

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: W003-PFO

Tree Stratum					50/20 Thresholds		
Plot Size (	30 ft.	)	Absolute % Cover	Dominant Species	Indicator Status	20%	50%
1	<i>Acer negundo</i>		80	Y	FAC	19	48
2	<i>Populus deltoides</i>		15	N	FAC	0	0
3						9	23
4						0	0
5							
6							
7							
8							
9							
10			95	= Total Cover			
Sapling/Shrub Stratum					Dominance Test Worksheet		
Plot Size (	15 ft.	)	Absolute % Cover	Dominant Species	Indicator Status	Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)	
1						Total Number of Dominant Species Across all Strata: <u>3</u> (B)	
2						Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)	
3							
4							
5							
6							
7							
8							
9							
10			0	= Total Cover			
Herb Stratum					Prevalence Index Worksheet		
Plot Size (	5 ft.	)	Absolute % Cover	Dominant Species	Indicator Status	Total % Cover of:	
1	<i>Lysimachia nummularia</i>		25	Y	FACW	OBL species	<u>0</u> x 1 = <u>0</u>
2	<i>Mentha spicata</i>		20	Y	FACW	FACW species	<u>45</u> x 2 = <u>90</u>
3						FAC species	<u>95</u> x 3 = <u>285</u>
4						FACU species	<u>0</u> x 4 = <u>0</u>
5						UPL species	<u>0</u> x 5 = <u>0</u>
6						Column totals	<u>140</u> (A) <u>375</u> (B)
7						Prevalence Index = B/A =	<u>2.68</u>
8							
9							
10							
11							
12							
13							
14							
15			45	= Total Cover			
Woody Vine Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (	30 ft.	)	Absolute % Cover	Dominant Species	Indicator Status	Rapid test for hydrophytic vegetation	
1						<input checked="" type="checkbox"/> Dominance test is >50%	
2						<input checked="" type="checkbox"/> Prevalence index is ≤3.0*	
3						Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)	
4						Problematic hydrophytic vegetation* (explain)	
5						*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
6							
7							
8							
9							
10			0	= Total Cover			
Remarks: (Include photo numbers here or on a separate sheet)					Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>Y</u>		

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SOIL

Sampling Point: W003-PFO

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/2	95	10YR 5/4	5	C	PL/M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils:

- | | | |
|---|--|---|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8)
(MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9)
(MLRA 147, 148) | <input type="checkbox"/> Piedmont Floodplain Soils (F19)
(MLRA 136, 147) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1)
(LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/29/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point U003
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): none Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.88766 Long.: -84.742109 Datum: WGS 84
 Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u> Upland for W003
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland pit for wetland W003 located in Big Bone Lick State Park	

HYDROLOGY

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

Field Observations:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	Wetland hydrology present? <u>N</u>
Surface water present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: U003

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1 _____				Tree Stratum	0	0	
2 _____				Sapling/Shrub Stratum	0	0	
3 _____				Herb Stratum	20	50	
4 _____				Woody Vine Stratum	0	0	
5 _____				Dominance Test Worksheet			
6 _____				Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)			
7 _____				Total Number of Dominant Species Across all Strata: <u>4</u> (B)			
8 _____				Percent of Dominant Species that are OBL, FACW, or FAC: <u>0.00%</u> (A/B)			
9 _____				Prevalence Index Worksheet			
10 _____	0	= Total Cover		Total % Cover of:			
				OBL species	0 x 1 =	0	
				FACW species	0 x 2 =	0	
				FAC species	10 x 3 =	30	
				FACU species	85 x 4 =	340	
				UPL species	0 x 5 =	0	
				Column totals	95 (A)	370 (B)	
				Prevalence Index = B/A = <u>3.89</u>			
Sapling/Shrub Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status		Rapid test for hydrophytic vegetation		
1 _____					Dominance test is >50%		
2 _____					Prevalence index is ≤3.0*		
3 _____					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
4 _____					Problematic hydrophytic vegetation* (explain)		
5 _____					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
6 _____					Definitions of Vegetation Strata:		
7 _____					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
8 _____					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
9 _____					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
10 _____					Woody vines - All woody vines greater than 3.28 ft in height.		
11 _____					Hydrophytic vegetation present? <u>N</u>		
12 _____							
13 _____							
14 _____							
15 _____	100	= Total Cover					
Herb Stratum							
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 <i>Poa pratensis</i>	30	Y	FACU				
2 <i>Festuca arundinacea</i>	15	Y	FACU				
3 <i>Dipsacus fullonum</i>	15	Y	FACU				
4 <i>Setaria faberi</i>	15	Y	FACU				
5 <i>Allium cernuum</i>	10	N	FACU				
6 <i>Rumex crispus</i>	10	N	FAC				
7 <i>Solidago sp.</i>	5	N					
8 _____							
9 _____							
10 _____							
11 _____							
12 _____							
13 _____							
14 _____							
15 _____							
Woody Vine Stratum							
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____							
2 _____							
3 _____							
4 _____							
5 _____							
	0	= Total Cover					

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

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SOIL

Sampling Point: U003

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/4	100	-	-			silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stratified Layers (A5) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> N </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point W004
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.885723 Long.: -84.727106 Datum: WGS 84
 Soil Map Unit Name EdE2-Eden silty clay loam, 20 to 35 percent slopes, eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u> W004
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks: PEM wetland along road ROW	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1</u>	
Water table present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3</u>	
Saturation present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: W004

