

Low/Minimal Impact Bridge Project Data Sheet

	TIP NO	
	WBS	17BP.6.R.44
	County	Columbus
	Bridge Number	230013
	Description	NC-410 over Beaver Dam Swamp
Stream	Basin	Lumber
	Classification	C;Sw
	SIN	15-17-1-12-1
	Type (Perennial/Intermittent)	Beaver Dam Swamp - Perennial
	Size (bankfull width)	Beaver Dam Swamp - 40'
Existing Structure	Type	
	Size	
	Suff. Rating	
Proposed Structure	Type	
	Size (width-out to out)	
Stream	USACE Impacts (Y/N)	Yes
	Non 404 Impacts (Y/N)	No
Wetlands	USACE Impacts (Y/N)	Yes
	Non 404 Impacts (Y/N)	No
	CAMA Impacts (Y/N)	
NC DWQ Buffers	Impacts (Y/N)	
Buffer Application Required (>40 ft) (Y/N)		
NC DWQ StormWater Permit Required (Y/N)		
T&E	Habitat (Y/N)	American alligator - Yes Wood stork - Yes Red-cockaded woodpecker - Yes Cooley's meadowrue - Yes Rough-leaved loosestrife - Yes
	Species Present	American alligator - Surveys not required due to T(S/A) designation Wood stork - No Red-cockaded woodpecker - No Cooley's meadowrue - Undetermined Rough-leaved loosestrife - Undetermined
	Bio Conclusion	American alligator - N/A Wood stork - No Effect Red-cockaded woodpecker - No Effect Cooley's meadowrue - Unresolved Rough-leaved loosestrife - Unresolved
Moratorium	Type	
	Dates	
Trout Waters	Native/Hatchery	
	Trout Species Present	
	Trout Conditions (Y/N)	
	WRC Reviewer	
CAMA	AECs	
Essential Fish	Habitat (Y/N)	
	Nav. Opening	
	USCG Permit	
	Historic Properties	
Archaeological	Resources	
	Tribal Lands	
	4(f) Resources	
	6(f) [LWCF] Resources	
	Wild and Scenic River	No
Forest Service	Lands	
TVA	Area	
FEMA	Buyout	
FEMA	Flood Study	
USTs	Haz Mats	
	Relocatees	
Location (decimal degrees)	LAT	34.25495
	LONG	-78.818408
Project Comments		Marginally suitable habitat for American alligator [T(S/A)] and wood stork (foraging) (T) exists within the study area within Beaver Dam Swamp, and wetlands WA, WB, WC, and WD which are riverine swamp forests with surface water and fish observed. However, no wading birds were observed during field observations, and the understory within the wetlands is dense. Marginal habitat for red-cockaded woodpecker is present within the southern end of the corridor where tracts of primarily pine trees are present. The southeastern quadrant has older pine trees (30-50 years), but is fragmented by the road and agricultural fields. The southwestern quadrant is a young pine plantation (<20 years). Suitable habitat for Cooley's meadowrue (E) and rough-leaved loosestrife (E) is present along the roadside ditches along NC-410. Field investigation was conducted outside of the USFWS survey windows for these plant species. Kimley-Horn staff will conduct surveys for these species during the appropriate survey window. According to NCNHP records (updated July 2014), there are no recorded element occurrences of any of the listed species within the project study area of within 1.0 mile of the study area.
Completed by:	Beth Reed, PWS	
	Consultant Biologist	
Reviewed by:	Kimley-Horn and Associates	
	Consulting Firm	

