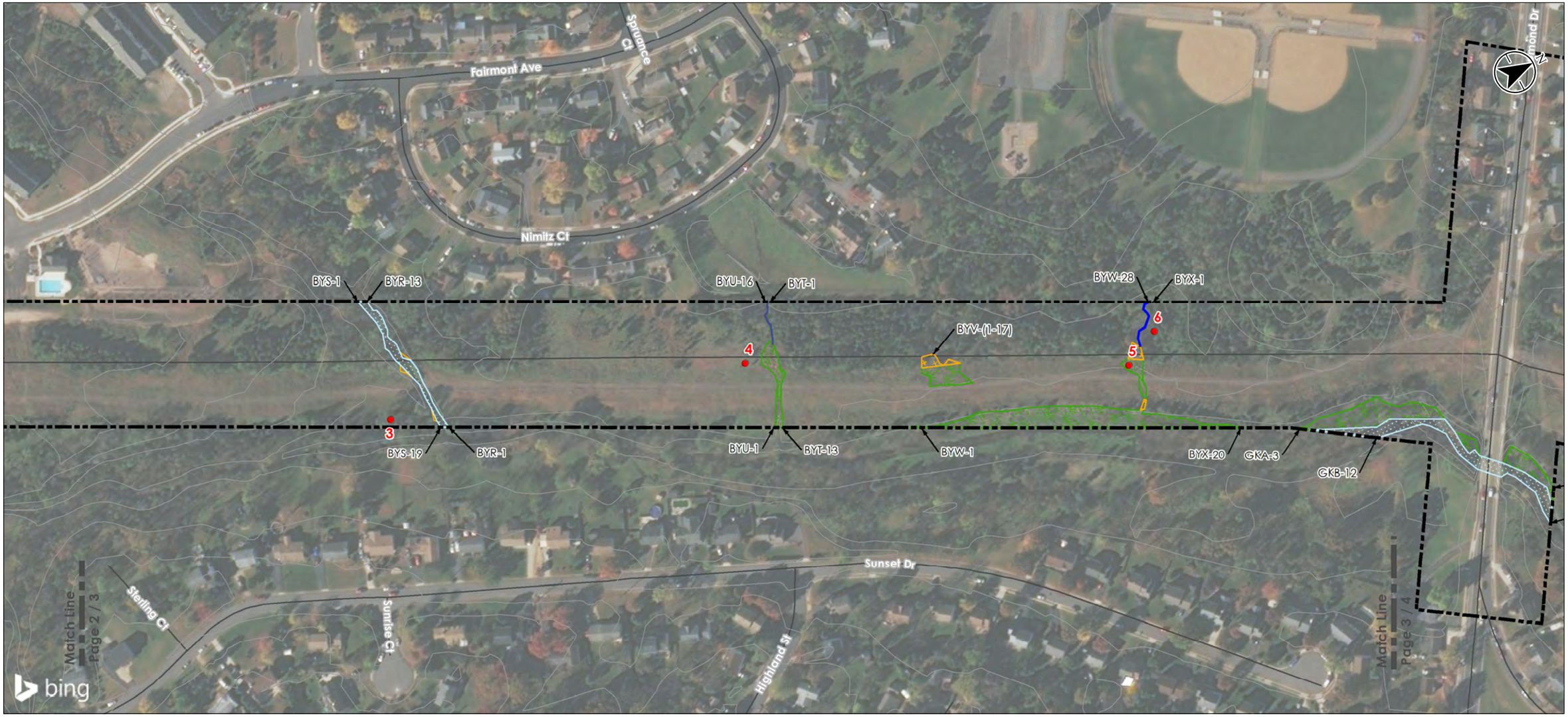

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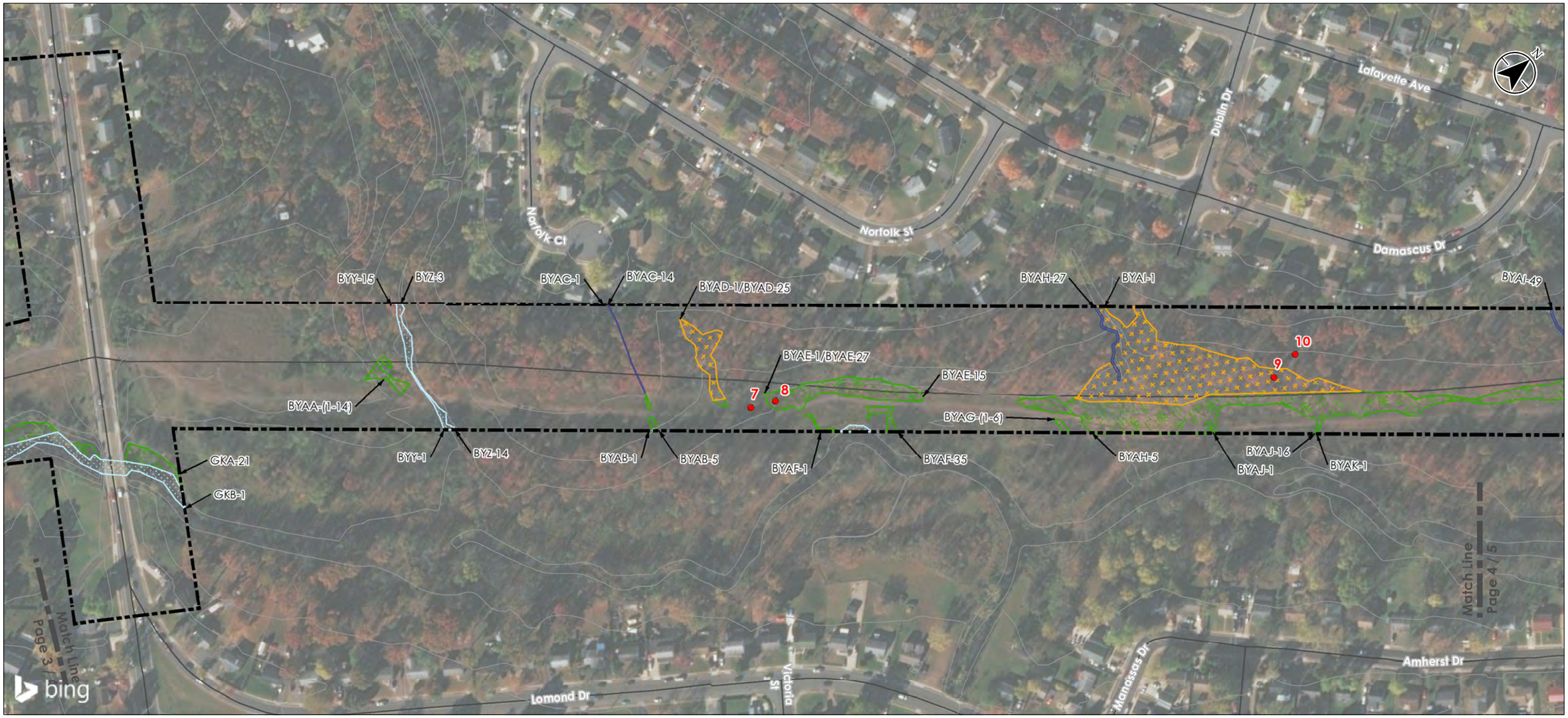

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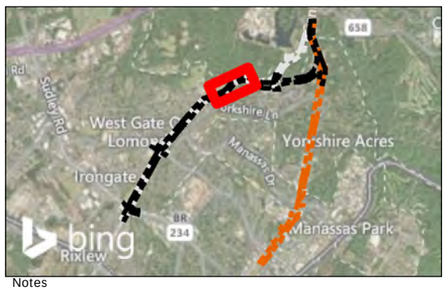

