

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 W003-PEM
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.88759 Long.: -84.742106 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> <u>W003-PEM</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PEM portion	

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 <input type="checkbox"/> 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"/> (includes capillary fringe)	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: W003-PEM

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: _____ (A)			
7 _____	_____	_____	_____	Total Number of Dominant Species Across all Strata: _____ (B)			
8 _____	_____	_____	_____	Percent of Dominant Species that are OBL, FACW, or FAC: _____ (A/B)			
9 _____	_____	_____	_____	Prevalence Index Worksheet			
10 _____	0 = Total Cover	_____	_____	Total % Cover of:			
				OBL species $\frac{20}{100} \times 1 = \frac{20}{100}$			
				FACW species $\frac{70}{100} \times 2 = \frac{140}{100}$			
				FAC species $\frac{5}{100} \times 3 = \frac{15}{100}$			
				FACU species $\frac{0}{100} \times 4 = \frac{0}{100}$			
				UPL species $\frac{0}{100} \times 5 = \frac{0}{100}$			
				Column totals $\frac{95}{100}$ (A) $\frac{175}{100}$ (B)			
				Prevalence Index = B/A = $\frac{175}{95} = 1.84$			
Sapling/Shrub Stratum							
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____	_____	_____	_____	Hydrophytic Vegetation Indicators:			
2 _____	_____	_____	_____	<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation			
3 _____	_____	_____	_____	<input checked="" type="checkbox"/> Dominance test is >50%			
4 _____	_____	_____	_____	<input checked="" type="checkbox"/> Prevalence index is $\leq 3.0^*$			
5 _____	_____	_____	_____	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 _____	_____	_____	_____	Definitions of Vegetation Strata:			
9 _____	_____	_____	_____	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
10 _____	_____	_____	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
11 _____	_____	_____	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
12 _____	_____	_____	_____	Woody vines - All woody vines greater than 3.28 ft in height.			
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	100 = Total Cover	_____	_____				
Herb Stratum							
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 <u>Cyperus esculentus</u>	25	Y	FACW	Hydrophytic vegetation present? <u>Y</u>			
2 <u>Lysimachia nummularia</u>	25	Y	FACW				
3 <u>Epilobium coloratum</u>	20	Y	FACW				
4 <u>Persicaria sagittata</u>	20	Y	OBL				
5 <u>Rumex crispus</u>	5	N	FAC				
6 <u>Solidago sp.</u>	5	N					
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	_____	_____	_____				
11 _____	_____	_____	_____				
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	_____	_____	_____				
	0 = 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: W003-PEM

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 5/6	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"/> 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) (MLRA 136, 147)
<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) (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 checked="" 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> Y </u>
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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: W003-PSS
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.887415 Long.: -84.741682 Datum: WGS 84
 Soil Map Unit Name LkB-Licking silt loam, 2 to 6 percent slopes NWI Classification: N/A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X 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> W003-PSS
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks: PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PSS portion	

HYDROLOGY

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

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

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: W003-PSS

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	<i>Acer negundo</i>	85	Y	FAC
2	<i>Populus deltoides</i>	15	Y	FAC
3				
4				
5				
6				
7				
8				
9				
10				
		100 = Total Cover		
Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1	<i>Lysimachia nummularia</i>	20	Y	FACW
2	<i>Alliaria petiolata</i>	10	Y	FACU
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
		30 = Total Cover		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status
1				
2				
3				
4				
5				
		0 = Total Cover		

50/20 Thresholds		
	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	20	50
Herb Stratum	6	15
Woody Vine Stratum	0	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>4</u> (B)		
Percent of Dominant Species that are OBL, FACW, or FAC: <u>75.00%</u> (A/B)		
Prevalence Index Worksheet		
Total % Cover of:		
OBL species	0 x 1 =	0
FACW species	20 x 2 =	40
FAC species	100 x 3 =	300
FACU species	10 x 4 =	40
UPL species	0 x 5 =	0
Column totals	130 (A)	380 (B)
Prevalence Index = B/A = <u>2.92</u>		
Hydrophytic Vegetation Indicators:		
<input type="checkbox"/> 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)

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SOIL

Sampling Point: W003-PSS

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	90	10YR 5/4	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:		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:

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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: 3/29/16
 Applicant/Owner: Duke Energy State: Kentucky Sampling Point: W003-PFO
 Investigator(s): Sarah Miloski, Julie Freer Section, Township, Range: No PLSS in Area
 Landform (hillslope, terrace, etc.): bottom land Local relief (concave, convex, none): concave Slope (%): 0
 Subregion (LRR or MLRA): LRR N Lat.: 38.886972 Long.: -84.740982 Datum: WGS 84
 Soil Map Unit Name No- Nolin silt loam, 0 to 2 percent slopes, occasionally flooded NWI Classification: PFO1A