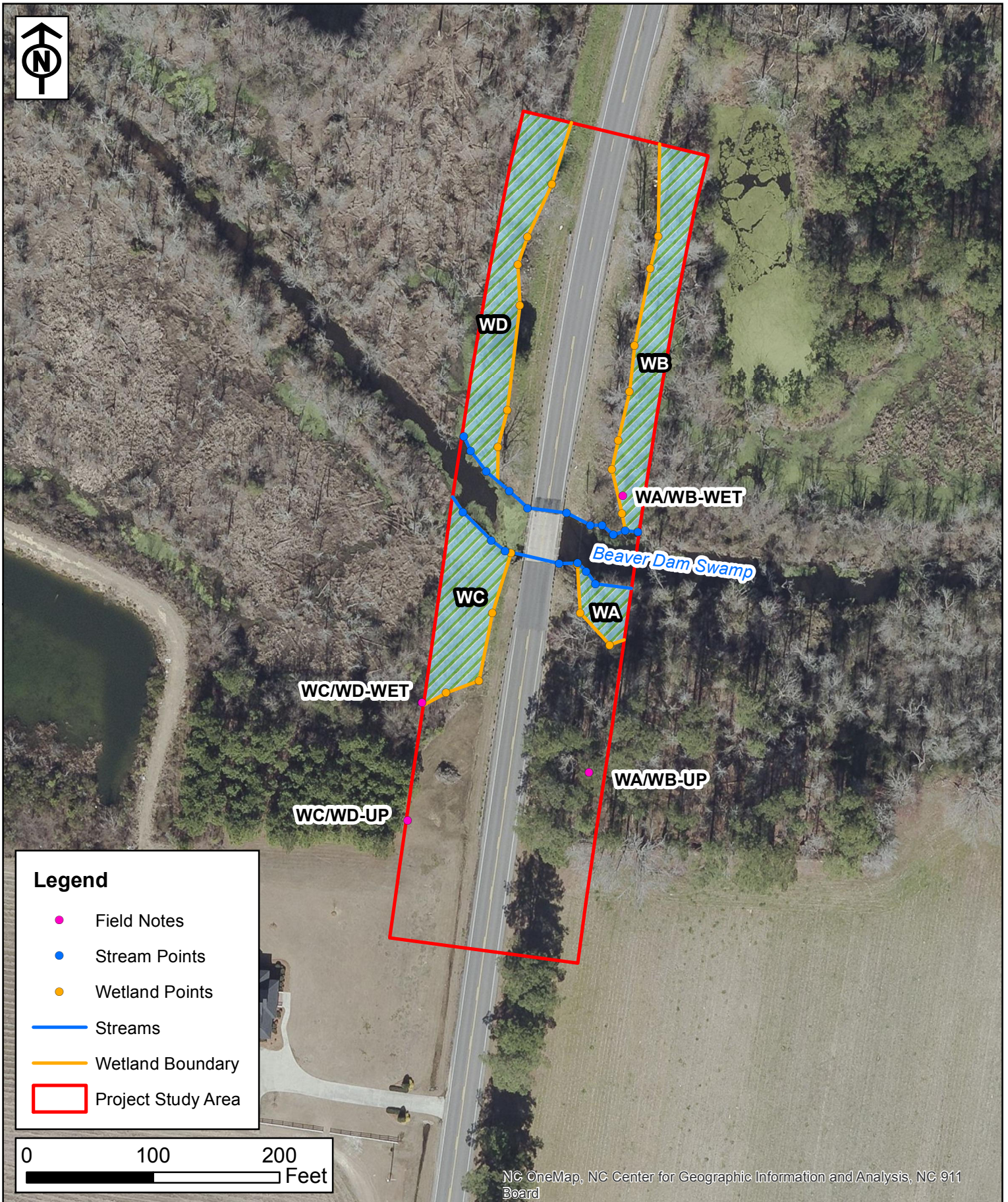


Figure 3: Aerial Imagery
Division 6 Bridges - Structure #230013
Columbus County, NC
August 2014

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Structure # 230013 City/County: Columbus County Sampling Date: 8/6/2014
 Applicant/Owner: NCDOT State: NC Sampling Point: WA/WB-UP
 Investigator(s): J. Hartshorn (KHA), R. Sullivan (KHA) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 1-2%
 Subregion (LRR or MLRA): LRR P Lat: 34.254569 Long: -78.818098 Datum: NAD 1983
 Soil Map Unit Name: Meggett fine sandy loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒	No ☐	Is the Sampled Area within a Wetland?	Yes ☐	No ☒
Hydric Soil Present?	Yes ☐	No ☒			
Wetland Hydrology Present?	Yes ☐	No ☒			
Remarks: Wetlands WA and WB are bounded on 3 sides by maintained, disturbed and upland areas. The south side of WA is a natural upland slope above WA and is indicative of a natural upland community.					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres along Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)		Secondary Indicators (minimum of two required) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☐ No ☒ Depth (inches): _____ (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Remarks: No indicators of wetland hydrology were observed within the upland area during the site visit.			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA/WB-UP