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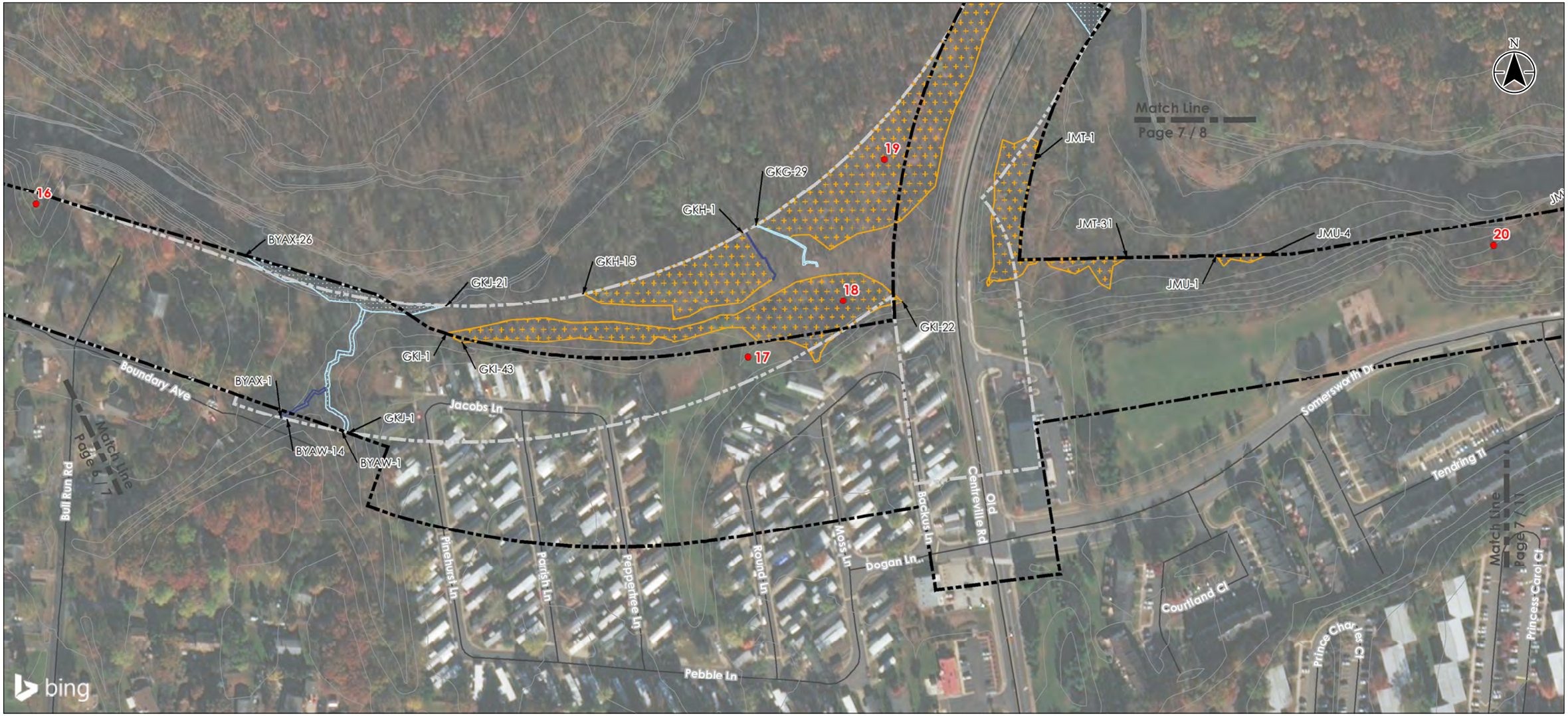

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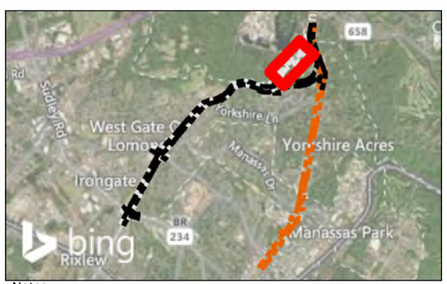

