

ATTACHMENT E-2

WETLAND DELINEATION REPORTS:

ROUTE 700 PARCELS

Dominion North Anna Power Station

**Wetland Delineation on Route 700 Parcels Adjacent to
Haley Drive and Kentucky Springs Road**

Prepared for:

Dominion Virginia Power
5000 Dominion Boulevard
Glen Allen, Virginia 23060-3308

Prepared by:

EA Engineering, Science, and Technology, Inc.
15 Loveton Circle
Sparks, Maryland 21152
(410)771-4950

June 2008

TABLE OF CONTENTS

1.0 Introduction.....	1
2.0 Methodology.....	1
2.1 Hydrophytic Vegetation.....	1
2.2 Hydric Soils	2
2.3 Wetland Hydrology.....	2
3.0 Results.....	3
4.0 Regulatory Coordination.....	7
5.0 Summary and Conclusions	7
6.0 References.....	8

List of Figures

<u>Number</u>	<u>Title</u>
1	General Location Map
2	Wetland Areas Delineated

List of Tables

<u>Number</u>	<u>Title</u>
1	Plant Species Identified During the Wetland Delineation, March 2008

List of Appendices

Appendix A	Wetland Delineation Data Forms
Appendix B	Photographic Record

1.0 INTRODUCTION

The North Anna Power Station (NAPS) is a nuclear power plant with the capacity to generate 1,786 megawatts of electricity from two units. NAPS is located in Louisa County, near the town of Mineral, on a peninsula on the southern shore of Lake Anna, approximately 5 miles upstream of the North Anna Dam (Figure 1). Dominion is an indirect, wholly subsidiary of Dominion Resources, Inc. Virginia Electric and Power Company (Virginia Power), operates the existing nuclear units on the NAPS site and is a wholly-owned subsidiary of Dominion Resources, Inc. Virginia Power owns the land above and below the lake surface and around the lake up to the expected high-water mark.

Dominion proposes to expand the NAPS site to provide additional electric service to meet the growing demand for electricity. In order to prepare the site for the proposed expansion, a haul road and laydown areas are proposed to support near-term construction projects within the NAPS site.

EA Engineering, Science, and Technology, Inc. (EA) performed a wetland delineation on 26 and 27 March 2008 within four parcels located on the Route 700 parcels, southwest of the North Anna Power Station (NAPS). This is the location for the proposed projects. The delineation defines those lands that may be subject to the U.S. Army Corps of Engineer's (USACE) regulatory jurisdiction under the Clean Water Act.

2.0 METHODOLOGY

The wetland delineation was conducted in accordance with the procedures outlined in the 1987 *Corps of Engineers Wetland Delineation Manual* (USACE 1987). This is the wetland delineation approach currently recognized by reviewing agencies including the United States Army Corps of Engineers (USACE) and the Virginia Department of the Environmental Quality (VDEQ). This procedure involves the three parameter approach that includes the identification of hydrophytic vegetation, hydric soils, and wetland hydrology. All three wetland criteria are generally required for an area to be considered a jurisdictional wetland by the USACE.

2.1 Hydrophytic Vegetation

The hydrophytic vegetation criterion involves determination of the dominance of hydrophytic plant species that are adapted to living in areas where the soil saturation and/or inundation is of sufficient duration during the growing season to influence the plant community composition. Plant species that are commonly found in wetlands have been categorized by the U.S. Fish and Wildlife Service in the *National List of Plant Species That Occur in Wetlands: Northeast-Region 1* (Reed 1988). Each plant listed is categorized by a regional wetland indicator or "hydrophytic" status in four categories as follows:

- Obligate (OBL) = Greater than 99 percent estimated probability of occurring in wetlands
- Facultative Wetland (FACW) = 67 to 99 percent estimated probability of occurring in wetlands
- Facultative (FAC) = 34 to 66 percent estimated probability of occurring in wetlands
- Facultative Upland (FACU) = 1 to 33 percent estimated probability of occurring in wetlands
- Positive (+) and negative (-) signs are modifiers used for the facultative categories. The (+) sign indicates a frequency toward the wetter end of the category (more frequently found in wetlands) and the (-) sign indicates a frequency toward the drier end of the category (less frequently found in wetlands).

An area is considered to have a dominance of hydrophytic vegetation if greater than 50 percent of the dominant plant species are OBL, FACW, or FAC (excluding FAC-) on the lists of plant species that occur in wetlands.

2.2 Hydric Soils

Hydric soils are soils that are saturated, ponded, or flooded for a sufficient duration during the growing season and develop anaerobic conditions that result in chemical reduction of elements, particularly iron. This results in gleyed soils that are characterized by soil coloration. Hydric soils may also be characterized by bright mottles and/or low matrix chroma. A hydric mineral soil will have either a matrix chroma of 2 or less in mottled soils or a matrix chroma of 1 or less in unmottled soils below the A-horizon or at a depth of 10 inches, whichever is shallower. Soil cores are taken during the field investigation in suspected wetland areas and the soil core value/chroma is compared to those provided in the Munsell Soil Color Charts (Kollmorgen Instruments Corporation 1992). Other indicators of hydric soil conditions that are identifiable when sampling soils in the field include high organic content, histic epipedons, concretions, and/or a sulfidic odor.