Are climatic/hydrologic conditions of the site typical for this time of the year? Yes X 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> W003-PFO
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	

Remarks:

 PEM / PSS/ PFO wetland located in Big Bone Lick State Park. Pit dug in PFO portion

HYDROLOGY

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

Field Observations:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u> No _____	Depth (inches):	<u>1</u>	
Water table present?	Yes <u>X</u> No _____	Depth (inches):	<u>2</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u> No _____	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: W003-PFO

Tree Stratum					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Acer negundo</i>					80			
2	<i>Populus deltoides</i>					15	N	FAC	
3									
4									
5									
6									
7									
8									
9									
10									
						95	=	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>Lysimachia nummularia</i>					25			
2	<i>Mentha spicata</i>					20	Y	FACW	
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
						45	=	Total Cover	

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

50/20 Thresholds

	20%	50%
Tree Stratum	19	48
Sapling/Shrub Stratum	0	0
Herb Stratum	9	23
Woody Vine Stratum	0	0

Dominance Test Worksheet

Number of Dominant Species that are OBL, FACW, or FAC: 3 (A)

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

Percent of Dominant Species that are OBL, FACW, or FAC: 100.00% (A/B)

Prevalence Index Worksheet

Total % Cover of:

OBL species	0	x 1 =	0
FACW species	45	x 2 =	90
FAC species	95	x 3 =	285
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column totals	140	(A)	375 (B)
Prevalence Index = B/A =	<u>2.68</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? Y

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

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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? <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: 3/29/16
 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 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:

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 <u>0</u> x 1 = <u>0</u>			
				FACW species <u>0</u> x 2 = <u>0</u>			
				FAC species <u>10</u> x 3 = <u>30</u>			
				FACU species <u>85</u> x 4 = <u>340</u>			
				UPL species <u>0</u> x 5 = <u>0</u>			
				Column totals <u>95</u> (A) <u>370</u> (B)			
				Prevalence Index = B/A = <u>3.89</u>			
Sapling/Shrub Stratum					Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid test for hydrophytic vegetation <input type="checkbox"/> Dominance test is >50% <input type="checkbox"/> Prevalence index is ≤3.0* <input type="checkbox"/> 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		
Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status				
1 _____	_____	_____	_____				
2 _____	_____	_____	_____				
3 _____	_____	_____	_____				
4 _____	_____	_____	_____				
5 _____	_____	_____	_____				
6 _____	_____	_____	_____				
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	_____	_____	_____				
11 _____	_____	_____	_____				
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	0 = Total Cover	_____	_____				
Herb Stratum					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.		
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 _____	100 = Total Cover	_____	_____				
Woody Vine Stratum					Hydrophytic vegetation present? <u>N</u>		
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>
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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: 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 X 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>W004</u>
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 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 <input type="checkbox"/> 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 <u>X</u> No <u> </u>	Depth (inches): <u>1</u>	
Water table present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>3</u>	
Saturation present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>0</u>	
(includes capillary fringe)		

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: 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: _____ (A)	
2 _____	_____	_____	_____		Total Number of Dominant Species Across all Strata: _____ (B)	
3 _____	_____	_____	_____		Percent of Dominant Species that are OBL, FACW, or FAC: _____ (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 <i>Cyperus esculentus</i>	30	Y	FACW		Total % Cover of:	
2 <i>Lysimachia nummularia</i>	20	Y	FACW		OBL species 0 x 1 = 0	
3 <i>Vernonia gigantea</i>	15	N	FAC		FACW species 60 x 2 = 120	
4 <i>Phalaris arundinacea</i>	10	N	FACW		FAC species 15 x 3 = 45	
5 <i>Apocynum androsaemifolium</i>	5	N	FACU		FACU species 5 x 4 = 20	
6 _____	_____	_____	_____		UPL species 0 x 5 = 0	
7 _____	_____	_____	_____		Column totals 80 (A) 185 (B)	
8 _____	_____	_____	_____		Prevalence Index = B/A = 2.31	
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)	
	0	= Total Cover			*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)

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? 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: 3/30/16
 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? <input checked="" type="checkbox"/>	Yes	Is the sampled area within a wetland? <input checked="" type="checkbox"/> W005
Hydric soil present? <input checked="" type="checkbox"/>	Yes	
Wetland hydrology present? <input checked="" type="checkbox"/>	Yes	