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1					Tree Stratum	0	0
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	16	40
4					Woody Vine Stratum	0	0
5							
6							
7							
8							
9							
10							
				0	= Total Cover		
Sapling/Shrub Stratum					Dominance Test Worksheet		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1					Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)		
2					Total Number of Dominant Species Across all Strata: <u>2</u> (B)		
3					Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)		
4							
5							
6							
7							
8							
9							
10							
				0	= Total Cover		
Herb Stratum					Prevalence Index Worksheet		
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1					Total % Cover of:		
2					OBL species	<u>0</u> x 1 = <u>0</u>	
3					FACW species	<u>60</u> x 2 = <u>120</u>	
4					FAC species	<u>15</u> x 3 = <u>45</u>	
5					FACU species	<u>5</u> x 4 = <u>20</u>	
6					UPL species	<u>0</u> x 5 = <u>0</u>	
7					Column totals	<u>80</u> (A) <u>185</u> (B)	
8					Prevalence Index = B/A = <u>2.31</u>		
9							
10							
11							
12							
13							
14							
15							
				80	= Total Cover		
Woody Vine Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1					Rapid test for hydrophytic vegetation		
2					<input checked="" type="checkbox"/> Dominance test is >50%		
3					<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
4					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
5					Problematic hydrophytic vegetation* (explain)		
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
				0	= Total Cover		
Remarks: (Include photo numbers here or on a separate sheet)					Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>Y</u>		

CONFIDENTIAL PROPRIETARY TRADE SECRET

SOIL

Sampling Point: W004

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/2	90	10YR 5/6	10	C	PL/M	silty clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> Y </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point W005
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.885817 Long.: -84.724071 Datum: WGS 84
 Soil Map Unit Name EdE2-Eden silty clay loam, 20 to 35 percent slopes, eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u> W005
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland along road ROW. Drains into stream S014	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1</u>	
Water table present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>3</u>	
Saturation present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: W005

Tree Stratum						50/20 Thresholds		
	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1					Tree Stratum	0	0	
2					Sapling/Shrub Stratum	0	0	
3					Herb Stratum	20	50	
4					Woody Vine Stratum	0	0	
5					Dominance Test Worksheet			
6					Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)			
7					Total Number of Dominant Species Across all Strata: <u>3</u> (B)			
8					Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)			
9					Prevalence Index Worksheet			
10		0	= Total Cover		Total % Cover of:			
					OBL species	0	x 1 = 0	
					FACW species	70	x 2 = 140	
					FAC species	30	x 3 = 90	
					FACU species	0	x 4 = 0	
					UPL species	0	x 5 = 0	
					Column totals	100 (A)	230 (B)	
					Prevalence Index = B/A = <u>2.30</u>			
					Hydrophytic Vegetation Indicators:			
					Rapid test for hydrophytic vegetation			
					<input checked="" type="checkbox"/> Dominance test is >50%			
					<input checked="" type="checkbox"/> Prevalence index is ≤3.0*			
					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)			
					<input type="checkbox"/> Problematic hydrophytic vegetation* (explain)			
					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
					Definitions of Vegetation Strata:			
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
					Woody vines - All woody vines greater than 3.28 ft in height.			
					Hydrophytic vegetation present? <u>Y</u>			
					Remarks: (Include photo numbers here or on a separate sheet)			

Sapling/Shrub Stratum					
	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
		0	= Total Cover		

Herb Stratum					
	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1	<i>Cyperus esculentus</i>	40	Y	FACW	
2	<i>Carex grayi</i>	30	Y	FACW	
3	<i>Juncus tenuis</i>	30	Y	FAC	
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
		100	= Total Cover		

Woody Vine Stratum					
	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	
1					
2					
3					
4					
5					
		0	= Total Cover		

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SOIL

Sampling Point: W005

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/2	70	10YR 5/6	30	C	PL/M	silty clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:

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 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point W006
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.885757 Long.: -84.722932 Datum: WGS 84
 Soil Map Unit Name EdE2-Eden silty clay loam, 20 to 35 percent slopes, eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u> W006
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland along road ROW. Drains into stream located outside of study area	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1</u>	
Water table present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>2</u>	
Saturation present? (includes capillary fringe) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: W006

Tree Stratum						50/20 Thresholds		
	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1					Tree Stratum	0	0	
2					Sapling/Shrub Stratum	0	0	
3					Herb Stratum	21	53	
4					Woody Vine Stratum	0	0	
5								
6								
7								
8								
9								
10		0						
					Dominance Test Worksheet			
					Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)			
					Total Number of Dominant Species Across all Strata: <u>3</u> (B)			
					Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)			
Sapling/Shrub Stratum						Prevalence Index Worksheet		
	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	Total % Cover of:			
1					OBL species	30	x 1 =	30
2					FACW species	75	x 2 =	150
3					FAC species	0	x 3 =	0
4					FACU species	0	x 4 =	0
5					UPL species	0	x 5 =	0
6					Column totals	105	(A)	180 (B)
7					Prevalence Index = B/A =			1.71
8								
9								
10		0						
					Hydrophytic Vegetation Indicators:			
					Rapid test for hydrophytic vegetation			
					X Dominance test is >50%			
					X Prevalence index is ≤3.0*			
					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)			
					Problematic hydrophytic vegetation* (explain)			
					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
Herb Stratum						Definitions of Vegetation Strata:		
	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
1					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
2					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
3					Woody vines - All woody vines greater than 3.28 ft in height.			
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15		105						
					Hydrophytic vegetation present?	<u>Y</u>		
Woody Vine Stratum								
	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1								
2								
3								
4								
5								
					0 = Total Cover			