2.3 Wetland Hydrology

Wetland hydrology supplies the moisture required to support wetland vegetation and create conditions necessary for the formation of hydric soil characteristics. A variety of information sources may be used to help identify potential areas with wetland hydrology. These sources include topographic maps (to assist in locating low lying area or drainage courses), aerial photographs (to identify areas of ponded water), and soil surveys (to identify soils in poorly drained hydrologic groups and soils with capability units indicative of wetness limitations). Primary indicators of wetland hydrology include

visual observation of inundation or saturation, watermarks, drift lines, sediment deposits, and wetland drainage patterns. Secondary indicators of wetland hydrology (of which two or more are required to determine wetland hydrology) include oxidized root channels, water-stained leaves, local soil survey data, and the FAC-Neutral test. The FAC-Neutral test involves comparison of the number of Obligate (OBL) and Facultative Wetland (FACW) plant species to the number of Facultative Upland (FACU) and Upland (UPL) plant species, with Facultative (FAC) species being neutral.

The USACE technical guideline for wetlands requires that a positive wetland indicator be present for each of the three identified parameters (hydrophytic vegetation, hydric soils, and wetland hydrology), except in limited instances identified in the 1987 *Corps of Engineers Wetland Delineation Manual*.

Potential wetlands were flagged in the field with pink flagging tape, surveyed, and imported into a GIS system to determine total wetland acreage on the site.

3.0 RESULTS

Based upon a field analysis of the vegetation, soils, and hydrology conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, EA personnel identified and flagged nine potential non-tidal wetland areas within the Route 700 parcels (Figure 2). The majority of the wetland areas were located in valleys with intermittent or perennial streams that generally flowed north toward Harris Creek. The wetland areas observed totaled 156,284 square feet (4.0 acres). Supporting documentation for the wetland delineation findings is included in the appendices of this document.

The vegetation in adjacent upland areas was typical of the region. Vegetation species identified on the project site and their hydrophytic status are provided in Table 1. USACE field data sheets for the wetland areas within the project site are attached as Appendix A and photographs of the wetland areas are presented in Appendix B. The wetland areas identified onsite and flagged are discussed below:

Wetland System 2

Wetland System 2 was located within an area that had been a deciduous forest prior to being clear-cut during recent timber harvesting operations. The areas clear-cut did not extend into the wetland. The wetland area flagged was associated with a drainage system that flowed north toward Harris Creek. The wetland area began at an access road on the northern portion of the parcel, traveled south and ended at a culvert that went beneath railroad tracks. The Wetland System 2 connected to Wetland System 3 by the culvert. Wetland System 2 totaled 70,480 square feet (1.62 acres).

The wetland area was classified as forested and the dominant vegetation was soft rush (*Juncus effusus*), red maple (*Acer rubrum*), and spicebush (*Lindera benzoin*). Seedbox (*Ludwigia alternifolia*), greenbrier (*Smilax rotundifolia*), sweetbay (*Magnolia*

virginiana), and deertongue grass (*Dichanthelium clandestinum*) were also observed within the wetland area. The soil matrix within the area had a chroma value of 10YR3/3 within the O horizon (0-2 inches), 10YR5/2 within the A horizon (2-5 inches), and 10YR4/1 within the B horizon (5-12 inches). No mottles were observed within the soil sample. The soil was classified as clay with coarse sand. Wetland hydrology indicators included saturation in the upper 12 inches and water was flowing within the stream channel.

Wetland System 3

Wetland System 3 was a small depressed area located between an access road and the railroad tracks. Wetland System 3 is connected to Wetland System 2 by a culvert located under the railroad tracks. Wetland System 3 totaled 956 square feet (0.02 acres).

This area was classified as emergent and the dominant vegetation was soft rush and deertongue grass. The soil matrix within the wetland area had a chroma value of 10YR4/3 within the A horizon (0-2 inches) and 10YR7/3 within the B horizon (2-5 inches). The soil sample was only 5 inches from ground surface due to gravel or rock. Mottles were observed within the B horizon and had a chroma value of 7.5YR5/8. The mottles were characterized as few and bright. Hydrophytic vegetation was present; however, hydrology and hydric soil characteristics were not present.

Wetland System 4

Wetland System 4 was located within an area that had been a deciduous forest prior to being clear-cut during recent timber harvesting operations. The harvesting operations did not extend into the wetland area. The area flagged began at a head-cut and followed a drainage channel north that ended at an access road that paralleled railroad tracks, directly across from Wetland System 3. Wetland System 4 totaled 2,846 square feet (0.07 acres).

The wetland area was classified as forested and the dominant vegetation was soft rush, greenbrier, red maple, and multiflora rose (*Rosa multiflora*). The soil matrix had a chroma value of 10YR2/1 within the A horizon (0-2 inches) and 10YR6/1 within the B horizon (2-12 inches). Mottles were few and bright with a chroma value of 10YR6/8. The soil was classified as clay with coarse sand. The wetland hydrology indicator included saturation in the upper 12 inches.

Wetland System 5

Wetland System 5 was located within an area that had been surrounded by a deciduous forest prior to being clear-cut during recent timber harvesting operations. The areas clear-cut did not extend into the wetland. This area was located at the top of a valley at the parcel boundary and was classified as emergent. The wetland area continued north and followed a stream channel toward Harris Creek, beyond the wetland flagging. Wetland System 5 totaled 2,759 square feet (0.06 acres).

This dominant vegetation was soft rush, and moss (*Sphagnum* sp.). The soil matrix had a chroma value of 10YR4/1 in the O horizon (0-3 inches) and 10YR5/1 in the A horizon (3-12 inches). No mottles were observed within the soil sample. The soil was characterized as a clay silt in the A horizon and a sandy clay in the B horizon. Wetland hydrology indicators included saturation in the upper 12 inches and drainage patterns in the wetland area.

