



December 31, 2019

Natural Resources Technical Memorandum: WBS Element No. 17BP.11.R.154
Replace Bridge #960733 on SR 2516 (Industrial Park Road) over Cub Creek, Wilkesboro,
Wilkes County, NCDOT Division 11

TGS Engineers (TGS) has completed the natural resource investigation and prepared a natural environmental field scoping meeting checklist for Bridge #960733 on SR 2516 (Industrial Park Road) over Cub Creek in Wilkes County, NC (Figure 1). The study area for this project comprises approximately 2.8 acres in a rural landscape and ranges in elevation from approximately 960 feet above mean sea level (msl) to 1240 feet above msl within 0.5 mile of the bridge (Figure 2). This memo summarizes the findings of the natural resource investigation. The field review included stream and wetland delineations and habitat assessments for federally protected species listed by the US Fish and Wildlife Service (USFWS) in Wilkes County. All work was conducted in accordance with the NCDOT Environmental Analysis Unit standard operating procedures. Field work was conducted on October 15, 2019.

WETLAND AND STREAM DELINEATION

Water resources in the study area are part of the Yadkin-Pee Dee River Basin [US Geological Survey (USGS) Hydrologic Unit 03040101]. One stream was identified in the study area (Table 1). The physical characteristics of the streams are provided in Table 2.

Table 1. Surface water resources in the study area

Stream Name	Map ID	Type	NC DEQ Index Number	Best Usage Classification
Cub Creek	Cub Creek	Perennial	12-41	C

Table 2. Physical characteristics of surface water resources in the study area

Map ID	Length (ft)	Bank Height (ft)	Bankfull Width (ft)	Water Depth (in)	Channel Substrate	Velocity	Clarity
Cub Creek	174	6	20	4-10	Si, Sa, Gr, Cb	Moderate	Clear

Si – silt, Sa – sand, Gr – gravel, Cb – cobble

No jurisdictional wetlands were identified in the study area (Figure 3).

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), or water supply watersheds (WS-I or WS-II) within the study area or within 1.0 mile downstream of the study area. There are no streams within the study area or within 1.0 mile downstream of the study area that are on the Final 2018 303(d) list of impaired streams.

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TGS Engineers

CLEAN WATER ACT PERMITS

One jurisdictional stream was identified in the study area. A Section 404 permit from the US Army Corps of Engineers (USACE) and a Section 401 Water Quality Certification from NC Division of Environmental Quality (NC DEQ) will be required if impacts are proposed for this project.

CONSTRUCTION MORATORIA

There are no construction moratoria in effect for this project.

NC RIVER BASIN BUFFER RULES

There are no riparian buffer rules in effect for this project.

RIVERS AND HARBORS ACT SECTION 10 NAVIGABLE WATERS

No surface waters have been designated as Section 10 navigable waters within the study area.

ENDANGERED SPECIES ACT PROTECTED SPECIES HABITAT ASSESSMENTS

As of November 13, 2019, the USFWS lists four federally protected species for Wilkes County, NC. (Table 3).

Table 3. Federally protected species listed for Wilkes County

Scientific Name	Common Name	Federal Status	Biological Conclusion
<i>Glyptemys muhlenbergii</i>	Bog turtle	T (S/A)	Not Required
<i>Myotis grisescens</i>	Gray bat	E	Unresolved
<i>Myotis septentrionalis</i>	Northern long-eared bat	T	Unresolved
<i>Bombis affinis</i>	Rusty-patched bumble bee	E	N/A

T (S/A) – Threatened due to similarity of appearance, E – Endangered, T – Threatened

Bog turtle

USFWS Recommended Survey Window: April 1 – October 1 (visual surveys); April 1 - June 15 (optimal for breeding/nesting); May 1-June 30 (trapping surveys)

Biological Conclusion: Not Required

Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS. Moreover, suitable habitat (open, spring-fed, emergent wetlands) is not present within the study area. A review of the July 2019 North Carolina Natural Heritage Program (NCNHP) dataset indicates no known bog turtle occurrences within 1.0 mile of the study area.

Northern long-eared bat (NLEB) and Gray bat

USFWS Optimal Survey Window: June 1 – August 15

Biological Conclusion: Unresolved

A review of the July 2019 NCNHP dataset indicates no known occurrences of northern long-eared bat (NLEB) or gray bat within 1.0 mile of the study area. Additional information for both species will be provided by the NCDOT – Biological Surveys Group (BSG).