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

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SOIL

Sampling Point: W006

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/2	95	10YR 5/8	5	C	PL/M	silty clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:

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 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point U004-6
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR or MLRA): LRR N Lat.: 38.885673 Long.: -84.727121 Datum: WGS 84
 Soil Map Unit Name EdE2-Eden silty clay loam, 20 to 35 percent slopes, eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u> Upland for W004-6
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland pit for wetlands W004-006 located along road ROW	

HYDROLOGY

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

Field Observations:	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	Wetland hydrology present? <u>N</u>
Surface water present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: U004-6

Tree Stratum					50/20 Thresholds		
Plot Size (	30 ft.	Absolute % Cover	Dominant Species	Indicator Status	20%	50%	
1					Tree Stratum	0	0
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	20	50
4					Woody Vine Stratum	0	0
5					Dominance Test Worksheet		
6					Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)		
7					Total Number of Dominant Species Across all Strata: <u>2</u> (B)		
8					Percent of Dominant Species that are OBL, FACW, or FAC: <u>0.00%</u> (A/B)		
9					Prevalence Index Worksheet		
10		0 = Total Cover			Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>100</u> x 4 = <u>400</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>400</u> (B) Prevalence Index = B/A = <u>4.00</u>		
Sapling/Shrub Stratum							
Plot Size (	15 ft.	Absolute % Cover	Dominant Species	Indicator Status			
1							
2							
3							
4							
5							
6							
7							
8							
9							
10		0 = Total Cover					
Herb Stratum							
Plot Size (	5 ft.	Absolute % Cover	Dominant Species	Indicator Status			
1	<i>Poa pratensis</i>	30	Y	FACU	Hydrophytic Vegetation Indicators:		
2	<i>Taraxacum officinale</i>	30	Y	FACU	Rapid test for hydrophytic vegetation		
3	<i>Trifolium repens</i>	15	N	FACU	Dominance test is >50%		
4	<i>Festuca arundinacea</i>	15	N	FACU	Prevalence index is ≤3.0*		
5	<i>Plantago major</i>	10	N	FACU	Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
6					Problematic hydrophytic vegetation* (explain)		
7					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
8							
9							
10							
11							
12							
13							
14							
15		100 = Total Cover			Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>N</u>		

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

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SOIL

Sampling Point: U004-6

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/3	100	-	-			silty clay loam	rocky, road wash

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils:
<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Piedmont Floodplain Soils (F19)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> (LRR N, MLRA 147, 148)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Polyvalue Below Surface (S8)	
<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Thin Dark Surface (S9)	
<input type="checkbox"/> (MLRA 147, 148)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)	
<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)	
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)	
<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)	

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> N </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W007
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.878916 Long.: -84.699993 Datum: WGS 84
 Soil Map Unit Name FdD3-Faywood silty clay, 12 to 20 percent slopes, severely eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u> <u>W007</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland along road ROW. Drains into stream S025	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u>		
Water table present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>2</u>		
Saturation present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u> (includes capillary fringe)		

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants

Sampling Point: W007

Tree Stratum Plot Size (30 ft.)					<p>50/20 Thresholds</p> <table style="width:100%;"> <tr><td>Tree Stratum</td><td style="text-align: right;">20%</td><td style="text-align: right;">50%</td></tr> <tr><td>Sapling/Shrub Stratum</td><td style="text-align: right;">0</td><td style="text-align: right;">0</td></tr> <tr><td>Herb Stratum</td><td style="text-align: right;">20</td><td style="text-align: right;">50</td></tr> <tr><td>Woody Vine Stratum</td><td style="text-align: right;">0</td><td style="text-align: right;">0</td></tr> </table> <p>Dominance Test Worksheet</p> <p>Number of Dominant Species that are OBL, FACW, or FAC: <u>3</u> (A)</p> <p>Total Number of Dominant Species Across all Strata: <u>3</u> (B)</p> <p>Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)</p> <p>Prevalence Index Worksheet</p> <p>Total % Cover of:</p> <table style="width:100%;"> <tr><td>OBL species</td><td style="text-align: right;">30</td><td style="text-align: right;">x 1 =</td><td style="text-align: right;">30</td></tr> <tr><td>FACW species</td><td style="text-align: right;">50</td><td style="text-align: right;">x 2 =</td><td style="text-align: right;">100</td></tr> <tr><td>FAC species</td><td style="text-align: right;">20</td><td style="text-align: right;">x 3 =</td><td style="text-align: right;">60</td></tr> <tr><td>FACU species</td><td style="text-align: right;">0</td><td style="text-align: right;">x 4 =</td><td style="text-align: right;">0</td></tr> <tr><td>UPL species</td><td style="text-align: right;">0</td><td style="text-align: right;">x 5 =</td><td style="text-align: right;">0</td></tr> <tr><td>Column totals</td><td style="text-align: right;">100 (A)</td><td></td><td style="text-align: right;">190 (B)</td></tr> <tr><td colspan="4">Prevalence Index = B/A = <u>1.90</u></td></tr> </table> <p>Hydrophytic Vegetation Indicators:</p> <p>Rapid test for hydrophytic vegetation</p> <p><input checked="" type="checkbox"/> Dominance test is >50%</p> <p><input checked="" type="checkbox"/> Prevalence index is ≤3.0*</p> <p>Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)</p> <p><input type="checkbox"/> Problematic hydrophytic vegetation* (explain)</p> <p>*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic</p> <p>Definitions of Vegetation Strata:</p> <p>Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.</p> <p>Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.</p> <p>Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.</p> <p>Woody vines - All woody vines greater than 3.28 ft in height.</p> <p>Hydrophytic vegetation present? <u>Y</u></p>	Tree Stratum	20%	50%	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0	OBL species	30	x 1 =	30	FACW species	50	x 2 =	100	FAC species	20	x 3 =	60	FACU species	0	x 4 =	0	UPL species	0	x 5 =	0	Column totals	100 (A)		190 (B)	Prevalence Index = B/A = <u>1.90</u>			
Tree Stratum	20%	50%																																											
Sapling/Shrub Stratum	0	0																																											
Herb Stratum	20	50																																											
Woody Vine Stratum	0	0																																											
OBL species	30	x 1 =	30																																										
FACW species	50	x 2 =	100																																										
FAC species	20	x 3 =	60																																										
FACU species	0	x 4 =	0																																										
UPL species	0	x 5 =	0																																										
Column totals	100 (A)		190 (B)																																										
Prevalence Index = B/A = <u>1.90</u>																																													
1		Absolute % Cover	Dominant Species	Indicator Status																																									
2																																													
3																																													
4																																													
5																																													
6																																													
7																																													
8																																													
9																																													
10		0	= Total Cover																																										
Sapling/Shrub Stratum Plot Size (15 ft.)																																													
1		Absolute % Cover	Dominant Species	Indicator Status																																									
2																																													
3																																													
4																																													
5																																													
6																																													
7																																													
8																																													
9																																													
10		0	= Total Cover																																										
Herb Stratum Plot Size (5 ft.)																																													
1	<i>Carex lupulina</i>	30	Y	OBL																																									
2	<i>Phalaris arundinacea</i>	30	Y	FACW																																									
3	<i>Juncus tenuis</i>	20	Y	FAC																																									
4	<i>Juncus effusus</i>	10	N	FACW																																									
5	<i>Epilobium coloratum</i>	10	N	FACW																																									
6																																													
7																																													
8																																													
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10																																													
11																																													
12																																													
13																																													
14																																													
15																																													
		100	= Total Cover																																										
Woody Vine Stratum Plot Size (30 ft.)																																													
1		Absolute % Cover	Dominant Species	Indicator Status																																									
2																																													
3																																													
4																																													
5																																													
		0	= Total Cover																																										
Remarks: (Include photo numbers here or on a separate sheet)																																													