Wetland System 6

Wetland System 6 was located in an area dominated by deciduous canopy species. The wetland area was between two slopes that have been cut-over, but the harvesting operations did not extend into the wetland area. The area flagged followed a shallow channel (approximately one foot deep and two feet wide) that flowed north toward Harris Creek. Wetland System 6 totaled 14,562 square feet (0.33 acres).

This wetland area was classified as forested and the dominant vegetation was sweetbay, red maple, and moss. Skunk cabbage (*Symplocarpus foetidus*), soft rush, spice bush, and greenbrier were also observed within the wetland area. The soil matrix had a chroma value of 10YR4/2 in the A horizon (0-4 inches) and 10YR5/1 in the B horizon (4-12 inches). No mottles were observed in the soil sample. The soil was characterized as a silty clay with some organic matter in the A horizon and a coarse sand in the B horizon. The soil was saturated at the surface and contained approximately 2 inches of water in the channel.

Wetland System 7

Wetland System 7 was dominated by deciduous canopy species. The area flagged began down-gradient of an excavated pit and followed a channel through the deciduous woods. The area opened to an emergent wetland at an access road that paralleled railroad tracks. A culvert beneath the railroad tracks lead to Wetland System 8. The channel was narrow and incised and no water was observed within the channel. Wetland System 7 totaled 34,539 square feet (0.79 acres).

Wetland System 7 was classified as forested and emergent. The dominant vegetation was sweetbay, greenbrier, and highbush blueberry (*Vaccinium corymbosum*). This area outside of the channel was dominated by red maple, Virginia pine (*Pinus virginiana*), greenbrier, and American holly (*Ilex opaca*). The soil matrix had a chroma of 10YR5/1 in the A horizon (0-6 inches) and 10YR8/1 in the B horizon (6-12 inches). Mottles were observed in the B horizon. The mottles were characterized as many and bright and they had a chroma value of 10YR6/6. The soil texture in both horizons was sandy clay. Pockets of standing water were observed within the channel and the area flagged was saturated in the upper 12 inches.

Wetland System 8

Wetland System 8 was dominated by deciduous canopy species. The deciduous canopy was located along a narrow braided channel. Both sides of the channel were clear cut and the wetland area was adjacent to and between the braided channels. The areas clear-cut did not extend into the wetland. The channel was approximately 1-2 feet wide and was less than one foot deep. Approximately 2 inches of water was flowing in the channel. The area flagged began at a culvert under railroad tracks and traveled north until the end of the property line. The wetland area and stream channel continued beyond the property line. Wetland System 8 totaled 2,300 square feet (0.05 acres).

This wetland area was classified as forested and was dominated by red maple, soft rush, sweetbay, skunk cabbage, and seedbox. The soil matrix had a chroma value of 10YR4/2 in the A horizon (0-5 inches) and 10YR5/1 in the B horizon (5-12 inches). Few and dark mottles were observed within the B horizon that had a chroma value of 10YR4/6. The soil texture of both horizons was characterized as a sandy clay. Wetland hydrology indicators included saturation in the upper 12 inches and observations of drainage pattern within the wetland area.

Wetland System 9

Wetland System 9 began at a culvert located beneath railroad tracks and followed a channel north towards Harris Creek. The delineation of this wetland ended at the parcel boundary. The wetland area and channel continued beyond the parcel boundary. The channel was braided and contained pockets of standing water. No water was observed flowing in the channel. Wetland System 9 totaled 26,010 square feet (0.60 acres).

This wetland area was classified as forested and was dominated by greenbrier, red maple, highbush blueberry, sweetbay, and moss. Within the open area at the end of the parcel boundary, soft rush and woolgrass (*Scirpus cyperinus*) were observed. The soil matrix had a chroma value of 10YR5/3 within the A horizon (0-1 inches) and within the B horizon the chroma values were 10YR6/3 (1-2 inches) and 10YR6/1 (2-12 inches). Few and bright mottles were observed in the B horizon. The chroma value for the first 2 inches was 10YR6/6 and the chroma value for the last 10 inches was 10YR7/8. Within the first 2 inches the soil texture was characterized as a silty sand. The last 10 inches of the soil sample was characterized as a clayey sand. The depth to the saturated soil was approximately 6 inches and water-stained leaves were observed as a secondary wetland hydrology indicator.

Wetland System 10

Wetland System 10 was located in a swale along a gravel roadway at the end of the parcel boundary. A culvert was observed beneath a gravel road that leads to a drainage area through the woods north of the area flagged. The drainage area paralleled the gravel roadway. Wetland System 10 totaled 1,831 square feet (0.04 acres).

This wetland area was classified as emergent surrounded by deciduous forest. The dominant species within the wetland area included soft rush, woolgrass, and seedbox. The species observed surrounding the wetland area included red maple, sweetgum (*Liquidambar styraciflua*), sweetbay, ground pine (*Lycopodium obscurum*), and Virginia pine. The soil matrix had a chroma value of 10YR5/2 within the A horizon (0-4 inches) and within the B horizon the chroma values were 10YR4/1 (4-5 inches) and 10YR5/1 (5-12 inches). The A horizon contained many bright and thin mottles with a chroma value of 10YR5/8. The last 8 inches of the B horizon contained occasional and faint mottles with a chroma value of 10YR7/6. The soil texture for the A and B horizons was characterized as a silty clay.