Rusty-patched bumble bee (RPBB)

USFWS Recommended Survey Window: early-June – mid-August

Biological Conclusion: N/A

The USFWS lists RPBB as a historic record for Wilkes County, North Carolina. Additionally, the USFWS does not and will not require surveys for RPBB in North Carolina because USFWS assumes the state is unoccupied by RPBB. Therefore, surveys for this species are not needed. A review of the July 2019 NCNHP dataset indicates no known occurrences of this species within 1.0 mile of the study area.

BALD EAGLE AND GOLDEN EAGLE PROTECTION ACT

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the project study area, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on October 9, 2019, using 2018 color aerials. No bodies of water within 1.13 miles of the project study area are large enough to provide foraging habitat for bald eagles. A review of the NCNHP database, updated November 2019, revealed no known occurrences of this species within 1.0 mile of the project study area. Additionally, no individuals or nests were observed during the field review conducted on October 15, 2019.

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QUALIFICATIONS OF CONTRIBUTORS

Investigator: Ryan Elliott
Education: B.S. Biology, 2014
Experience: Environmental Scientist, TGS, 2018-Present
Environmental Scientist, MMI, 2015-2018
Responsibilities: Wetland and stream delineation, T&E habitat survey, document Preparation

Investigator: Stacy Oberhausen, P.E.
Education: B.S. Civil Engineering, 1986
Experience: Project Engineer/Manager, TGS, 2016-Present
Engineer/Project Engineer/Engineering Spvr, NCDOT, 1986-2016
Responsibilities: Document review

Investigator: Nancy Clemons
Education: Marketing Communications
Experience: Marketing Manager, TGS Engineers, 2015-Present
Director Marketing, The Pantry, Inc., 2010-2014;
Director Marketing, The John R. McAdams Company, 2004-2010
Responsibilities: Document review

If you have any questions or need additional information, please contact me at your earliest convenience at ryan.elliott@tgsengineers.com.

Attachments: FSM Checklist
Figure 1. Vicinity Map
Figure 2. USGS Topographic Map
Figure 3. Environmental Features Map
USACE Wetland Data Forms
Natural Heritage Program Elemental Occurrence Database Report

Natural Environment FSM Checklist

	WBS	17BP.11.R.154
	County	Wilkes
	Bridge Number	960733
	Description	Replace Bridge No. 733 on SR 2516 (Industrial Park Rd.) over Cub Creek
Stream	Basin	Yadkin-Pee Dee
	Type	Cub Creek - Perennial
	Classification	Cub Creek - C
Stream	Non 404 (y/n)	No
Wetlands	USACE (y/n)	No
	Non 404 (y/n)	No
	CAMA (y/n)	No
NC DWQ Buffer Basin	y/n (if yes provide basin)	No
T&E Habitat	(y/n, with explanation)	Bald eagle - No, no large bodies of water Bog turtle - No, no bogs or fens Gray bat - No, no caves or mines NLEB - Yes, pine trees RPBB - Yes, fields and forest
CAMA AECs	(y/n)	No
Wild and Scenic River	(y/n)	No

Natural Environment FSM Checklist

Project Comments	*An area located on the easternmost forested section north of the Industrial Park Road was investigated to determine if a wetland was present. The area was ruled out as a wetland due to soils with the following profile: 0-3" 10 YR 4/3 100%; 3-12" 7.5 YR 4/3 100% - both sandy loam. *An area approximately 20' south of Industrial Park Road and 100' west of Cub Creek was investigated to determine if a wetland was present. The area was ruled out as a wetland due to soils with the following profile: 0-3" 10 YR 3/3 100%; 3-12" 10 YR 4/3 40% (matrix); 5 R 5/8 30% (mottle); 7.5 YR 6/8 30% (mottle) - both clay loam. Both data points had inconsistent soil. The profiles above were the samples closest to meeting hydric soil indicators.
Completed by:	<i>Ryan Elliott</i>