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Pinus taeda</i></u>	<u>30%</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>88.89%</u> (A/B)																
2. <u><i>Liquidambar styraciflua</i></u>	<u>30%</u>	<u>Y</u>	<u>FAC</u>																	
3. <u><i>Acer rubrum</i></u>	<u>25%</u>	<u>Y</u>	<u>FAC</u>																	
4. <u><i>Liriodendron tulipifera</i></u>	<u>5%</u>	<u>N</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>90%</u> = Total Cover 50% of total cover: <u>45%</u> 20% of total cover: <u>18%</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>30%</u> = Total Cover 50% of total cover: <u>15%</u> 20% of total cover: <u>6%</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u><i>Quercus nigra</i></u>	<u>10%</u>	<u>Y</u>	<u>FAC</u>																	
2. <u><i>Acer rubrum</i></u>	<u>10%</u>	<u>Y</u>	<u>FAC</u>																	
3. <u><i>Quercus michauxii</i></u>	<u>5%</u>	<u>N</u>	<u>FACW</u>																	
4. <u><i>Salix nigra</i></u>	<u>5%</u>	<u>N</u>	<u>OBL</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>30%</u> = Total Cover 50% of total cover: <u>15%</u> 20% of total cover: <u>6%</u>																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>None</u>	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Toxicodendron radicans</i></u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>																	
2. <u><i>Smilax rotundifolia</i></u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>																	
3. <u><i>Smilax bona-nox</i></u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>																	
4. <u><i>Parthenocissus quinquefolia</i></u>	<u>5%</u>	<u>Y</u>	<u>FACU</u>																	
5. _____	_____	_____	_____																	
<u>20%</u> = Total Cover 50% of total cover: <u>10%</u> 20% of total cover: <u>4%</u>																				
Remarks: (If observed, list morphological adaptations below).				Hydrophytic Vegetation Present? Yes ☒ No ☐																

SOIL

Sampling Point: WA/WB-UP

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 ¹	Loc ²		
0-2"	10YR 2/1	100%					Loam	Organic debris
2-12"	10YR 7/6	70%					Loamy clay	Split matrix
	5YR 5/6	30%					Loamy clay	
12-24"	5YR 5/6	40%					Loamy clay	Split matrix
	10YR 7/6	30%					Loamy clay	
	10YR 8/1	30%					Loamy clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☐ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
 (MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No indicators of hydric soil were observed within 24" of the soil profile. Neither the water table nor soil saturation was observed at the data form location during the site visit. The profile is a split matrix and is likely from fill/grading activities when building up adjacent agricultural field.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Structure # 230013 City/County: Columbus County Sampling Date: 8/6/2014
 Applicant/Owner: NCDOT State: NC Sampling Point: WA/WB-WET
 Investigator(s): J. Hartshorn (KHA), R. Sullivan (KHA) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Floodplain swamp Local relief (concave, convex, none): Concave Slope (%): <1%
 Subregion (LRR or MLRA): LRR P Lat: 34.255170 Long: -78.818009 Datum: NAD 1983
 Soil Map Unit Name: Meggett fine sandy loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐		
Wetland Hydrology Present?	Yes ☒ No ☐		
Remarks: WA/WB is a floodplain swamp wetland around stream Beaver Dam Swamp just east of Joe Brown Highway. Wetlands WA and WB are bounded to the north and south and east (road) by uplands.			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☒ Water Marks (B1) ☒ Sediment Deposits (B2) ☒ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9)	☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres along Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☒ No ☐ Depth (inches): <u>10"</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>8"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Wetlands WA and WB are low-lying swamp wetlands that get frequently flooded by Beaver Dam Swamp. Based on sediment deposits and vegetative adaptations, water is typically 2' deep throughout much of the wetland. An abandoned pond located off-site and east of WB provides additional hydrology to WB. The water table was observed at 10" and saturated soils were observed at 8" at the data form location. Surface water to ~1' was observed within the wetland.			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WA/WB-WET