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SOIL

Sampling Point: W007

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/1	70	10YR 5/8	30	C	PL/M	silty clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils:
<input type="checkbox"/> Histisol (A1)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)	<input checked="" type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)
	<input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
	<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input type="checkbox"/> Other (Explain in Remarks)

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> Y </u>
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Remarks:

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 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: U007
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR or MLRA): LRR N Lat.: 38.878928 Long.: -84.699971 Datum: WGS 84
 Soil Map Unit Name FdD3-Faywood silty clay, 12 to 20 percent slopes, severely eroded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u>
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: <u>Upland pit for wetland W007</u>	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>N</u>
Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Saturation present? (includes capillary fringe) Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: U007

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	50/20 Thresholds		
1					Tree Stratum	20%	50%
2					Tree Stratum	0	0
3					Sapling/Shrub Stratum	0	0
4					Herb Stratum	20	50
5					Woody Vine Stratum	0	0
6					Dominance Test Worksheet		
7					Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)		
8					Total Number of Dominant Species Across all Strata: <u>3</u> (B)		
9					Percent of Dominant Species that are OBL, FACW, or FAC: <u>0.00%</u> (A/B)		
10		0 = Total Cover			Prevalence Index Worksheet		
Sapling/Shrub Stratum Plot Size (15 ft.)					Total % Cover of:		
1					OBL species	<u>0</u> x 1 =	<u>0</u>
2					FACW species	<u>0</u> x 2 =	<u>0</u>
3					FAC species	<u>0</u> x 3 =	<u>0</u>
4					FACU species	<u>100</u> x 4 =	<u>400</u>
5					UPL species	<u>0</u> x 5 =	<u>0</u>
6					Column totals	<u>100</u> (A)	<u>400</u> (B)
7					Prevalence Index = B/A = <u>4.00</u>		
8					Hydrophytic Vegetation Indicators:		
9					Rapid test for hydrophytic vegetation		
10					Dominance test is >50%		
11					Prevalence index is ≤3.0*		
12					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
13					Problematic hydrophytic vegetation* (explain)		
14					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
15					Definitions of Vegetation Strata:		
Herb Stratum Plot Size (5 ft.)					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
1	<i>Poa pratensis</i>	30	Y	FACU	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
2	<i>Trifolium repens</i>	30	Y	FACU	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
3	<i>Plantago major</i>	20	Y	FACU	Woody vines - All woody vines greater than 3.28 ft in height.		
4	<i>Taraxacum officinale</i>	15	N	FACU	Hydrophytic vegetation present? <u>N</u>		
5	<i>Plantago lanceolata</i>	5	N	FACU			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15		100 = Total Cover					
Woody Vine Stratum Plot Size (30 ft.)							
1							
2							
3							
4							
5							
		0 = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet)							

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SOIL

Sampling Point: U007

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/4	100	-	-			silty clay loam	rocky, road wash

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils:

- | | | |
|--|--|---|
| <input type="checkbox"/> Histisol (A1)
<input type="checkbox"/> Histic Epipedon (A2)
<input type="checkbox"/> Black Histic (A3)
<input type="checkbox"/> Hydrogen Sulfide (A4)
<input type="checkbox"/> Stratified Layers (A5)
<input type="checkbox"/> 2 cm Muck (A10) (LRR N)
<input type="checkbox"/> Depleted Below Dark Surface (A11)
<input type="checkbox"/> Thick Dark Surface (A12)
<input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)
<input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)
<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)
<input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)
<input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)
<input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)
<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)
<input type="checkbox"/> Very Shallow Dark Surface (TF12)
<input type="checkbox"/> Other (Explain in Remarks) |
|--|--|---|