Legend

Project Study Area

Bridge #733

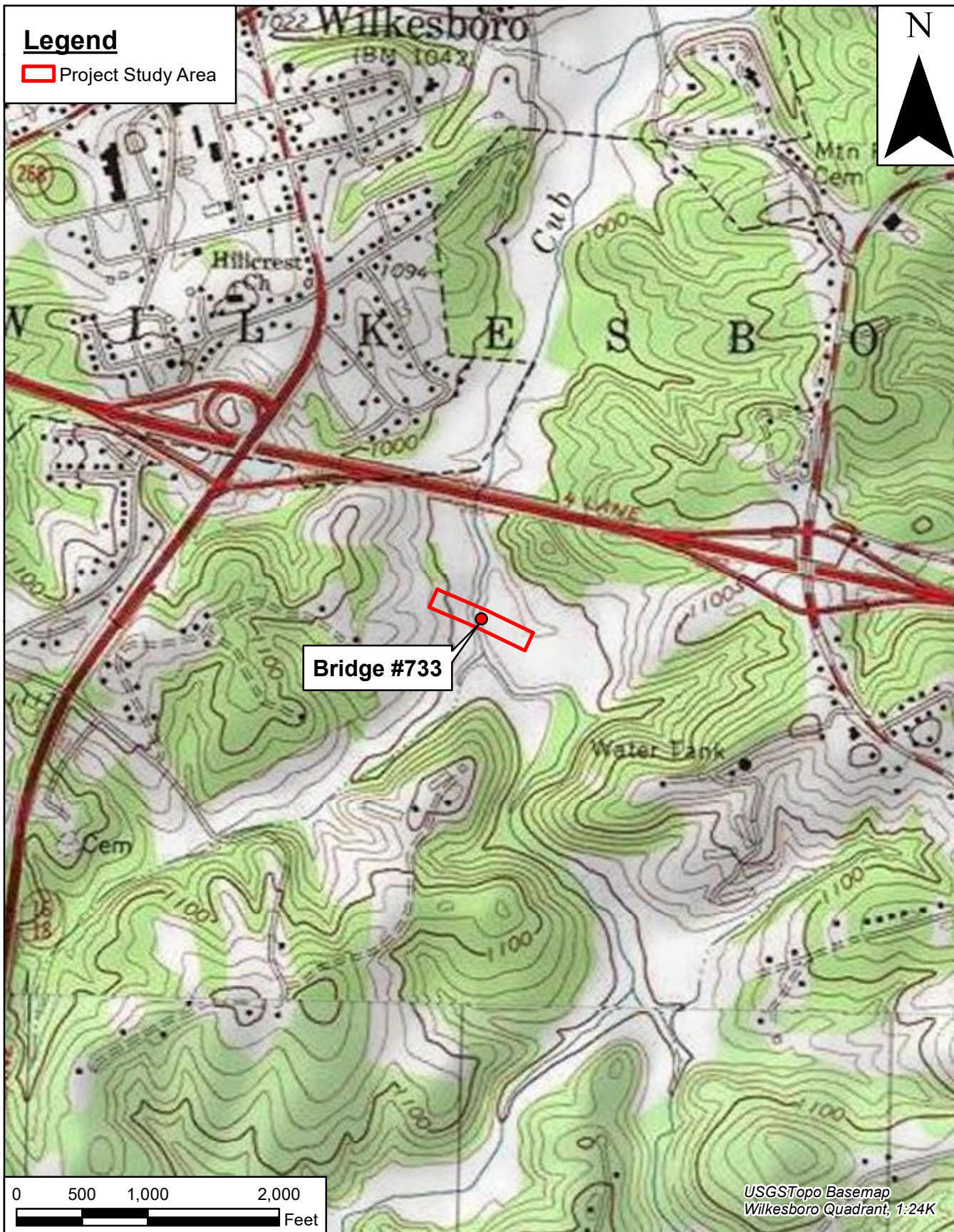
USGSTopo Basemap
Wilkesboro Quadrant, 1:24K

Legend

Project Study Area

Bridge #733

USGSTopo Basemap
Wilkesboro Quadrant, 1:24K



Legend

Project Study Area

Bridge #733

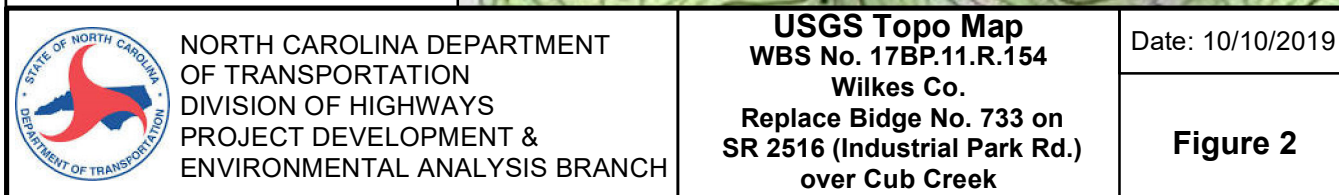
USGSTopo Basemap
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Legend