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Quercus nigra</u>	<u>25%</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>7</u> (A) Total Number of Dominant Species Across All Strata: <u>7</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100%</u> (A/B)																
2. <u>Liquidambar styraciflua</u>	<u>15%</u>	<u>Y</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>40%</u> = Total Cover 50% of total cover: <u>20%</u> 20% of total cover: <u>4%</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>60%</u> = Total Cover 50% of total cover: <u>30%</u> 20% of total cover: <u>12%</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Ligustrum sinense</u>	<u>50%</u>	<u>Y</u>	<u>FAC</u>																	
2. <u>Acer rubrum</u>	<u>10%</u>	<u>N</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>60%</u> = Total Cover 50% of total cover: <u>30%</u> 20% of total cover: <u>12%</u>																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Boehmeria cylindrica</u>	<u>20%</u>	<u>Y</u>	<u>FACW</u>	Hydrophytic Vegetation Indicators: ☐ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ Problematic Hydrophytic Vegetation ¹ (Explain)																
2. <u>Saururus cernuus</u>	<u>10%</u>	<u>Y</u>	<u>OBL</u>																	
3. <u>Onoclea sensibilis</u>	<u>5%</u>	<u>N</u>	<u>FACW</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>35%</u> = Total Cover 50% of total cover: <u>17.5%</u> 20% of total cover: <u>7%</u>																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>Vitis rotundifolia</u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.																
2. <u>Campsis radicans</u>	<u>2%</u>	<u>Y</u>	<u>FAC</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>7%</u> = Total Cover 50% of total cover: <u>3.5%</u> 20% of total cover: <u>1.4%</u>																				
Hydrophytic Vegetation Present?																				

Remarks: (If observed, list morphological adaptations below).

At the data point, near the wetland fringe, Chinese privet was very abundant while the interior of the wetland appeared to be dominated by Juncaceae species and lizard's tail with an open canopy of trees.

SOIL

Sampling Point: WA/WB-WET

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 ¹	Loc ²		
0-4"	10YR 2/3	100%					Sandy clay loam	
4-8"	10YR 7/1	90%	10YR 5/6	10%	C	M	Sand	
8-12"	10YR 3/1	90%	7.5YR 4/5	10%	C	M	Sandy clay loam	
12-18"	7.5YR 3/1	90%	5YR 5/5	10%	C	M	Clay loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☐ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☒ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
 (MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

The soil is dark near the surface and saturated. Below the dark layer is a sand layer that had redox concentrations at the time of the data form. The water table was observed at 10" and soil saturation was observed at 8".

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Structure # 230013 City/County: Columbus County Sampling Date: 8/6/2014
 Applicant/Owner: NCDOT State: NC Sampling Point: WC/WD-UP
 Investigator(s): J. Hartshorn (KHA), R. Sullivan (KHA) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Slight hillslope Local relief (concave, convex, none): None Slope (%): <1%
 Subregion (LRR or MLRA): LRR P Lat: 34.254465 Long: -78.818573 Datum: NAD 1983
 Soil Map Unit Name: Meggett fine sandy loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☐ No ☒
Hydric Soil Present?	Yes ☐ No ☒		
Wetland Hydrology Present?	Yes ☐ No ☒		
Remarks: Upland data point WC/WD-UP is approximately 60' south from and 2' higher in elevation than the wetland data point WC/WD-WET. The upland area is a maintained grassy area adjacent to a planted stand of loblolly pine trees.			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply)		Secondary Indicators (minimum of two required)	
☐ Surface Water (A1) ☐ High Water Table (A2) ☐ Saturation (A3) ☐ Water Marks (B1) ☐ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9)	☐ Aquatic Fauna (B13) ☐ Marl Deposits (B15) (LRR U) ☐ Hydrogen Sulfide Odor (C1) ☐ Oxidized Rhizospheres along Living Roots (C3) ☐ Presence of Reduced Iron (C4) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Thin Muck Surface (C7) ☐ Other (Explain in Remarks)	☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☐ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): <u>>18"</u> Saturation Present? Yes ☐ No ☒ Depth (inches): <u>>18"</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☐ No ☒	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: No indicators of hydrology were observed at WC/WD-UP during the site visit.			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WC/WD-UP

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u><i>Pinus taeda</i></u>	<u>20%</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</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>66.7%</u> (A/B)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>20%</u> = Total Cover 50% of total cover: <u>10%</u> 20% of total cover: <u>4%</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>None</u>	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
_____ = Total Cover 50% of total cover: _____ 20% of total cover: _____																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u><i>Digitaria sanguinalis</i></u>	<u>100%</u>	<u>Y</u>	<u>FACU</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>100%</u> = Total Cover 50% of total cover: <u>50%</u> 20% of total cover: <u>20%</u>																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u><i>Campsis radicans</i></u>	<u>10%</u>	<u>Y</u>	<u>FAC</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.																
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>10%</u> = Total Cover 50% of total cover: <u>5%</u> 20% of total cover: <u>2%</u>																				
Hydrophytic Vegetation Present?																				
Yes ☒ No ☐																				