4.0 REGULATORY COORDINATION

The field investigation characterized the wetland resources within the project area. Wetland investigations of this type reflect the current state of temporal and variable conditions, thus requiring individual professional judgment when evaluating a site. Therefore, the wetland delineation is EA's professional estimate of the wetlands located on the properties southwest of NAPS based on the delineation methodology utilized and the best technical information available related to the project site and the time of study.

Wetland boundaries, as defined by regulatory purposes, can only be verified through a site review by the USACE or the Virginia Department of Environmental Quality (VDEQ). After review of the wetland boundaries, the USACE or VDEQ representative may provide a letter documenting acceptance of the wetland boundaries.

5.0 SUMMARY AND CONCLUSIONS

Based upon a field analysis of the vegetation, soils, and hydrology conducted in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, EA personnel identified and flagged nine potential non-tidal wetland areas within the Route 700 parcels, southwest of NAPS and north of Haley Drive.

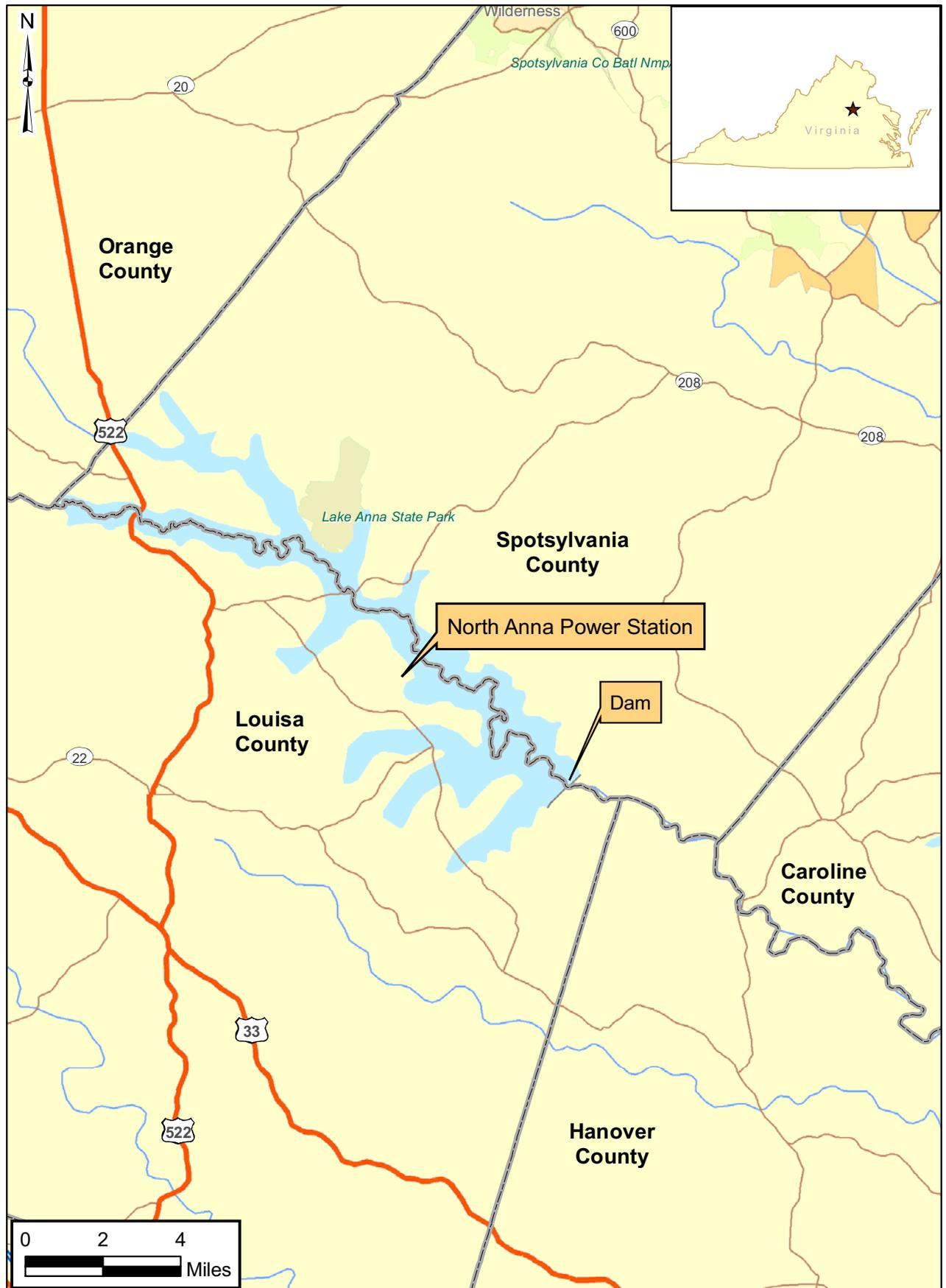
Three potential wetland areas, Wetlands 2, 4, and 5, were located within an area that had been a deciduous forest prior to being clear-cut during recent timber harvesting operations. Wetland 3 was a small depressed area located between an access road and the railroad tracks. Wetlands 6, 7, 8, and 9 were dominated by deciduous canopy species. Wetland 10 was located in a swale along a gravel roadway. The majority of the wetland areas were located in valleys with intermittent or perennial streams that generally flowed north toward Harris Creek. The wetland areas observed totaled 156,284 square feet (4.0 acres).