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 checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> 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 checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland hydrology present? <input checked="" type="checkbox"/>
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? 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:

VEGETATION - Use scientific names of plants

Sampling Point: W005

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					50/20 Thresholds <table style="width:100%; border:none;"> <tr> <td></td><td style="text-align:right;">20%</td><td style="text-align:right;">50%</td></tr> <tr> <td>Tree Stratum</td><td style="text-align:right;">0</td><td style="text-align:right;">0</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>			20%	50%	Tree Stratum	0	0	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0
	20%	50%																			
Tree Stratum	0	0																			
Sapling/Shrub Stratum	0	0																			
Herb Stratum	20	50																			
Woody Vine Stratum	0	0																			
2																					
3																					
4																					
5																					
6					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)																
7																					
8																					
9																					
10																					
		0	= Total Cover																		
Sapling/Shrub Stratum	Plot Size (15 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					Prevalence Index Worksheet Total % Cover of: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>70</u> x 2 = <u>140</u> FAC species <u>30</u> x 3 = <u>90</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>230</u> (B) Prevalence Index = B/A = <u>2.30</u>																
2																					
3																					
4																					
5																					
		0	= Total Cover																		
Herb Stratum	Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1	<i>Cyperus esculentus</i>	40	Y	FACW	Hydrophytic Vegetation Indicators: <input type="checkbox"/> 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																
2	<i>Carex grayi</i>	30	Y	FACW																	
3	<i>Juncus tenuis</i>	30	Y	FAC																	
4																					
5																					
		100	= Total Cover																		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					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.																
2																					
3																					
4																					
5																					
		0	= Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet)					Hydrophytic vegetation present? <u>Y</u>																

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

- | | | |
|---|--|---|
| <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> |
|---|--|---|
- *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:

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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> <u>W006</u>
Hydric soil present? <u>Yes</u>	
Wetland hydrology present? <u>Yes</u>	
Remarks:	
<p>PEM wetland along road ROW. Drains into stream located outside of study area</p>	

HYDROLOGY

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

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"/> (includes capillary fringe)	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					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					Total % Cover of:	
	0	= Total Cover			OBL species <u>30</u> x 1 = <u>30</u>	
					FACW species <u>75</u> x 2 = <u>150</u>	
					FAC species <u>0</u> x 3 = <u>0</u>	
					FACU species <u>0</u> x 4 = <u>0</u>	
					UPL species <u>0</u> x 5 = <u>0</u>	
					Column totals <u>105</u> (A) <u>180</u> (B)	
					Prevalence Index = B/A = <u>1.71</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						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
	105	= 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)					Hydrophytic Vegetation Indicators: <input type="checkbox"/> 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>	

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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"/> 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:		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: U004-6

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					50/20 Thresholds <table style="width:100%; border-collapse: collapse;"> <tr><td></td><td style="text-align: right;">20%</td><td style="text-align: right;">50%</td></tr> <tr><td>Tree Stratum</td><td style="text-align: right;">0</td><td style="text-align: right;">0</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>			20%	50%	Tree Stratum	0	0	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0
	20%	50%																			
Tree Stratum	0	0																			
Sapling/Shrub Stratum	0	0																			
Herb Stratum	20	50																			
Woody Vine Stratum	0	0																			
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	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across all Strata: <u>2</u> (B) Percent of Dominant Species that are OBL, FACW, or FAC: <u>0.00%</u> (A/B)																
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	Prevalence Index Worksheet 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>																
1	<i>Poa pratensis</i>	30	Y	FACU																	
2	<i>Taraxacum officinale</i>	30	Y	FACU																	
3	<i>Trifolium repens</i>	15	N	FACU																	
4	<i>Festuca arundinacea</i>	15	N	FACU																	
5	<i>Plantago major</i>	10	N	FACU																	
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	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid test for hydrophytic vegetation <input type="checkbox"/> Dominance test is >50% <input type="checkbox"/> Prevalence index is ≤3.0* <input type="checkbox"/> Morphological adaptations* (provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic hydrophytic vegetation* (explain) <small>*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic</small>																
1																					
2																					
3																					
4																					
5																					
		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>N</u>														

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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:
<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) | Indicators for Problematic Hydric Soils:
<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:

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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 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 X 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 checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> 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 checked="" type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:		Wetland hydrology present? <u>Y</u>
Surface water present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>1</u>	
Water table present? Yes <u>X</u> No <u> </u>	Depth (inches): <u>2</u>	
Saturation present? Yes <u>X</u> No <u> </u> (includes capillary fringe)	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: W007