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WC/WD-UP

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 ¹	Loc ²		
0-8"	2.5Y 4/4	100%					Sandy loam	
8-12"	2.5Y 6/8	100%					Sandy loam	
12-18"	5GY 6/1	90%					Sand	Split matrix
	7.5YR 5/6	10%					Clay	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☐ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
 (MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☐ No ☒

Remarks:

No indicators of hydric soil were observed within the upland area during the site visit.

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Structure # 230013 City/County: Columbus County Sampling Date: 8/6/2014
 Applicant/Owner: NCDOT State: NC Sampling Point: WC/WD-WET
 Investigator(s): J. Hartshorn (KHA), R. Sullivan (KHA) Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): Toe of slope Local relief (concave, convex, none): None Slope (%): <1%
 Subregion (LRR or MLRA): LRR P Lat: 34.254722 Long: -78.818535 Datum: NAD 1983
 Soil Map Unit Name: Meggett fine sandy loam NWI classification: PFO1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☒ No ☐	Is the Sampled Area within a Wetland?	Yes ☒ No ☐
Hydric Soil Present?	Yes ☒ No ☐		
Wetland Hydrology Present?	Yes ☒ No ☐		
Remarks: Wetlands WC and WD are both low-lying wetlands surrounding stream SA.			

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☒ Surface Water (A1) ☒ High Water Table (A2) ☒ Saturation (A3) ☒ Water Marks (B1) ☒ Sediment Deposits (B2) ☐ Drift Deposits (B3) ☐ Algal Mat or Crust (B4) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9)		Secondary Indicators (minimum of two required) ☐ Surface Soil Cracks (B6) ☐ Sparsely Vegetated Concave Surface (B8) ☒ Drainage Patterns (B10) ☐ Moss Trim Lines (B16) ☐ Dry-Season Water Table (C2) ☐ Crayfish Burrows (C8) ☐ Saturation Visible on Aerial Imagery (C9) ☒ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ FAC-Neutral Test (D5) ☐ Sphagnum moss (D8) (LRR T, U)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☒ No ☐ Depth (inches): <u>1"</u> Saturation Present? Yes ☒ No ☐ Depth (inches): <u>Surface</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks: Hydrology for WC/WD-WET is likely from groundwater, flooding of Beaver Dam Swamp, and precipitation events. Surface water was observed near the wetland data point to a depth of ~3". The water table was observed at 1" while the soil was saturated at the surface.			

VEGETATION (Four Strata) – Use scientific names of plants.

 Sampling Point: WC/WD-WET

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status																	
1. <u>Acer rubrum</u>	<u>30%</u>	<u>Y</u>	<u>FAC</u>	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>8</u> (A) Total Number of Dominant Species Across All Strata: <u>9</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>88.9%</u> (A/B)																
2. <u>Salix nigra</u>	<u>25%</u>	<u>Y</u>	<u>OBL</u>																	
3. <u>Fraxinus caroliniana</u>	<u>5%</u>	<u>N</u>	<u>OBL</u>																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>60%</u> = Total Cover 50% of total cover: <u>30%</u> 20% of total cover: <u>12%</u>				Prevalence Index worksheet: <table style="width: 100%;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																			
OBL species _____	x 1 = _____																			
FACW species _____	x 2 = _____																			
FAC species _____	x 3 = _____																			
FACU species _____	x 4 = _____																			
UPL species _____	x 5 = _____																			
Column Totals: _____	(A) _____ (B) _____																			
Prevalence Index = B/A = _____																				
<u>20%</u> = Total Cover 50% of total cover: <u>10%</u> 20% of total cover: <u>4%</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>Acer rubrum</u>	<u>10%</u>	<u>Y</u>	<u>FAC</u>																	
2. <u>Fraxinus caroliniana</u>	<u>10%</u>	<u>Y</u>	<u>OBL</u>																	
3. <u>Ligustrum sinense</u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>																	
4. <u>Alnus serrulata</u>	<u>5%</u>	<u>Y</u>	<u>FACW</u>																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
<u>20%</u> = Total Cover 50% of total cover: <u>10%</u> 20% of total cover: <u>4%</u>																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Saururus cernuus</u>	<u>25%</u>	<u>Y</u>	<u>OBL</u>	Hydrophytic Vegetation Indicators: <u> </u> 1 - Rapid Test for Hydrophytic Vegetation <u>X</u> 2 - Dominance Test is >50% <u> </u> 3 - Prevalence Index is ≤3.0 ¹ <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain)																
2. <u>Boehmeria cylindrica</u>	<u>5%</u>	<u>N</u>	<u>FACW</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
11. _____	_____	_____	_____																	
12. _____	_____	_____	_____																	
<u>30%</u> = Total Cover 50% of total cover: <u>15%</u> 20% of total cover: <u>6%</u>																				
Woody Vine Stratum (Plot size: <u>30'</u>)																				
1. <u>Campsis radicans</u>	<u>5%</u>	<u>Y</u>	<u>FAC</u>	Definitions of Four Vegetation Strata: Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height. Sapling/Shrub – Woody plants, excluding vines, 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 vine – All woody vines greater than 3.28 ft in height.																
2. <u>Ipomoea hederacea</u>	<u>5%</u>	<u>Y</u>	<u>FACU</u>																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
<u>10%</u> = Total Cover 50% of total cover: <u>5%</u> 20% of total cover: <u>2%</u>																				
Hydrophytic Vegetation Present? Yes ☒ No ☐																				