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> N </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W008
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.87925 Long.: -84.698896 Datum: WGS 84
 Soil Map Unit Name FcD-Faywood silty clay loam, 12 to 20 percent slopes NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>Yes</u>	Is the sampled area within a wetland? <u>Yes</u> W008
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM wetland in stream valley	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>1</u>	
Water table present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>6</u>	
Saturation present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: W008

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1 <i>Acer saccharinum</i>	10	Y	FACW	Tree Stratum	2	5	
2 _____	_____	_____	_____	Sapling/Shrub Stratum	0	0	
3 _____	_____	_____	_____	Herb Stratum	19	48	
4 _____	_____	_____	_____	Woody Vine Stratum	0	0	
5 _____	_____	_____	_____	Dominance Test Worksheet			
6 _____	_____	_____	_____	Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)			
7 _____	_____	_____	_____	Total Number of Dominant Species Across all Strata: <u>2</u> (B)			
8 _____	_____	_____	_____	Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)			
9 _____	_____	_____	_____	Prevalence Index Worksheet			
10 _____	10 = Total Cover	_____	_____	Total % Cover of:			
				OBL species	10 x 1 =	10	
				FACW species	85 x 2 =	170	
				FAC species	10 x 3 =	30	
				FACU species	0 x 4 =	0	
				UPL species	0 x 5 =	0	
				Column totals	105 (A)	210 (B)	
				Prevalence Index = B/A = <u>2.00</u>			
Sapling/Shrub Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status		<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation		
1 _____	_____	_____	_____		<input checked="" type="checkbox"/> Dominance test is >50%		
2 _____	_____	_____	_____		<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
3 _____	_____	_____	_____		Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
4 _____	_____	_____	_____		Problematic hydrophytic vegetation* (explain)		
5 _____	_____	_____	_____		*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
6 _____	_____	_____	_____		Definitions of Vegetation Strata:		
7 _____	_____	_____	_____		Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
8 _____	_____	_____	_____		Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
9 _____	_____	_____	_____		Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
10 _____	_____	_____	_____		Woody vines - All woody vines greater than 3.28 ft in height.		
11 _____	_____	_____	_____		Hydrophytic vegetation present? <u>Y</u>		
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	95 = Total Cover	_____	_____				
Herb Stratum							
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 <i>Phalaris arundinacea</i>	50	Y	FACW				
2 <i>Cyperus strigosus</i>	15	N	FACW				
3 <i>Juncus effusus</i>	10	N	FACW				
4 <i>Eleocharis flavescens</i>	10	N	OBL				
5 <i>Rumex crispus</i>	10	N	FAC				
6 _____	_____	_____	_____				
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	_____	_____	_____				
11 _____	_____	_____	_____				
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	_____	_____	_____				
Woody Vine Stratum							
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____	_____	_____	_____				
2 _____	_____	_____	_____				
3 _____	_____	_____	_____				
4 _____	_____	_____	_____				
5 _____	_____	_____	_____				
6 _____	_____	_____	_____				
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	0 = Total Cover	_____	_____				

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

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SOIL

Sampling Point: W008

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/2	70	10YR 5/6	30	C	PL/M	silty clay loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

<p>Hydric Soil Indicators:</p> <p><input type="checkbox"/> Histisol (A1)</p> <p><input type="checkbox"/> Histic Epipedon (A2)</p> <p><input type="checkbox"/> Black Histic (A3)</p> <p><input type="checkbox"/> Hydrogen Sulfide (A4)</p> <p><input type="checkbox"/> Stratified Layers (A5)</p> <p><input type="checkbox"/> 2 cm Muck (A10) (LRR N)</p> <p><input type="checkbox"/> Depleted Below Dark Surface (A11)</p> <p><input type="checkbox"/> Thick Dark Surface (A12)</p> <p><input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)</p> <p><input type="checkbox"/> Sandy Gleyed Matrix (S4)</p> <p><input type="checkbox"/> Sandy Redox (S5)</p> <p><input type="checkbox"/> Stripped Matrix (S6)</p>	<p><input type="checkbox"/> Dark Surface (S7)</p> <p><input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148)</p> <p><input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148)</p> <p><input type="checkbox"/> Loamy Gleyed Matrix (F2)</p> <p><input checked="" type="checkbox"/> Depleted Matrix (F3)</p> <p><input type="checkbox"/> Redox Dark Surface (F6)</p> <p><input type="checkbox"/> Depleted Dark Surface (F7)</p> <p><input type="checkbox"/> Redox Depressions (F8)</p> <p><input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136)</p> <p><input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148)</p> <p><input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147)</p>	<p>Indicators for Problematic Hydric Soils:</p> <p><input type="checkbox"/> 2 cm Muck (A10) (MLRA 147)</p> <p><input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148)</p> <p><input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147)</p> <p><input type="checkbox"/> Very Shallow Dark Surface (TF12)</p> <p><input type="checkbox"/> Other (Explain in Remarks)</p>
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*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

<p>Restrictive Layer (if observed):</p> <p>Type: _____</p> <p>Depth (inches): _____</p>	<p>Hydric soil present? <u>Y</u></p>
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Remarks:

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 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 3/30/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point U008
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 20
 Subregion (LRR or MLRA): LRR N Lat.: 38.879312 Long.: -84.698793 Datum: WGS 84
 Soil Map Unit Name FcD-Faywood silty clay loam, 12 to 20 percent slopes NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u> Upland for W008
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland pit for wetland W008	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <u>N</u>
Surface water present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	
Water table present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches): <u>NA</u>	
Saturation present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> (includes capillary fringe)	Depth (inches): <u>NA</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: U008

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1					Tree Stratum	0	0
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	20	50
4					Woody Vine Stratum	0	0
5					Dominance Test Worksheet		
6					Number of Dominant Species that are OBL, FACW, or FAC: <u>1</u> (A)		
7					Total Number of Dominant Species Across all Strata: <u>3</u> (B)		
8					Percent of Dominant Species that are OBL, FACW, or FAC: <u>33.33%</u> (A/B)		
9					Prevalence Index Worksheet		
10					Total % Cover of:		
					OBL species	0	x 1 = 0
					FACW species	20	x 2 = 40
					FAC species	10	x 3 = 30
					FACU species	70	x 4 = 280
					UPL species	0	x 5 = 0
					Column totals	100 (A)	350 (B)
					Prevalence Index = B/A = <u>3.50</u>		
					Hydrophytic Vegetation Indicators:		
					___ Rapid test for hydrophytic vegetation		
					___ Dominance test is >50%		
					___ Prevalence index is ≤3.0*		
					___ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
					___ Problematic hydrophytic vegetation* (explain)		
					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
					Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>N</u>		
					0 = Total Cover		
					Herb Stratum		
	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status			
1	<i>Taraxacum officinale</i>	30	Y	FACU			
2	<i>Dipsacus fullonum</i>	25	Y	FACU			
3	<i>Phalaris arundinacea</i>	20	Y	FACW			
4	<i>Securigera varia</i>	15	N	FACU			
5	<i>Rumex crispus</i>	10	N	FAC			
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
					100 = Total Cover		
					Woody Vine Stratum		
	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status			
1							
2							
3							
4							
5							
					0 = Total Cover		
Remarks: (Include photo numbers here or on a separate sheet)							

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SOIL

Sampling Point: U008

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 5/3	100	-	-			silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

**Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):

Type: _____
 Depth (inches): _____

Hydric soil present? N

Remarks:

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 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 4/1/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W009
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.889871 Long.: -84.639984 Datum: WGS 84
 Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal" Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present?	<u>Yes</u>	Is the sampled area within a wetland?	<u>Yes</u>
Hydric soil present?	<u>Yes</u>		<u>W009</u>
Wetland hydrology present?	<u>Yes</u>		

Remarks:

 PSS wetland located between pastures and stream.

HYDROLOGY

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

Field Observations:	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>1</u>	Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>5</u>	
Water table present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Depth (inches): <u>0</u>	
Saturation present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: W009

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1 _____	_____	_____	_____	Tree Stratum	0	0	
2 _____	_____	_____	_____	Sapling/Shrub Stratum	14	35	
3 _____	_____	_____	_____	Herb Stratum	13	33	
4 _____	_____	_____	_____	Woody Vine Stratum	0	0	
5 _____	_____	_____	_____	Dominance Test Worksheet			
6 _____	_____	_____	_____	Number of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A)			
7 _____	_____	_____	_____	Total Number of Dominant Species Across all Strata: <u>5</u> (B)			
8 _____	_____	_____	_____	Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)			
9 _____	_____	_____	_____	Prevalence Index Worksheet			
10 _____	0 = Total Cover	_____	_____	Total % Cover of:			
				OBL species <u>25</u> x 1 = <u>25</u>			
				FACW species <u>45</u> x 2 = <u>90</u>			
				FAC species <u>60</u> x 3 = <u>180</u>			
				FACU species <u>5</u> x 4 = <u>20</u>			
				UPL species <u>0</u> x 5 = <u>0</u>			
				Column totals <u>135</u> (A) <u>315</u> (B)			
				Prevalence Index = B/A = <u>2.33</u>			
Sapling/Shrub Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	Rapid test for hydrophytic vegetation			
1 <i>Acer negundo</i>	60	Y	FAC	<input checked="" type="checkbox"/> Dominance test is >50%			
2 <i>Salix nigra</i>	10	Y	OBL	<input checked="" type="checkbox"/> Prevalence index is ≤3.0*			
3 _____	_____	_____	_____	Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)			
4 _____	_____	_____	_____	Problematic hydrophytic vegetation* (explain)			
5 _____	_____	_____	_____	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
6 _____	_____	_____	_____	Definitions of Vegetation Strata:			
7 _____	_____	_____	_____	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
8 _____	_____	_____	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
9 _____	_____	_____	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
10 _____	_____	_____	_____	Woody vines - All woody vines greater than 3.28 ft in height.			
11 _____	_____	_____	_____	Hydrophytic vegetation present? <u>Y</u>			
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	70 = Total Cover	_____	_____				
Herb Stratum					Remarks: (Include photo numbers here or on a separate sheet)		
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 <i>Epilobium coloratum</i>	30	Y	FACW				
2 <i>Typha latifolia</i>	15	Y	OBL				
3 <i>Phalaris arundinacea</i>	15	Y	FACW				
4 <i>Lamium purpureum</i>	5	N	FACU				
5 _____	_____	_____	_____				
6 _____	_____	_____	_____				
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	_____	_____	_____				
11 _____	_____	_____	_____				
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	65 = Total Cover	_____	_____				
Woody Vine Stratum					Remarks: (Include photo numbers here or on a separate sheet)		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____	_____	_____	_____				
2 _____	_____	_____	_____				
3 _____	_____	_____	_____				
4 _____	_____	_____	_____				
5 _____	0 = Total Cover	_____	_____				