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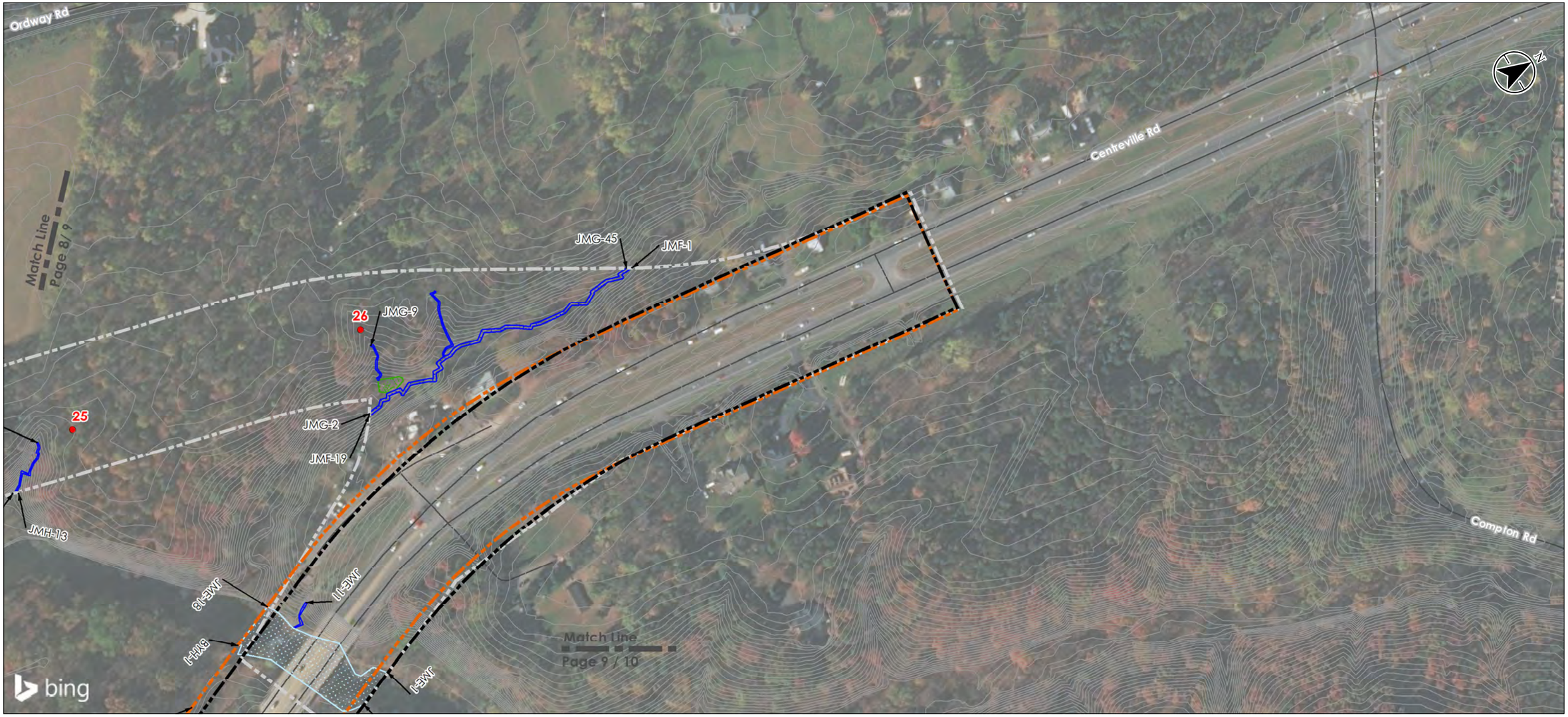