6.0 REFERENCES

Environmental Laboratory. 1987. *Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1*. U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

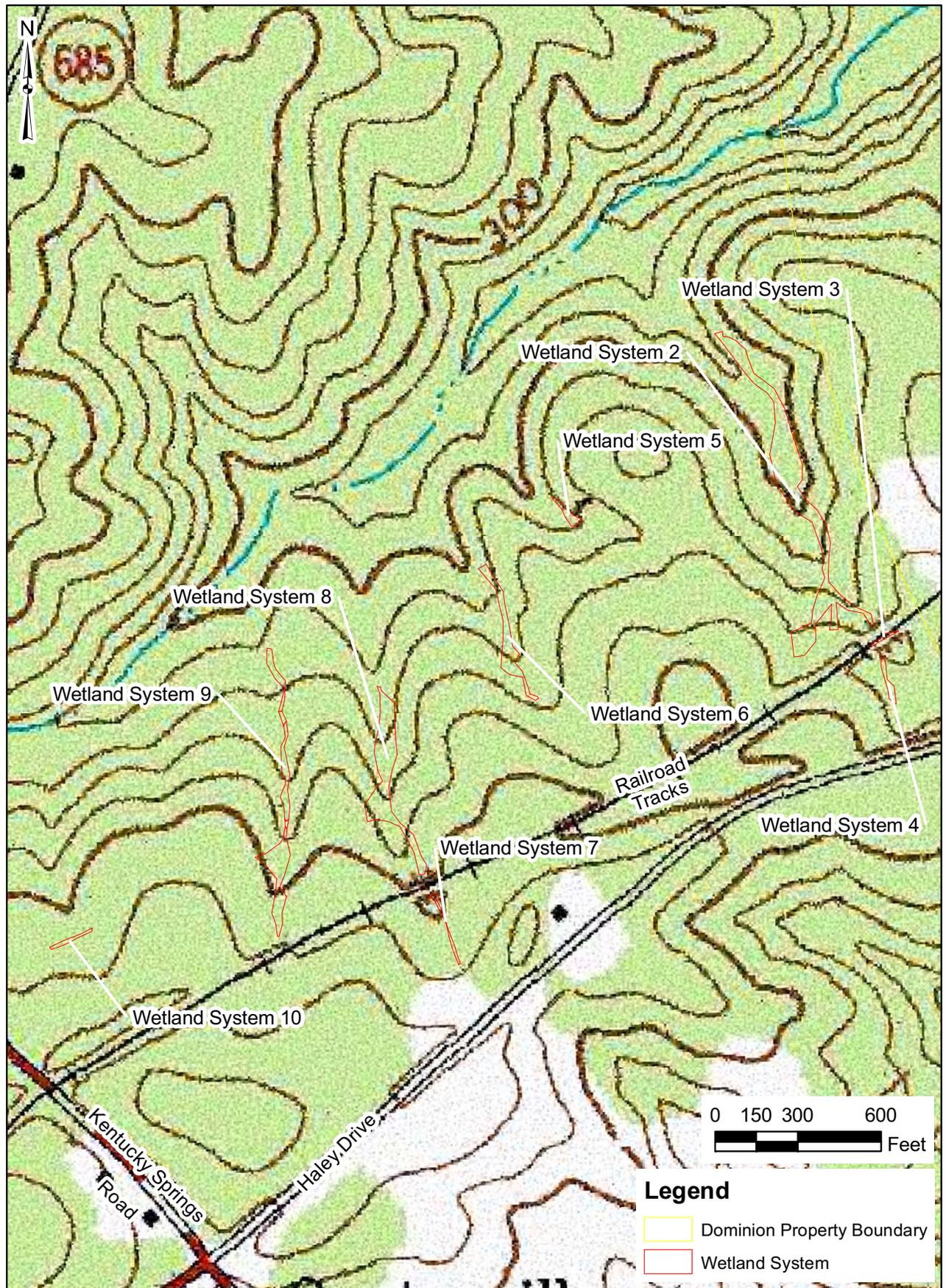
Kollmorgen Instruments Corp. 1992. *Munsell Soil Color Charts*. New York.

Reed, Porter B. 1988. *National List of Plant Species That Occur in Wetlands Northeast (Region I)*. National Ecology Research Center, US Fish and Wildlife Service. May.



Q:\projects\GIS\1439101\WXD\Figure 1. General Location Map.mxd

Figure 1. General Location Map



C:\projects\GIS\1439101\MXD\Figure 2. Wetland Areas Delineated within the Lands Southwest of Dominion's.mxd

Figure 2. Wetland Areas Delineated.

Table 1. Plant Species Identified During the Wetland Delineation, March 2008

Scientific Name	Common Name	Hydrophytic Status
Tree Species		
<i>Acer rubrum</i>	Red maple	FAC
<i>Carpinus caroliniana</i>	Ironwood	FAC
<i>Magnolia virginiana</i>	Sweetbay	FACW+
Shrub Species		
<i>Lindera benzoin</i>	Spicebush	FACW-
<i>Rosa multiflora</i>	Multiflora rose	FACU
<i>Rubus allegheniensis</i>	Allegheny blackberry	FACU-
<i>Vaccinium corymbosum</i>	Highbush blueberry	FACW-
Herbaceous Species		
<i>Andropogon virginicus</i>	Broom sedge	FACU
<i>Aster</i> sp.	Aster species	UNK
<i>Carex</i> sp.	Sedge species	UNK
<i>Dichanthelium clandestinum</i>	Deertongue grass	FAC+
<i>Juncus</i> sp.	Rush species	FAC
<i>Juncus effusus</i>	Soft rush	FACW+
<i>Ludwigia alternifolia</i>	Seedbox	FACW+
<i>Scirpus cyperinus</i>	Woolgrass	FACW+
<i>Sphagnum</i> sp.	Moss species	FAC
<i>Symplocarpus foetidus</i>	Skunk cabbage	OBL
<i>Typha latifolia</i>	Broadleaf cattail	OBL
Vine Species		
<i>Smilax rotundifolia</i>	Common greenbrier	FAC