Project Study Area

Bridge #733

USGSTopo Basemap
Wilkesboro Quadrant, 1:24K

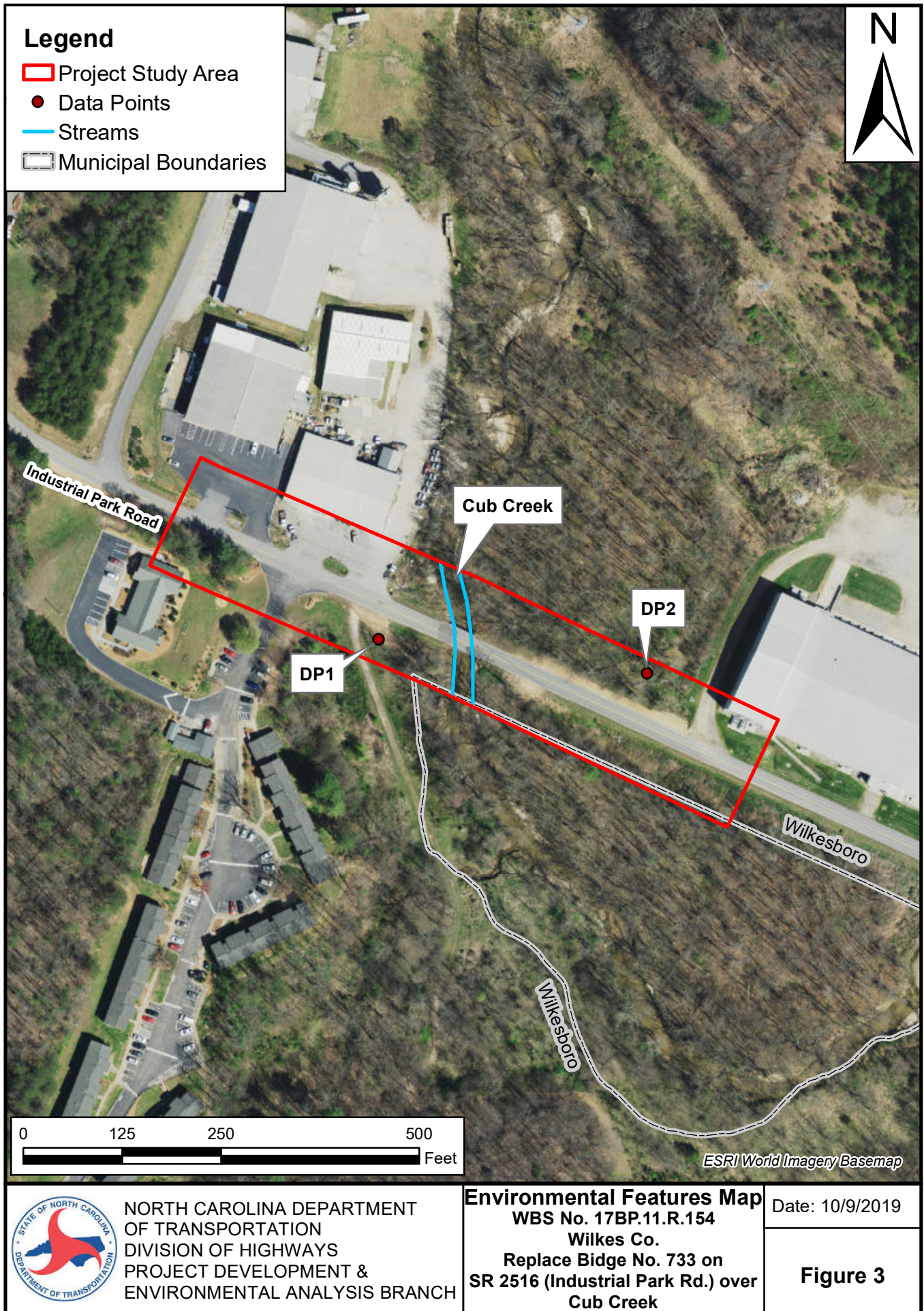


 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH	USGS Topo Map WBS No. 17BP.11.R.154 Wilkes Co. Replace Bidge No. 733 on SR 2516 (Industrial Park Rd.) over Cub Creek	Date: 10/10/2019
		Figure 2

 NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH	USGS Topo Map WBS No. 17BP.11.R.154 Wilkes Co. Replace Bidge No. 733 on SR 2516 (Industrial Park Rd.) over Cub Creek	Date: 10/10/2019
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		Figure 2



WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Bridge# 960733 City/County: Wilkesboro/Wilkes Sampling Date: 10/15/2019
 Applicant/Owner: NC Department of Transportation State: NC Sampling Point: DP1
 Investigator(s): Ryan Elliott Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): None Slope (%): 3
 Subregion (LRR or MLRA): LRR P Lat: 36.133126 Long: -81.155340 Datum: WGS 84
 Soil Map Unit Name: DaA - Dan River and Comus soils 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:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ True Aquatic Plants (B14) ☐ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☒ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Drift Deposits (B3) ☐ Thin Muck Surface (C7) ☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☐ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)		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) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? Yes ☒ No ☐ Depth (inches): <u>6</u> (includes capillary fringe)		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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

 Sampling Point: DP1

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
50% of total cover: _____ 20% of total cover: _____				
Sapling Stratum (Plot size: <u>15'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
50% of total cover: _____ 20% of total cover: _____				
Shrub Stratum (Plot size: <u>15'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
50% of total cover: _____ 20% of total cover: _____				
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Cyperus odoratus</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
2. <u>Cyperus iria</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Ambrosia artemisiifolia</u>	<u>20</u>	<u>N</u>	<u>FACU</u>	
4. <u>Xanthorhiza simplicissima</u>	<u>5</u>	<u>N</u>	<u>FACW</u>	
5. <u>Toxicodendron radicans</u>	<u>5</u>	<u>N</u>	<u>FAC</u>	
6. <u>Asclepias syriaca</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
7. <u>Phleum pratense</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
8. <u>Polygonum persicaria</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
11. _____	_____	_____	_____	
	<u>85</u>	= Total Cover		
50% of total cover: <u>42.5</u> 20% of total cover: <u>17.0</u>				
Woody Vine Stratum (Plot size: <u>30'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
	<u>0</u>	= Total Cover		
50% of total cover: _____ 20% of total cover: _____				
Remarks: (Include photo numbers here or on a separate sheet.)				

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = <u>0</u>
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: <u>0</u> (A)	<u>0</u> (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

☐ 1 - Rapid Test for Hydrophytic Vegetation

☒ 2 - Dominance Test is >50%

☐ 3 - Prevalence Index is ≤3.0¹

☐ 4 - Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

☐ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☒ No ☐

SOIL

Sampling Point: DP1[illegible]

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Bridge# 960733 City/County: Wilkesboro/Wilkes Sampling Date: 10/15/2019
 Applicant/Owner: NC Department of Transportation State: NC Sampling Point: DP2
 Investigator(s): Ryan Elliott Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): Concave Slope (%): 0
 Subregion (LRR or MLRA): LRR P Lat: 36.133033 Long: -81.154185 Datum: WGS 84
 Soil Map Unit Name: DaA - Dan River and Comus soils NWI classification: PSS1A

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:					

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) ☐ Surface Water (A1) ☐ True Aquatic Plants (B14) ☐ High Water Table (A2) ☐ Hydrogen Sulfide Odor (C1) ☐ Saturation (A3) ☐ Oxidized Rhizospheres on Living Roots (C3) ☐ Water Marks (B1) ☐ Presence of Reduced Iron (C4) ☐ Sediment Deposits (B2) ☐ Recent Iron Reduction in Tilled Soils (C6) ☐ Drift Deposits (B3) ☐ Thin Muck Surface (C7) ☐ Algal Mat or Crust (B4) ☐ Other (Explain in Remarks) ☐ Iron Deposits (B5) ☐ Inundation Visible on Aerial Imagery (B7) ☒ Water-Stained Leaves (B9) ☐ Aquatic Fauna (B13)		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) ☐ Stunted or Stressed Plants (D1) ☐ Geomorphic Position (D2) ☐ Shallow Aquitard (D3) ☐ Microtopographic Relief (D4) ☐ FAC-Neutral Test (D5)	
Field Observations: Surface Water Present? Yes ☐ No ☒ Depth (inches): _____ Water Table Present? Yes ☐ No ☒ Depth (inches): _____ Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): _____		Wetland Hydrology Present? Yes ☒ No ☐	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:			
Remarks:			