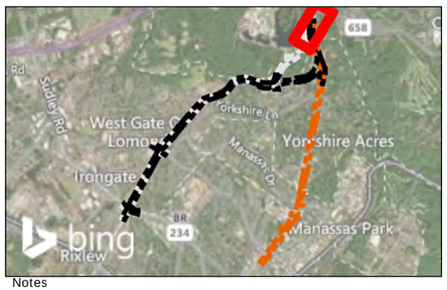

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1 Data Point Location

Alternative 2A Limits

Alternative 2B Limits

Alternative 4 Limits

Culvert

2-Foot Contour

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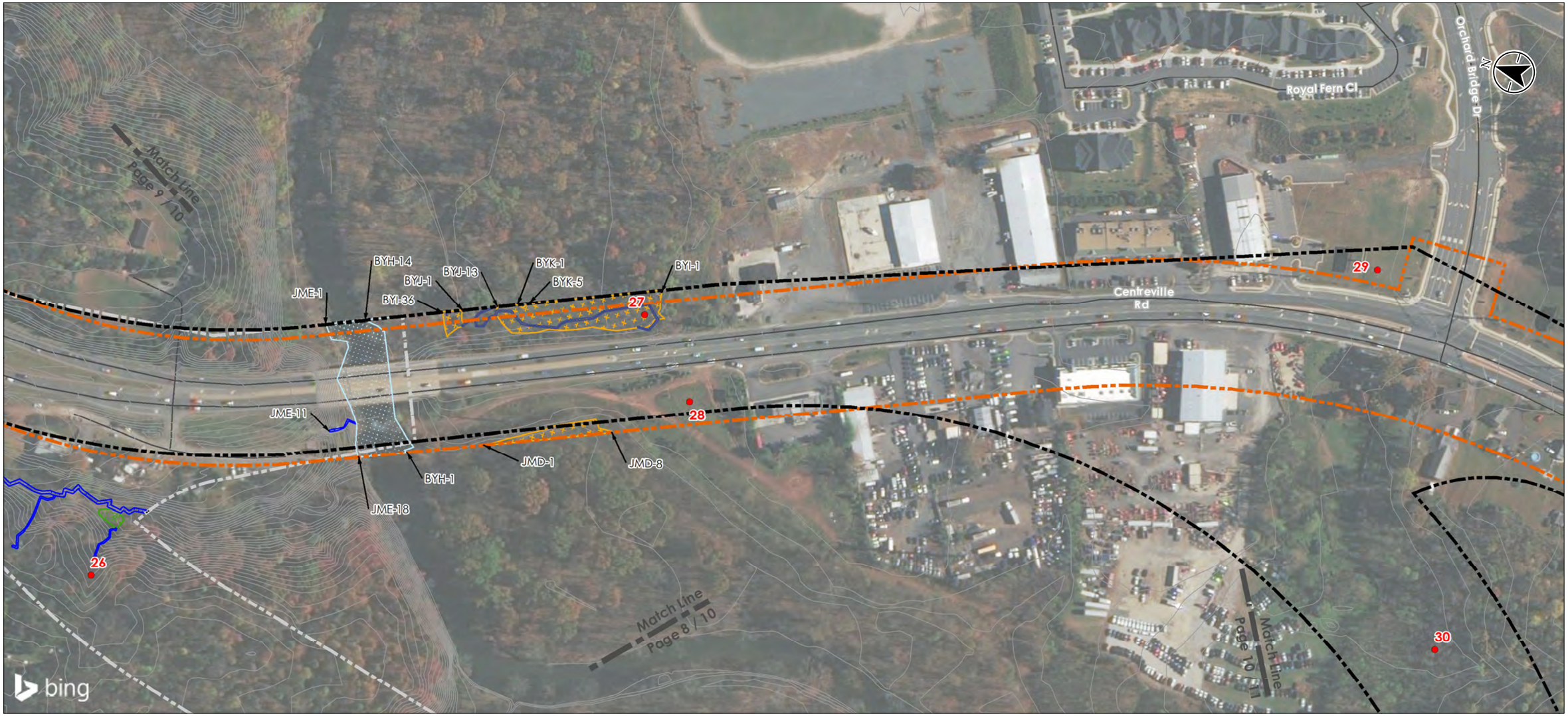

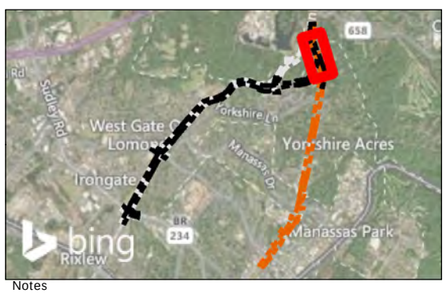

A-1 Flag Location

1 Data Point Location

Alternative 2A Limits

Alternative 2B Limits

Alternative 4 Limits

Culvert

2-Foot Contour

Approximate Palustrine Emergent Wetland Limits (PEM)

Approximate Palustrine Scrub-Shrub Wetland Limits (PSS)

Approximate Palustrine Forested Wetland Limits (PFO)

Approximate Upper Perennial Stream Channel Limits (R3)

Approximate Intermittent Stream Channel Limits (R4)

Approximate Ephemeral Stream Channel Limits (R6)

0 200 400 Feet

1:2,400 (At original document size of 11x17)