Source: Reed, 1988

- *OBL=Obligate. Greater than 99 percent estimated occurrence in wetlands
- FACW=Facultative Wetland. 67 to 99 percent estimated occurrence in wetlands
- FAC=Facultative. 34 to 66 percent estimated occurrence in wetlands
- FACU=Facultative Upland. 1 to 33 percent estimated occurrence in wetlands
- UNK=Unknown. Hydrophytic status unknown.

APPENDIX A
WETLAND DELINEATION DATA FORMS

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO</u> Transect ID: _____ Plot ID: <u>2</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Lindera benzoin</u>	<u>Shrub</u>	<u>FACW-</u>	10. _____	_____	_____
3. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Ludwigia alternifolia</u>	<u>Herb</u>	<u>FACW+</u>	13. _____	_____	_____
6. <u>Magnolia virginiana</u>	<u>Tree</u>	<u>FACW+</u>	14. _____	_____	_____
7. <u>Dichanthelium clandestinum</u>	<u>Herb</u>	<u>FAC+</u>	15. _____	_____	_____
8. <u>Andropogon virginicus</u>	<u>Herb</u>	<u>FACU</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 87%

Remarks: Cut over area with deciduous species remaining in drainage way.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	Wetland Hydrology Indicators: Primary Indicators: <input checked="" type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations: Depth of Surface Water: <u>0.5-2</u> (in.) Depth to Free Water in Pit: <u>5</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	
Remarks: <u>Water flowing. Wetland area follows stream and connects with System 3 via culvert.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10YR3/3	---	---	Silt with Organic Matter
2-5	B	10YR5/2	---	---	Clay with Coarse Sand
5-12	B	10YR4/1	---	---	Clay with Coarse Sand
0-4	A	10YR5/3	---	---	Silty Clay
4-8	B	10YR6/2	10YR6/8	Abundant/Bright	Silt Clay
8-12	B	10YR7/1	10YR6/8	Few/Bright	Clayey Sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks: Upland soil collected on wooded slope adjacent to wetland. Brighter soil colors progressing up slope.					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes No (Circle) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes No Hydric Soils Present? <input checked="" type="checkbox"/> Yes No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks:	

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PEM</u> Transect ID: _____ Plot ID: <u>3</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Dichanthelium clandestinum</u>	<u>Herb</u>	<u>FAC+</u>	10. _____	_____	_____
3. _____	_____	_____	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____
Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-):			100%		
Remarks:					

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: --- (in.) Depth to Free Water in Pit: --- (in.) Depth to Saturated Soil: --- (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: Culvert under railroad tracks that leads into system 2.	

SOILS

UPL

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10YR4/3	---	---	Silt with Organic Matter
2-5	B	10YR7/3	7.5YR5/8	Few/Bright	Silty Clay
0-5	A	10YR2/1	---	---	Silt with Organic Matter
5-12	B	10YR6/4	---	---	Silt with gravel
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Circle) Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No Hydric Soils Present? Yes <input checked="" type="checkbox"/> No	(Circle) Is this Sampling Point Within a Wetland? Yes <input checked="" type="checkbox"/> No
Remarks: Drainage area that parallels railroad tracks.	

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO</u> Transect ID: _____ Plot ID: <u>4</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Andropogon virginicus</u>	<u>Herb</u>	<u>FACU</u>	10. _____	_____	_____
3. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Sphagnum sp.</u>	<u>Herb</u>	<u>UNK</u>	13. _____	_____	_____
6. <u>Rosa multiflora</u>	<u>Shrub</u>	<u>FACU</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 60%

Remarks: _____

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: <u>---</u> (in.) Depth to Free Water in Pit: <u>4</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Drainage from headcut and stops at access road</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10YR2/1	---	---	Silt with Organic Matter
2-12	B	10YR6/1	10YR6/8	Few/Bright	Clay with Coarse Sand
0-5	A	10YR2/1	---	---	Silt with Organic Matter
5-12	B	10YR6/4	---	---	Silt with gravel
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes No (Circle)	(Circle)
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes No	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes No	
Is this Sampling Point Within a Wetland?		<input checked="" type="checkbox"/> Yes No
Remarks:		

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PEM</u> Transect ID: _____ Plot ID: <u>5</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Scirpus cyperinus</u>	<u>Herb</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Sphagnum species</u>	<u>Herb</u>	<u>UNK</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Cut over area with deciduous species remaining in drainage way.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>---</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Top of valley at parcel boundary.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-3	A	10YR4/1	---	---	Clay Silt
3-12	B	10YR5/1	---	---	Sandy Clay
0-2	A	10YR5/3	---	---	Silt
2-12	B	10YR6/6	---	---	Clay Silt
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks: Upland soil collected on wooded slope adjacent to wetland. Cutover. Wetland area also cutover.					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes No (Circle) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes No Hydric Soils Present? <input checked="" type="checkbox"/> Yes No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks:	