CONFIDENTIAL PROPRIETARY TRADE SECRET

SOIL

Sampling Point: W009

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/2	90	10YR 5/8	10	C	PL/M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed):
 Type: _____
 Depth (inches): _____

Hydric soil present? Y

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 4/1/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: U009
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): toe-of-slope Local relief (concave, convex, none): none Slope (%): 5
 Subregion (LRR or MLRA): LRR N Lat.: 38.88972 Long.: -84.639974 Datum: WGS 84
 Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <u>No</u>	Is the sampled area within a wetland? <u>No</u> Upland for W009
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland pit for wetland W009	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)		
Field Observations:		Wetland hydrology present? <u>N</u>	
Surface water present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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VEGETATION - Use scientific names of plants

Sampling Point: U009

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0 = Total Cover		

Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
		0 = Total Cover		

Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1	<i>Taraxacum officinale</i>	30	Y	FACU
2	<i>Trifolium repens</i>	25	Y	FACU
3	<i>Poa pratensis</i>	20	Y	FACU
4	<i>Plantago major</i>	10	N	FACU
5	<i>Lamium purpureum</i>	10	N	FACU
6	<i>Allium canadense</i>	5	N	FACU
7				
8				
9				
10				
11				
12				
13				
14				
15				
		100 = Total Cover		

Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0 = Total Cover		

60/20 Thresholds

Tree Stratum	20%	50%
Sapling/Shrub Stratum	0	0
Herb Stratum	20	50
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 0 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 0.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column totals	100 (A)		400 (B)
Prevalence Index = B/A =	<u>4.00</u>		

Hydrophytic Vegetation Indicators:

Rapid test for hydrophytic vegetation

Dominance test is >50%

Prevalence index is ≤3.0*

Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)

Problematic hydrophytic vegetation* (explain)

*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic

Definitions of Vegetation Strata:

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

Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

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

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic vegetation present? N

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

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SOIL

Sampling Point: U009

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/3	100	-	-			silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

- Histisol (A1)
- Histic Epipedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 2 cm Muck (A10) (LRR N)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148)
- Sandy Gleyed Matrix (S4)
- Sandy Redox (S5)
- Stripped Matrix (S6)

- Dark Surface (S7)
- Polyvalue Below Surface (S8) (MLRA 147, 148)
- Thin Dark Surface (S9) (MLRA 147, 148)
- Loamy Gleyed Matrix (F2)
- Depleted Matrix (F3)
- Redox Dark Surface (F6)
- Depleted Dark Surface (F7)
- Redox Depressions (F8)
- Iron-Manganese Masses (F12) (LRR N, MLRA 136)
- Umbric Surface (F13) (MLRA 136, 122)
- Piedmont Floodplain Soils (F19) (MLRA 148)
- Red Parent Material (F21) (MLRA 127, 147)

Indicators for Problematic Hydric Soils:

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

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> N </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 4/1/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point W010
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.87925 Long.: -84.698896 Datum: WGS 84
 Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <input checked="" type="checkbox"/> Yes	Is the sampled area within a wetland? <input checked="" type="checkbox"/> Yes W010
Hydric soil present? <input checked="" type="checkbox"/> Yes	
Wetland hydrology present? <input checked="" type="checkbox"/> Yes	
Remarks:	
PEM wetland along road ROW drains into S039	

HYDROLOGY

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

Field Observations:		Wetland hydrology present? <input checked="" type="checkbox"/> Y
Surface water present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>3</u>	
Water table present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>	
Saturation present? (includes capillary fringe)	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Depth (inches): <u>0</u>	

Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

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VEGETATION - Use scientific names of plants

Sampling Point: W010

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status	50/20 Thresholds		
1					Tree Stratum	20%	50%
2					Sapling/Shrub Stratum	0	0
3					Herb Stratum	20	50
4					Woody Vine Stratum	0	0
5					Dominance Test Worksheet		
6					Number of Dominant Species that are OBL, FACW, or FAC: <u>2</u> (A)		
7					Total Number of Dominant Species Across all Strata: <u>3</u> (B)		
8					Percent of Dominant Species that are OBL, FACW, or FAC: <u>66.67%</u> (A/B)		
9					Prevalence Index Worksheet		
10		0 = Total Cover			Total % Cover of:		
					OBL species	0 x 1 =	0
					FACW species	60 x 2 =	120
					FAC species	10 x 3 =	30
					FACU species	30 x 4 =	120
					UPL species	0 x 5 =	0
					Column totals	100 (A)	270 (B)
					Prevalence Index = B/A = <u>2.70</u>		
					Hydrophytic Vegetation Indicators:		
					Rapid test for hydrophytic vegetation		
					<input checked="" type="checkbox"/> Dominance test is >50%		
					<input checked="" type="checkbox"/> Prevalence index is ≤3.0*		
					Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
					Problematic hydrophytic vegetation* (explain)		
					*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic		
					Definitions of Vegetation Strata:		
					Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.		
					Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.		
					Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.		
					Woody vines - All woody vines greater than 3.28 ft in height.		
					Hydrophytic vegetation present? <u>Y</u>		
					Herb Stratum Plot Size (5 ft.) Absolute % Cover Dominant Species Indicator Status		
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
		100 = Total Cover					
					Woody Vine Stratum Plot Size (30 ft.) Absolute % Cover Dominant Species Indicator Status		
1							
2							
3							
4							
5							
		0 = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet)							