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

 Sampling Point: DP2

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Platanus occidentalis</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
2. <u>Acer negundo</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u>Acer rubrum</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
4. <u>Carpinus caroliniana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
5. <u>Liriodendron tulipifera</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
6. _____	_____	_____	_____
<u>45</u> = Total Cover			
50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>			
Sapling Stratum (Plot size: <u>15'</u>)			
1. <u>Lindera benzoin</u>	<u>15</u>	<u>Y</u>	<u>FAC</u>
2. <u>Acer negundo</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>
3. <u>Platanus occidentalis</u>	<u>5</u>	<u>N</u>	<u>FACW</u>
4. <u>Carpinus caroliniana</u>	<u>5</u>	<u>N</u>	<u>FAC</u>
5. <u>Fagus grandifolia</u>	<u>5</u>	<u>N</u>	<u>FACU</u>
6. <u>Ligustrum japonicum</u>	<u>5</u>	<u>N</u>	<u>UPL</u>
<u>45</u> = Total Cover			
50% of total cover: <u>22.5</u> 20% of total cover: <u>9.0</u>			
Shrub Stratum (Plot size: <u>15'</u>)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
<u>0</u> = Total Cover			
50% of total cover: _____ 20% of total cover: _____			
Herb Stratum (Plot size: <u>5'</u>)			
1. <u>Boehmeria cylindrica</u>	<u>15</u>	<u>Y</u>	<u>FACW</u>
2. <u>Toxicodendron radicans</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. <u>Polygonum persicaria</u>	<u>5</u>	<u>Y</u>	<u>UPL</u>
4. <u>Fragaria virginiana</u>	<u>5</u>	<u>Y</u>	<u>FACU</u>
5. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
9. _____	_____	_____	_____
10. _____	_____	_____	_____
11. _____	_____	_____	_____
<u>35</u> = Total Cover			
50% of total cover: <u>17.5</u> 20% of total cover: <u>7.0</u>			
Woody Vine Stratum (Plot size: <u>30'</u>)			
1. <u>Toxicodendron radicans</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
2. <u>Vitis rotundifolia</u>	<u>5</u>	<u>Y</u>	<u>FAC</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
<u>10</u> = Total Cover			
50% of total cover: <u>5.0</u> 20% of total cover: <u>2.0</u>			

Dominance Test worksheet:	
Number of Dominant Species That Are OBL, FACW, or FAC:	<u>10</u> (A)
Total Number of Dominant Species Across All Strata:	<u>12</u> (B)
Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>83%</u> (A/B)
Prevalence Index worksheet:	
Total % Cover of:	Multiply by:
OBL species _____	x 1 = <u>0</u>
FACW species _____	x 2 = <u>0</u>
FAC species _____	x 3 = <u>0</u>
FACU species _____	x 4 = <u>0</u>
UPL species _____	x 5 = <u>0</u>
Column Totals: <u>0</u> (A)	<u>0</u> (B)
Prevalence Index = B/A = _____	
Hydrophytic Vegetation Indicators:	
☐ 1 - Rapid Test for Hydrophytic Vegetation ☒ 2 - Dominance Test is >50% ☐ 3 - Prevalence Index is ≤3.0 ¹ ☐ 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain)	
¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	
Definitions of Five Vegetation Strata:	
Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH). Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH. Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height. Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height. Woody vine – All woody vines, regardless of height.	
Hydrophytic Vegetation Present? Yes ☒ No ☐	