Tree Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					50/20 Thresholds <table style="width:100%; border:none;"> <tr><td></td><td style="text-align:right;">20%</td><td style="text-align:right;">50%</td></tr> <tr><td>Tree Stratum</td><td style="text-align:right;">0</td><td style="text-align:right;">0</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>			20%	50%	Tree Stratum	0	0	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0
	20%	50%																			
Tree Stratum	0	0																			
Sapling/Shrub Stratum	0	0																			
Herb Stratum	20	50																			
Woody Vine Stratum	0	0																			
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					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)																
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>Carex lupulina</i>	30	Y	OBL	Prevalence Index Worksheet Total % Cover of: OBL species <u>30</u> x 1 = <u>30</u> FACW species <u>50</u> x 2 = <u>100</u> FAC species <u>20</u> x 3 = <u>60</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column totals <u>100</u> (A) <u>190</u> (B) Prevalence Index = B/A = <u>1.90</u>																
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																					
9																					
10																					
11																					
12																					
13																					
14																					
15		100	= Total Cover																		
Woody Vine Stratum	Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status																	
1					Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> 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																
2																					
3																					
4																					
5		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: 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

- | | | |
|--|---|--|
| <p>Hydric Soil Indicators:</p> <ul style="list-style-type: none"> <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) | <ul style="list-style-type: none"> <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 checked="" 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) | <p>Indicators for Problematic Hydric Soils:</p> <ul style="list-style-type: none"> <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? <input checked="" type="checkbox"/> Y
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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> Upland for W007
Hydric soil present? <u>No</u>	
Wetland hydrology present? <u>No</u>	
Remarks: Upland pit for wetland W007	

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"/>	Depth (inches): <u>NA</u>	
(includes capillary fringe)		

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																	
1					50/20 Thresholds <table style="width:100%; border-collapse: collapse;"> <tr><td></td><td style="text-align: right;">20%</td><td style="text-align: right;">50%</td></tr> <tr><td>Tree Stratum</td><td style="text-align: right;">0</td><td style="text-align: right;">0</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>			20%	50%	Tree Stratum	0	0	Sapling/Shrub Stratum	0	0	Herb Stratum	20	50	Woody Vine Stratum	0	0
	20%	50%																			
Tree Stratum	0	0																			
Sapling/Shrub Stratum	0	0																			
Herb Stratum	20	50																			
Woody Vine Stratum	0	0																			
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	Dominance Test Worksheet Number of Dominant Species that are OBL, FACW, or FAC: <u>0</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>0.00%</u> (A/B)																
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	Prevalence Index Worksheet 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>																
1	<i>Poa pratensis</i>	30	Y	FACU																	
2	<i>Trifolium repens</i>	30	Y	FACU																	
3	<i>Plantago major</i>	20	Y	FACU																	
4	<i>Taraxacum officinale</i>	15	N	FACU																	
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.)	Absolute % Cover	Dominant Species	Indicator Status	Hydrophytic Vegetation Indicators: <input type="checkbox"/> Rapid test for hydrophytic vegetation <input type="checkbox"/> Dominance test is >50% <input type="checkbox"/> Prevalence index is ≤3.0* <input type="checkbox"/> 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																
1																					
2																					
3																					
4																					
5		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>N</u>																

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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: <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)	Indicators for Problematic Hydric Soils: <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:

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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: 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> <u>W008</u>
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 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 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 checked="" 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 checked="" 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 <input type="checkbox"/> 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>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:

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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	
7					Species that are OBL,	
8					FACW, or FAC: <u>2</u> (A)	
9					Total Number of Dominant	
10					Species Across all Strata: <u>2</u> (B)	
	10 = Total Cover				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 <u>10</u> x 1 = <u>10</u>	
2					FACW species <u>85</u> x 2 = <u>170</u>	
3					FAC species <u>10</u> x 3 = <u>30</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>105</u> (A) <u>210</u> (B)	
7					Prevalence Index = B/A = <u>2.00</u>	
8						
9						
10						
	0 = Total Cover					
Herb Stratum					Hydrophytic Vegetation Indicators:	
Plot Size (5 ft.)	Absolute % Cover	Dominant Species	Indicator Status		<input checked="" type="checkbox"/> Rapid test for hydrophytic vegetation	
1 <i>Phalaris arundinacea</i>	50	Y	FACW		<input checked="" type="checkbox"/> Dominance test is >50%	
2 <i>Cyperus strigosus</i>	15	N	FACW		<input checked="" type="checkbox"/> Prevalence index is ≤3.0*	
3 <i>Juncus effusus</i>	10	N	FACW		Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)	
4 <i>Eleocharis flavescens</i>	10	N	OBL		Problematic hydrophytic vegetation* (explain)	
5 <i>Rumex crispus</i>	10	N	FAC		*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
	95 = 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.	
Woody Vine Stratum					Hydrophytic vegetation present?	
Plot Size (30 ft.)	Absolute % Cover	Dominant Species	Indicator Status		<u>Y</u>	
1						
2						
3						
4						
5						
	0 = Total Cover					
Remarks: (Include photo numbers here or on a separate sheet)						