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO</u> Transect ID: _____ Plot ID: <u>6</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Magnolia virginiana</u>	<u>Tree</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Sphagnum species</u>	<u>Herb</u>	<u>UNK</u>	13. _____	_____	_____
6. <u>Symplocarpus foetidus</u>	<u>Herb</u>	<u>OBL</u>	14. _____	_____	_____
7. <u>Lindera benzoin</u>	<u>Shrub</u>	<u>FACW-</u>	15. _____	_____	_____
8. <u>Carex species</u>	<u>Herb</u>	<u>UNK</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Deciduous canopy in bottom between two slopes that have been cutover.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: <u>2</u> (in.) Depth to Free Water in Pit: <u>8</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Water flowing in channel - channel shallow approx. 1 ft deep and 2 ft wide.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR4/2	---	---	Silty Clay with some organics
4-12	B	10YR5/1	---	---	Coarse Sand (very wet)
0-5	A	10YR3/3	---	---	Silt with Organics
5-12	B	2.5Y7/3	---	---	Clay Silt
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes No (Circle) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes No Hydric Soils Present? <input checked="" type="checkbox"/> Yes No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks:	

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/26/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO/PEM</u> Transect ID: _____ Plot ID: <u>7</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Magnolia virginiana</u>	<u>Tree</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Vaccinium corymbosum</u>	<u>Shrub</u>	<u>FACW-</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Mixed canopy. American holly, Virginia pine, common greenbrier, and red maple border stream.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: <u>---</u> (in.) Depth to Free Water in Pit: <u>1</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Pockets of standing water in channel - no flow. Flagging ends at road - culvert through railroad tracks.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-6	A	10YR5/1	---	---	Sandy Clay
6-12	B	10YR8/1	10YR6/6	Many/Bright	Sandy Clay
0-2	O	10YR3/3	---	---	Organic/Silt
2-12	A	10YR6/4	---	---	Silty Clay
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input checked="" type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	No	(Circle)	
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	No	(Circle)	
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	No		Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks: Channel through mixed woods. Begins down-gradient of excavated pit (old). Narrow incised channel through woods. Opens to emergent wetland at powerline row. Wetland stops at road that runs parallel to railroad tracks. Culvert beneath railroad tracks to another wetland.				

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/27/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO</u> Transect ID: _____ Plot ID: <u>8</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Magnolia virginiana</u>	<u>Tree</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Carex species</u>	<u>Herb</u>	<u>UNK</u>	12. _____	_____	_____
5. <u>Symplocarpus foetidus</u>	<u>Herb</u>	<u>OBL</u>	13. _____	_____	_____
6. <u>Ludwigia alternifolia</u>	<u>Herb</u>	<u>FACW+</u>	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Deciduous canopy along narrow braided channel. Clear cut on both sides. Wetland adjacent to and between channels.

HYDROLOGY

<input type="checkbox"/> Recorded Data (Describe in Remarks): <input type="checkbox"/> Stream, Lake, or Tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available <hr/> Field Observations: Depth of Surface Water: <u>0</u> (in.) Depth to Free Water in Pit: <u>4</u> (in.) Depth to Saturated Soil: <u>0</u> (in.)	Wetland Hydrology Indicators: Primary Indicators: <input type="checkbox"/> Inundated <input checked="" type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands Secondary Indicators (2 or more required): <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Narrow braided channels 1-2 ft. wide and approx 1 ft. deep. Approximately 2 inches of flowing water.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-5	A	10YR4/2	---	---	Fine Sandy Clay
5-12	B	10YR5/1	10YR4/6	Dark/Few	Sandy Clay
0-2	O	10YR4/2	---	---	Fine Sand with Organic Matter
2-12	A	10YR6/6	---	---	Sandy Clay
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks: Wetland soil collected adjacent to channel near property line. Upland soil collected on south slope approximately 50 inches from wetland sample.					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present?	<input checked="" type="checkbox"/> Yes	No (Circle)	
Wetland Hydrology Present?	<input checked="" type="checkbox"/> Yes	No	(Circle)
Hydric Soils Present?	<input checked="" type="checkbox"/> Yes	No	Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks:			

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/27/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PFO</u> Transect ID: _____ Plot ID: <u>9</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. <u>Ilex opaca</u>	<u>Tree</u>	<u>FACU+</u>
2. <u>Magnolia virginiana</u>	<u>Tree</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Vaccinium corymbosum</u>	<u>Shrub</u>	<u>FACW-</u>	13. _____	_____	_____
6. <u>Scirpus cyperinus</u>	<u>Herb</u>	<u>FACW+</u>	14. _____	_____	_____
7. <u>Sphagnum species</u>	<u>Herb</u>	<u>UNK</u>	15. _____	_____	_____
8. <u>Carpinus caroliniana</u>	<u>Tree</u>	<u>FAC</u>	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 87%

Remarks: Deciduous canopy.

HYDROLOGY

<p>___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other X ___ No Recorded Data Available</p> <hr/> <p>Field Observations:</p> <p>Depth of Surface Water: ___ (in.)</p> <p>Depth to Free Water in Pit: ___ (in.)</p> <p>Depth to Saturated Soil: <u>6</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <p>___ Inundated X ___ Saturated in Upper 12 Inches ___ Water Marks ___ Drift Lines ___ Sediment Deposits ___ Drainage Patterns in Wetlands</p> <p>Secondary Indicators (2 or more required):</p> <p>___ Oxidized Root Channels in Upper 12 Inches X ___ Water-Stained Leaves ___ Local Soil Survey Data ___ FAC-Neutral Test ___ Other (Explain in Remarks)</p>
Remarks: Pockets of standing water.	