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

SOIL

Sampling Point: DP2

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		
0-3	10 YR 4/3	100					Loamy/ Sandy	
3-12	7.5 YR 4/3	100					Loamy/ Sandy	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:						Indicators for Problematic Hydric Soils³:		
☐ Histosol (A1)	☐ Dark Surface (S7)	☐ 2 cm Muck (A10) (MLRA 147)						
☐ Histic Epipedon (A2)	☐ Polyvalue Below Surface (S8) (MLRA 147, 148)	☐ Coast Prairie Redox (A16)						
☐ Black Histic (A3)	☐ Thin Dark Surface (S9) (MLRA 147, 148)	☐ Piedmont Floodplain Soils (F19)						
☐ Hydrogen Sulfide (A4)	☐ Loamy Gleyed Matrix (F2)	☐ Very Shallow Dark Surface (TF12)						
☐ Stratified Layers (A5)	☐ Depleted Matrix (F3)	☐ Other (Explain in Remarks)						
☐ 2 cm Muck (A10) (LRR N)	☐ Redox Dark Surface (F6)							
☐ Depleted Below Dark Surface (A11)	☐ Depleted Dark Surface (F7)							
☐ Thick Dark Surface (A12)	☐ Redox Depressions (F8)							
☐ Sandy Mucky Mineral (S1) (LRR N,	☐ Iron-Manganese Masses (F12) (LRR N,							
MLRA 147, 148)	MLRA 136)							
☐ Sandy Gleyed Matrix (S4)	☐ Umbric Surface (F13) (MLRA 136, 122)							
☐ Sandy Redox (S5)	☐ Piedmont Floodplain Soils (F19) (MLRA 148)							
☐ Stripped Matrix (S6)	☐ Red Parent Material (F21) (MLRA 127, 147)							

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present?

Yes ☐

No ☒

Remarks:



Roy Cooper, Governor
Susi Hamilton, Secretary
Walter Clark, Director, Land and Water Stewardship

NCNHDE-10508

October 17, 2019

Ryan Elliott
TGS Engineers
706 Hillsborough St
Raleigh, NC 27603
RE: Bridge #733 Wilkes Co.; 17BP.11.R.154

Dear Ryan Elliott:

The North Carolina Natural Heritage Program (NCNHP) appreciates the opportunity to provide information about natural heritage resources for the project referenced above.

Based on the project area mapped with your request, a query of the NCNHP database indicates that there are no records for rare species, important natural communities, natural areas, and/or conservation/managed areas within the proposed project boundary. Please note that although there may be no documentation of natural heritage elements within the project boundary, it does not imply or confirm their absence; the area may not have been surveyed. The results of this query should not be substituted for field surveys where suitable habitat exists. In the event that rare species are found within the project area, please contact the NCNHP so that we may update our records.

The attached 'Potential Occurrences' table summarizes rare species and natural communities that have been documented within a one-mile radius of the property boundary. The proximity of these records suggests that these natural heritage elements may potentially be present in the project area if suitable habitat exists. Tables of natural areas and conservation/managed areas within a one-mile radius of the project area, if any, are also included in this report.

If a Federally-listed species is found within the project area or is indicated within a one-mile radius of the project area, the NCNHP recommends contacting the US Fish and Wildlife Service (USFWS) for guidance. Contact information for USFWS offices in North Carolina is found here:
<https://www.fws.gov/offices/Directory/ListOffices.cfm?statecode=37>.

Please note that natural heritage element data are maintained for the purposes of conservation planning, project review, and scientific research, and are not intended for use as the primary criteria for regulatory decisions. Information provided by the NCNHP database may not be published without prior written notification to the NCNHP, and the NCNHP must be credited as an information source in these publications. Maps of NCNHP data may not be redistributed without permission.

The NC Natural Heritage Program may follow this letter with additional correspondence if a Dedicated Nature Preserve, Registered Heritage Area, Clean Water Management Trust Fund easement, or Federally-listed species are documented near the project area.

If you have questions regarding the information provided in this letter or need additional assistance, please contact Rodney A. Butler at rodney.butler@ncdcr.gov or 919-707-8603.

Sincerely,
NC Natural Heritage Program

Natural Heritage Element Occurrences, Natural Areas, and Managed Areas Within a One-mile Radius of the Project Area
 Bridge #733 Wilkes Co.
 Project No. 17BP.11.R.154
 October 17, 2019
 NCNHDE-10508

Element Occurrences Documented Within a One-mile Radius of the Project Area

Taxonomic Group	EO ID	Scientific Name	Common Name	Last Observation Date	Element Occurrence Rank	Accuracy	Federal Status	State Status	Global Rank	State Rank
Crustacean	32642	Cambarus johni	Carolina Foothills Crayfish	2009-04-08	E	3-Medium	---	Significantly Rare	G3	S3