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SOIL

Sampling Point: W010

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

Depth (Inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type*	Loc**		
0-18	10YR 4/2	80	10YR 4/6	20	C	PL/M	silt loam	

*Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains
 **Location: PL=Pore Lining, M=Matrix

Hydric Soil Indicators:

Indicators for Problematic Hydric Soils:

- | | | |
|--|--|--|
| <input type="checkbox"/> Histisol (A1) | <input type="checkbox"/> Dark Surface (S7) | <input type="checkbox"/> 2 cm Muck (A10) (MLRA 147) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Polyvalue Below Surface (S8) (MLRA 147, 148) | <input type="checkbox"/> Coast Prairie Redox (A16) (MLRA 147, 148) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Thin Dark Surface (S9) (MLRA 147, 148) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 136, 147) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Very Shallow Dark Surface (TF12) |
| <input type="checkbox"/> Stratified Layers (A5) | <input checked="" type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 2 cm Muck (A10) (LRR N) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) (LRR N, MLRA 147, 148) | <input type="checkbox"/> Iron-Manganese Masses (F12) (LRR N, MLRA 136) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | <input type="checkbox"/> Umbric Surface (F13) (MLRA 136, 122) | |
| <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 148) | |
| <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> Red Parent Material (F21) (MLRA 127, 147) | |

*Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric soil present? <u> Y </u>
--	-----------------------------------

Remarks:

CONFIDENTIAL PROPRIETARY TRADE SECRET
 DUKE- WALTON TO BIG BONE

WETLAND DETERMINATION DATA FORM - Eastern Mountains and Piedmont Region

Project/Site: Walton-Big Bone Natural Gas Pipeline City/County: Boone Sampling Date: 4/1/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: U010
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 10
 Subregion (LRR or MLRA): LRR N Lat.: 38.889434 Long.: -84.628515 Datum: WGS 84
 Soil Map Unit Name No-Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes No (If no, explain in remarks)
 Are vegetation , soil , or hydrology significantly disturbed? Are "normal Yes
 Are vegetation , soil , or hydrology naturally problematic? circumstances" present?
 (If needed, explain any answers in remarks)

SUMMARY OF FINDINGS

Hydrophytic vegetation present? <input type="checkbox"/> No	Is the sampled area within a wetland? <input type="checkbox"/> No
Hydric soil present? <input type="checkbox"/> No	
Wetland hydrology present? <input type="checkbox"/> No	
Remarks:	
Upland pit for wetland W010	

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)		<input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> True Aquatic Plants (B14) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Other (Explain in Remarks)		
Field Observations:		Wetland hydrology present? <input type="checkbox"/> N	
Surface water present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Water table present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Saturation present? (includes capillary fringe)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Depth (inches): <u>NA</u>		
Describe recorded data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

CONFIDENTIAL PROPRIETARY TRADE SECRET

VEGETATION - Use scientific names of plants

Sampling Point: U010

Tree Stratum					50/20 Thresholds		
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		20%	50%	
1 <i>Pyrus calleryana</i>	30	Y	UPL	Tree Stratum	6	15	
2 _____				Sapling/Shrub Stratum	3	8	
3 _____				Herb Stratum	20	50	
4 _____				Woody Vine Stratum	0	0	
5 _____				Dominance Test Worksheet			
6 _____				Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A)			
7 _____				Total Number of Dominant Species Across all Strata: <u>5</u> (B)			
8 _____				Percent of Dominant Species that are OBL, FACW, or FAC: <u>0.00%</u> (A/B)			
9 _____				Prevalence Index Worksheet			
10 _____	30 = Total Cover			Total % Cover of:			
				OBL species <u>0</u> x 1 = <u>0</u>			
				FACW species <u>0</u> x 2 = <u>0</u>			
				FAC species <u>0</u> x 3 = <u>0</u>			
				FACU species <u>100</u> x 4 = <u>400</u>			
				UPL species <u>45</u> x 5 = <u>225</u>			
				Column totals <u>145</u> (A) <u>625</u> (B)			
				Prevalence Index = B/A = <u>4.31</u>			
Sapling/Shrub Stratum					Hydrophytic Vegetation Indicators:		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status	Rapid test for hydrophytic vegetation			
1 <i>Lonicera maackii</i>	15	Y	UPL	Dominance test is >50%			
2 _____				Prevalence index is ≤3.0*			
3 _____				Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)			
4 _____				Problematic hydrophytic vegetation* (explain)			
5 _____				*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
6 _____				Definitions of Vegetation Strata:			
7 _____				Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
8 _____				Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
9 _____				Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
10 _____				Woody vines - All woody vines greater than 3.28 ft in height.			
11 _____				Hydrophytic vegetation present? <u>N</u>			
12 _____							
13 _____							
14 _____							
15 _____	15 = Total Cover						
Herb Stratum							
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 <i>Taraxacum officinale</i>	30	Y	FACU				
2 <i>Trifolium repens</i>	25	Y	FACU				
3 <i>Poa pratensis</i>	20	Y	FACU				
4 <i>Plantago major</i>	10	N	FACU				
5 <i>Lamium purpureum</i>	10	N	FACU				
6 <i>Allium canadense</i>	5	N	FACU				
7 _____							
8 _____							
9 _____							
10 _____							
11 _____							
12 _____							
13 _____							
14 _____							
15 _____	100 = Total Cover						
Woody Vine Stratum							
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____							
2 _____							
3 _____							
4 _____							
5 _____							
6 _____							
7 _____							
8 _____							
9 _____							
10 _____	0 = Total Cover						

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