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

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>
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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: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)
<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: 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"/> Depth (inches): <u>NA</u> (includes capillary fringe)		Wetland hydrology present? <u>N</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: _____ 1 (A)			
7 _____	_____	_____	_____	Total Number of Dominant Species Across all Strata: _____ 3 (B)			
8 _____	_____	_____	_____	Percent of Dominant Species that are OBL, FACW, or FAC: _____ 33.33% (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 =	3.50		
0 = Total Cover					Hydrophytic Vegetation Indicators:		
Sapling/Shrub Stratum					___ Rapid test for hydrophytic vegetation		
Plot Size (15 ft.)					___ Dominance test is >50%		
Absolute % Cover					___ Prevalence index is ≤3.0*		
Dominant Species					___ Morphological adaptations* (provide supporting data in Remarks or on a separate sheet)		
Indicator Status					___ Problematic hydrophytic vegetation* (explain)		
1 _____	_____	_____	_____	*Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic			
2 _____	_____	_____	_____	Definitions of Vegetation Strata:			
3 _____	_____	_____	_____	Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.			
4 _____	_____	_____	_____	Sapling/shrub - Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.			
5 _____	_____	_____	_____	Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.			
6 _____	_____	_____	_____	Woody vines - All woody vines greater than 3.28 ft in height.			
7 _____	_____	_____	_____				
8 _____	_____	_____	_____				
9 _____	_____	_____	_____				
10 _____	_____	_____	_____				
11 _____	_____	_____	_____				
12 _____	_____	_____	_____				
13 _____	_____	_____	_____				
14 _____	_____	_____	_____				
15 _____	_____	_____	_____				
100 = Total Cover					Hydrophytic vegetation present? <u> N </u>		
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 _____	_____	_____	_____				
0 = 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: | 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:

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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 X 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> W009
Hydric soil present? <u>Yes</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 checked="" type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> True Aquatic Plants (B14)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input checked="" type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input checked="" type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Oxidized Rhizospheres on Living	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Water Marks (B1)	<input checked="" type="checkbox"/> Roots (C3)	<input type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Recent Iron Reduction in Tilled	<input checked="" type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Inundation Visible on Aerial	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Geomorphic Position (D2)	
<input type="checkbox"/> 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:				Wetland hydrology present? <u>Y</u>
Surface water present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>1</u>	
Water table present?	Yes <u>X</u> No <u> </u>	Depth (inches):	<u>5</u>	
Saturation present? (includes capillary fringe)	Yes <u>X</u> No <u> </u>	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: W009

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	<i>Acer negundo</i>					60			
2	<i>Salix nigra</i>					10	Y	OBL	
3									
4									
5									
6									
7									
8									
9									
10									
						70	=	Total Cover	
Herb Stratum					Plot Size (5 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1	<i>Epilobium coloratum</i>					30			
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					Plot Size (30 ft.)		Absolute % Cover	Dominant Species	Indicator Status
1									
2									
3									
4									
5									
						0	=	Total Cover	

50/20 Thresholds		
	20%	50%
Tree Stratum	0	0
Sapling/Shrub Stratum	14	35
Herb Stratum	13	33
Woody Vine Stratum	0	0

Dominance Test Worksheet		
Number of Dominant Species that are OBL, FACW, or FAC: <u>5</u> (A)		
Total Number of Dominant Species Across all Strata: <u>5</u> (B)		
Percent of Dominant Species that are OBL, FACW, or FAC: <u>100.00%</u> (A/B)		

Prevalence Index Worksheet		
Total % Cover of:		
OBL species	25 x 1 =	25
FACW species	45 x 2 =	90
FAC species	60 x 3 =	180
FACU species	5 x 4 =	20
UPL species	0 x 5 =	0
Column totals	135 (A)	315 (B)
Prevalence Index = B/A = <u>2.33</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>
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Remarks: (Include photo numbers here or on a separate sheet)

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:		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:

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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: 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 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: U009

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