Notes
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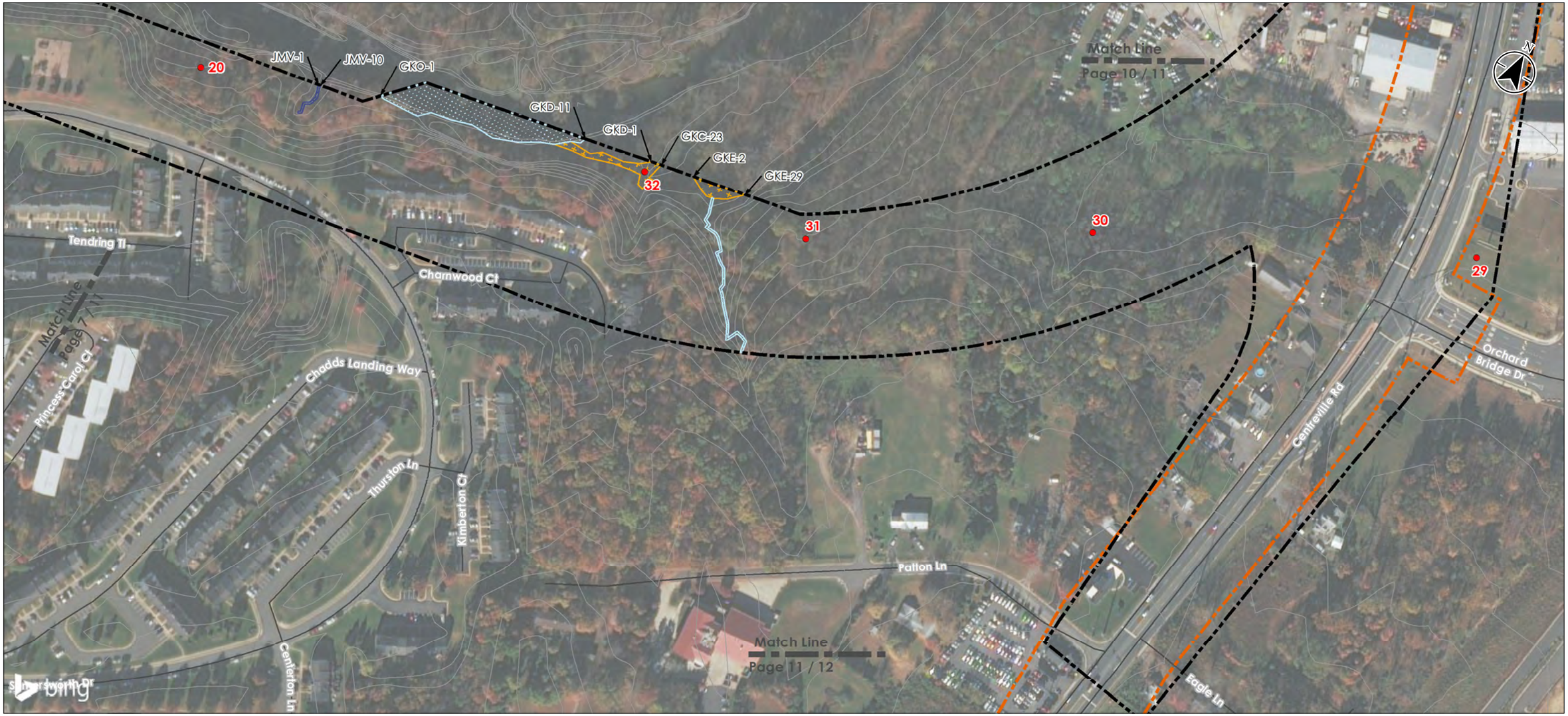
Project Location
Prince William County, City of Manassas, Manassas Park, and Fairfax County, Virginia

203401138
Prepared by ECL on 2018-012-13
Technical Review by MGS on 2019-01-03
Independent Review by JMM on 2019-01-03

Client/Project
Parsons Transportation Group, Inc.
Environmental Documentation for
Route 28 Corridor

Figure No.
1

Title
Delineation Map



A-1 Flag Location

1 Data Point Location

Alternative 2A Limits

Alternative 2B Limits

Alternative 4 Limits

Culvert

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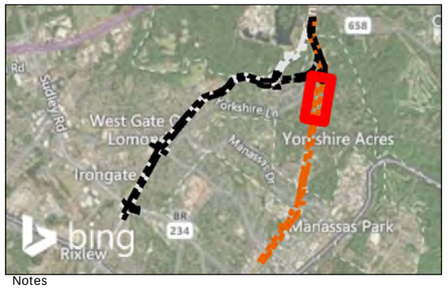

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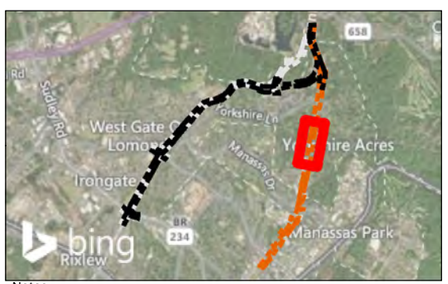

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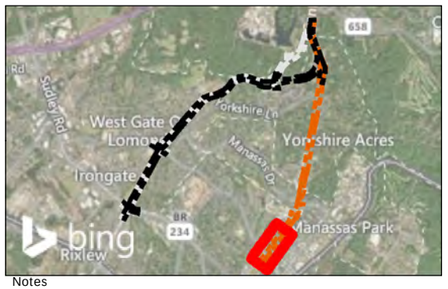

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