Remarks: (If observed, list morphological adaptations below).

Buttressing was observed on many of the trees within the wetland areas.

SOIL

Sampling Point: WC/WD-WET

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 ¹		
0-6"	2.5Y 3/2	90%	10YR 5/6	10%	C	PL	Clay loam
6-12"	2.5Y 3/1	85%	10YR 5/6	15%	C	M	Clay loam
12-18"	2.5Y 6/2	60%	2.5Y 6/8	40%	C	M	Sandy clay
18-24"	2.5Y 6/4	70%	2.5Y 6/6	30%	C	M	Clayey sand

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ Organic Bodies (A6) (LRR P, T, U)
☐ 5 cm Mucky Mineral (A7) (LRR P, T, U)
☐ Muck Presence (A8) (LRR U)
☐ 1 cm Muck (A9) (LRR P, T)
☒ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Coast Prairie Redox (A16) (MLRA 150A)
☐ Sandy Mucky Mineral (S1) (LRR O, S)
☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Dark Surface (S7) (LRR P, S, T, U)

- ☐ Polyvalue Below Surface (S8) (LRR S, T, U)
☐ Thin Dark Surface (S9) (LRR S, T, U)
☐ Loamy Mucky Mineral (F1) (LRR O)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Marl (F10) (LRR U)
☐ Depleted Ochric (F11) (MLRA 151)
☐ Iron-Manganese Masses (F12) (LRR O, P, T)
☐ Umbric Surface (F13) (LRR P, T, U)
☐ Delta Ochric (F17) (MLRA 151)
☐ Reduced Vertic (F18) (MLRA 150A, 150B)
☐ Piedmont Floodplain Soils (F19) (MLRA 149A)
☐ Anomalous Bright Loamy Soils (F20) (MLRA 149A, 153C, 153D)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR O)
☐ 2 cm Muck (A10) (LRR S)
☐ Reduced Vertic (F18) (outside MLRA 150A,B)
☐ Piedmont Floodplain Soils (F19) (LRR P, S, T)
☐ Anomalous Bright Loamy Soils (F20)
 (MLRA 153B)
☐ Red Parent Material (TF2)
☐ Very Shallow Dark Surface (TF12)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ☒ No ☐

Remarks:

The water table was observed at 1" while the soil was saturated at the surface. Prominent pore linings were observed within the first 6" of the soil profile.