SOILS

UPL

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-1	A	10YR5/3	---	---	Silt with Organic Matter
1-2	B	10YR6/3	10YR6/6	Few/Bright	Silty Sand
2-12	B	10YR6/1	10YR7/8	Few Large/Bright	Clay Sand
0-5	A	10YR5/3	---	---	Silt with Some Organics
5-12	B	10YR5/6	---	---	Silty Sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks:					

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes No (Circle) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes No Hydric Soils Present? <input checked="" type="checkbox"/> Yes No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks: Begins at culvert under railroad tracks. Channel continues beyond flagging/end of parcel. Channel braided.	

Approved by HQUSACE 3/92

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

Project/Site: <u>Proposed Haul Road</u> Applicant/Owner: <u>Dominion</u> Investigator: <u>Leasure, Harden</u>	Date: <u>3/27/08</u> County: <u>Louisa</u> State: <u>Virginia</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input type="checkbox"/> No Is the area a potential Problem Area? <input type="checkbox"/> Yes <input type="checkbox"/> No (If needed, explain on reverse.)	Community ID: <u>PEM</u> Transect ID: _____ Plot ID: <u>10</u>

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Juncus effusus</u>	<u>Herb</u>	<u>FACW+</u>	9. _____	_____	_____
2. <u>Scirpus cyperinus</u>	<u>Herb</u>	<u>FACW+</u>	10. _____	_____	_____
3. <u>Ludwigia alternifolia</u>	<u>Herb</u>	<u>FACW+</u>	11. _____	_____	_____
4. _____	_____	_____	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-): 100%

Remarks: Surrounding woodland has red maple, sweetgum, Virginia magnolia (sweetbay), groundpine, and Virginia pine.

HYDROLOGY

<p>___ Recorded Data (Describe in Remarks): ___ Stream, Lake, or Tide Gauge ___ Aerial Photographs ___ Other <input checked="" type="checkbox"/> No Recorded Data Available</p> <hr style="border: 0.5px solid black;"/> <p>Field Observations:</p> <p>Depth of Surface Water: <u>0</u> (in.)</p> <p>Depth to Free Water in Pit: <u>---</u> (in.)</p> <p>Depth to Saturated Soil: <u>---</u> (in.)</p>	<p>Wetland Hydrology Indicators:</p> <p>Primary Indicators:</p> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input type="checkbox"/> Drainage Patterns in Wetlands <p>Secondary Indicators (2 or more required):</p> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input type="checkbox"/> Water-Stained Leaves <input type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Remarks: <u>Low drainage area at culvert, beneath gravel road. Road bed on embankment - drainage area through woods. Not wetland to the south.</u>	

SOILS

Map Unit Name (Series and Phase): _____		Drainage Class: _____			
Taxonomy (Subgroup): _____		Field Observations Confirm Mapped Type? Yes No			
Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/ Size/Contrast	Texture, Concretions, Structure, etc.
0-4	A	10YR5/2	10YR5/8	Many/Bright	Silty Clay
4-5	B	10YR4/1	---	---	Silty Clay
5-12	B	10YR5/1	10YR7/6	Faint/Occasional	Silty Clay
0-1	O	10YR5/3	---	---	Silt with Organic Matter
1-12	A	10YR6/4	---	---	Silty Sand
Hydric Soil Indicators:					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)			
Remarks: Wetland soil collected in ditch parallel to road. Upland soil collected in deciduous woods to the south.					

UPL

WETLAND DETERMINATION

Hydrophytic Vegetation Present? <input checked="" type="checkbox"/> Yes No (Circle) Wetland Hydrology Present? <input checked="" type="checkbox"/> Yes No Hydric Soils Present? <input checked="" type="checkbox"/> Yes No	(Circle) Is this Sampling Point Within a Wetland? <input checked="" type="checkbox"/> Yes No
Remarks:	

Approved by HQUSACE 3/92

APPENDIX B
PHOTOGRAPHIC RECORD

Photographic Record

**Wetland Delineation
North Anna Power Station
March 26-27, 2008**



Wetland System 2



Wetland System 2



Wetland System 3



Wetland System 3



Wetland System 4



Wetland System 4

Photographic Record

**Wetland Delineation
North Anna Power Station
March 26-27, 2008**



Wetland System 5



Wetland System 5



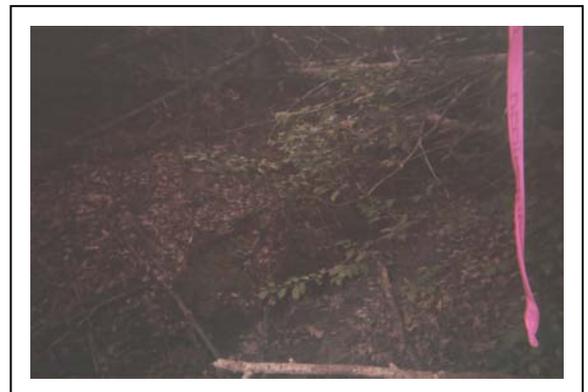
Wetland System 6



Wetland System 6



Wetland System 7



Wetland System 7

Photographic Record

**Wetland Delineation
North Anna Power Station
March 26-27, 2008**



Wetland System 8



Wetland System 8



Wetland System 9



Wetland System 9



Wetland System 10



Wetland System 10