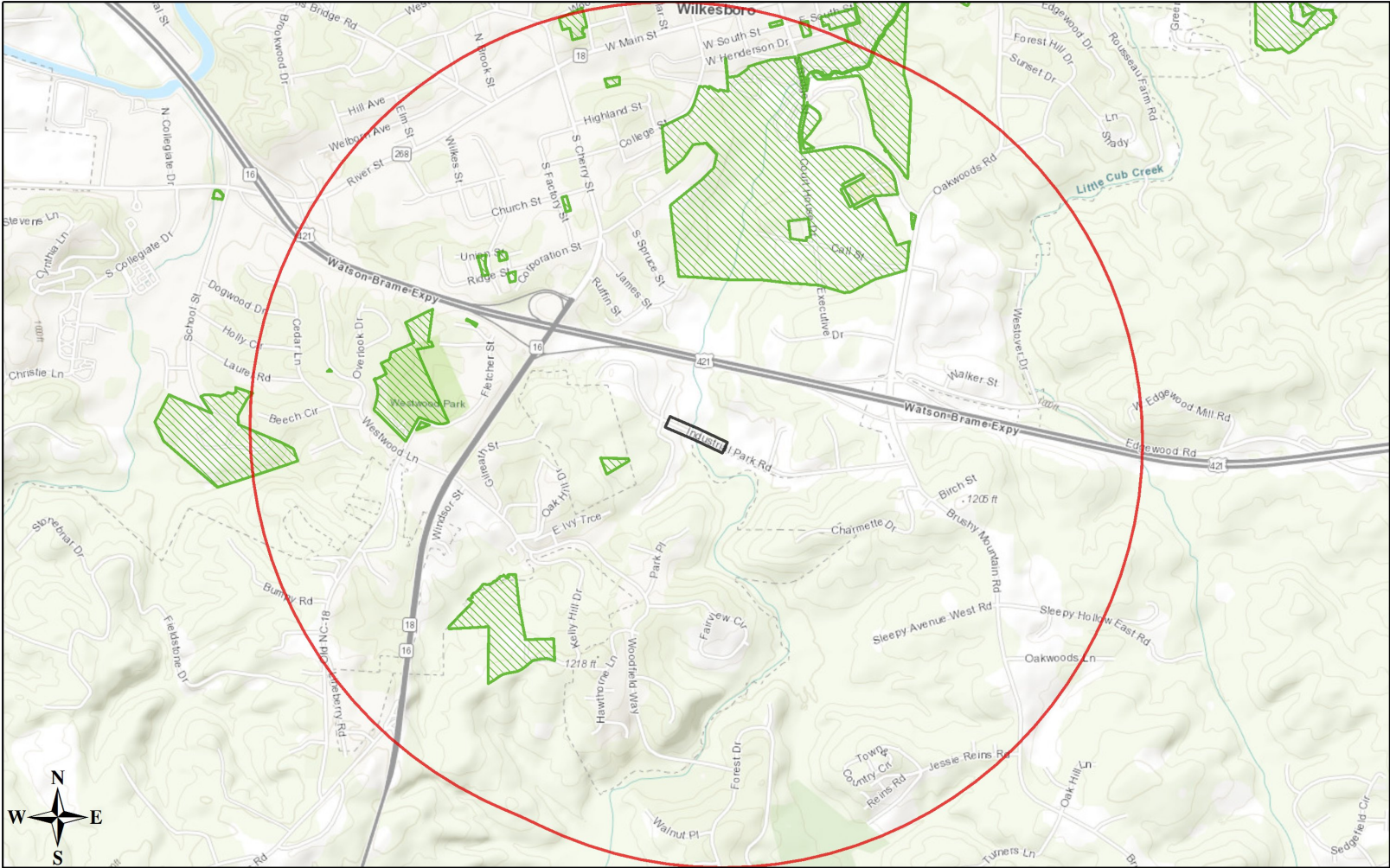
No Natural Areas are Documented Within a One-mile Radius of the Project Area

Managed Areas Documented Within a One-mile Radius of the Project Area

Managed Area Name	Owner	Owner Type
Wilkes County Open Space	Wilkes County	Local Government

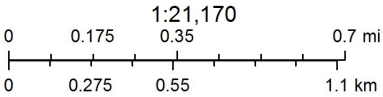
Definitions and an explanation of status designations and codes can be found at <https://ncnhde.natureserve.org/content/help>. Data query generated on October 17, 2019; source: NCNHP, Q3 Jul 2019. Please resubmit your information request if more than one year elapses before project initiation as new information is continually added to the NCNHP database.

NCNHDE-10508: Bridge #733 Wilkes Co.



October 17, 2019

-  Project Boundary
-  Buffered Project Boundary
-  Managed Area (MAREA)



Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community