WETLAND RATING WORKSHEET Fourth version

STR# 230013
WA

Project Name: Structure #230013 Nearest road: NC Highway 410
County: Columbus Wetland area: 0.04 acres Wetland width: 80 feet
Name of Evaluator: J. Hartshorn, R. Sullivan Date: 9/2/2014

Wetland Location

☐ on pond or lake
☒ on perennial stream
☐ on intermittent stream
☐ within interstream divide
☐ other: _____

Soil Series

☐ predominantly organic
(humus, muck, or peat)
☒ predominantly mineral
(non-sandy)
☐ predominantly sandy

Hydrolic factors

☐ steep topography
☐ ditched or channelized
☒ total riparian wetland width $\geq$ 100 ft

Adjacent land use (within ½ mile upstream, upslope, or radius)

☒ forested/natural vegetation 25 %
☒ agriculture, urban/suburban 70 %
☒ impervious service 5 %

Dominant vegetation

1) Ligustrum sinense
2) Quercus nigra
3) Liquidambar styraciflua

Flooding and wetness

☐ semipermanently to permanently flooded
or inundated
☒ seasonally flooded or inundated
☐ intermittently flooded or temporary
surface water
☐ no evidence of flooding or surface water

Wetland type (select one)

☒ Bottomland hardwood forest	☐ Pine savanna
☐ Headwater forest	☐ Freshwater marsh
☐ Swamp forest	☐ Bog/fen
☐ Wet flat	☐ Ephemeral wetland
☐ Pocosin	☐ Carolina Bay
☐ Bog forest	☐ Other _____

*The rating system cannot be applied to salt or brackish marshes or stream channels

				weight			
R	Water Storage	<u>3</u>	x	<u>4.00</u>	=	<u>12</u>	
A	Bank/Shoreline stabilization	<u>3</u>	x	<u>4.00</u>	=	<u>20</u>	
T	Pollutant removal	<u>5</u>	x	<u>5.00</u>	=	<u>25</u>	
I	Wildlife habitat	<u>4</u>	x	<u>2.00</u>	=	<u>8</u>	
N	Aquatic life	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>	
G	Recreation/Education	<u>1</u>	x	<u>1.00</u>	=	<u>1</u>	

Total Score¹ 86

¹Add 1 point if in sensitive watershed and >10% nonpoint disturbance within ½ mile radius.

WETLAND RATING WORKSHEET Fourth version

STR# 230013
WB

Project Name: Structure #230013 Nearest road: NC Highway 410
 County: Columbus Wetland area: 0.19 acres Wetland width: 500 feet
 Name of Evaluator: J. Hartshorn, R. Sullivan Date: 9/2/2014

Wetland Location

☐ on pond or lake
☒ on perennial stream
☐ on intermittent stream
☐ within interstream divide
☐ other: _____

Soil Series

☐ predominantly organic
 (humus, muck, or peat)
☒ predominantly mineral
 (non-sandy)
☐ predominantly sandy

Hydrolic factors

☐ steep topography
☐ ditched or channelized
☒ total riparian wetland width $\geq$ 100 ft

Adjacent land use (within ½ mile upstream, upslope, or radius)

☒ forested/natural vegetation 45 %
☒ agriculture, urban/suburban 50 %
☒ impervious service 5 %

Dominant vegetation

1) Ligustrum sinense
 2) Quercus nigra
 3) Liquidambar styraciflua

Flooding and wetness

☐ semipermanently to permanently flooded
 or inundated
☒ seasonally flooded or inundated
☐ intermittently flooded or temporary
 surface water
☐ no evidence of flooding or surface water

Wetland type (select one)

☒ Bottomland hardwood forest	☐ Pine savanna
☐ Headwater forest	☐ Freshwater marsh
☐ Swamp forest	☐ Bog/fen
☐ Wet flat	☐ Ephemeral wetland
☐ Pocosin	☐ Carolina Bay
☐ Bog forest	☐ Other _____

*The rating system cannot be applied to salt or brackish marshes or stream channels

				weight		
R	Water Storage	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>
A	Bank/Shoreline stabilization	<u>3</u>	x	<u>4.00</u>	=	<u>12</u>
T	Pollutant removal	<u>5</u>	x	<u>5.00</u>	=	<u>25</u>
I	Wildlife habitat	<u>5</u>	x	<u>2.00</u>	=	<u>10</u>
N	Aquatic life	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>
G	Recreation/Education	<u>1</u>	x	<u>1.00</u>	=	<u>1</u>

Total Score¹ 88

¹Add 1 point if in sensitive watershed and >10% nonpoint disturbance within ½ mile radius.

WETLAND RATING WORKSHEET Fourth version

STR #230013
WC

Project Name: Structure #230013 Nearest road: NC Highway 410
 County: Columbus Wetland area: 0.14 acres Wetland width: 170 feet
 Name of Evaluator: J. Hartshorn, R. Sullivan Date: 9/2/2014

Wetland Location

☐ on pond or lake
☒ on perennial stream
☐ on intermittent stream
☐ within interstream divide
☐ other: _____

Soil Series

☐ predominantly organic
 (humus, muck, or peat)
☒ predominantly mineral
 (non-sandy)
☐ predominantly sandy

Hydrolic factors

☐ steep topography
☐ ditched or channelized
☒ total riparian wetland width $\geq$ 100 ft

Adjacent land use (within ½ mile upstream, upslope, or radius)

☒ forested/natural vegetation 50 %
☒ agriculture, urban/suburban 45 %
☒ impervious service 5 %

Dominant vegetation

1) Acer rubrum
 2) Salix nigra
 3) Saururus cernuus

Flooding and wetness

☐ semipermanently to permanently flooded
 or inundated
☒ seasonally flooded or inundated
☐ intermittently flooded or temporary
 surface water
☐ no evidence of flooding or surface water

Wetland type (select one)

☒ Bottomland hardwood forest	☐ Pine savanna
☐ Headwater forest	☐ Freshwater marsh
☐ Swamp forest	☐ Bog/fen
☐ Wet flat	☐ Ephemeral wetland
☐ Pocosin	☐ Carolina Bay
☐ Bog forest	☐ Other _____

*The rating system cannot be applied to salt or brackish marshes or stream channels

				weight		
R	Water Storage	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>
A	Bank/Shoreline stabilization	<u>3</u>	x	<u>4.00</u>	=	<u>12</u>
T	Pollutant removal	<u>5</u>	x	<u>5.00</u>	=	<u>25</u>
I	Wildlife habitat	<u>5</u>	x	<u>2.00</u>	=	<u>10</u>
N	Aquatic life	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>
G	Recreation/Education	<u>1</u>	x	<u>1.00</u>	=	<u>1</u>

Total Score¹ 88

¹Add 1 point if in sensitive watershed and >10% nonpoint disturbance within ½ mile radius.

WETLAND RATING WORKSHEET Fourth version

STR #230013
WD

Project Name: Structure #230013 Nearest road: NC Highway 410
County: Columbus Wetland area: 0.14 acres Wetland width: 170 feet
Name of Evaluator: J. Hartshorn, R. Sullivan Date: 9/2/2014

Wetland Location

☐ on pond or lake
☒ on perennial stream
☐ on intermittent stream
☐ within interstream divide
☐ other: _____

Soil Series

☐ predominantly organic
(humus, muck, or peat)
☒ predominantly mineral
(non-sandy)
☐ predominantly sandy

Hydrolic factors

☐ steep topography
☐ ditched or channelized
☒ total riparian wetland width $\geq$ 100 ft

Adjacent land use (within ½ mile upstream, upslope, or radius)

☒ forested/natural vegetation 25 %
☒ agriculture, urban/suburban 70 %
☒ impervious service 5 %

Dominant vegetation

1) Acer rubrum
2) Salix nigra
3) Saururus cernuus

Flooding and wetness

☐ semipermanently to permanently flooded
or inundated
☒ seasonally flooded or inundated
☐ intermittently flooded or temporary
surface water
☐ no evidence of flooding or surface water

Wetland type (select one)

☒ Bottomland hardwood forest	☐ Pine savanna
☐ Headwater forest	☐ Freshwater marsh
☐ Swamp forest	☐ Bog/fen
☐ Wet flat	☐ Ephemeral wetland
☐ Pocosin	☐ Carolina Bay
☐ Bog forest	☐ Other _____

*The rating system cannot be applied to salt or brackish marshes or stream channels

				weight			
R	Water Storage	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>	
A	Bank/Shoreline stabilization	<u>3</u>	x	<u>4.00</u>	=	<u>12</u>	
T	Pollutant removal	<u>5</u>	x	<u>5.00</u>	=	<u>25</u>	
I	Wildlife habitat	<u>5</u>	x	<u>2.00</u>	=	<u>10</u>	
N	Aquatic life	<u>5</u>	x	<u>4.00</u>	=	<u>20</u>	
G	Recreation/Education	<u>1</u>	x	<u>1.00</u>	=	<u>1</u>	

Total Score¹ 88

¹Add 1 point if in sensitive watershed and >10% nonpoint disturbance within ½ mile radius.