

NC 41 (Tomahawk Road)  
Bridge No. 12 and Bridge No. 26  
Over Black River and Black River Overflow  
Sampson County  
Federal-Aid Project No. BRSTP-41(8)  
State Project No. 8.1281501  
T.I.P. No. B-1382

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

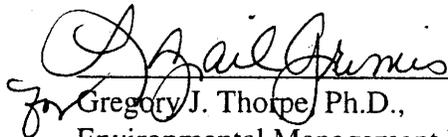
AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

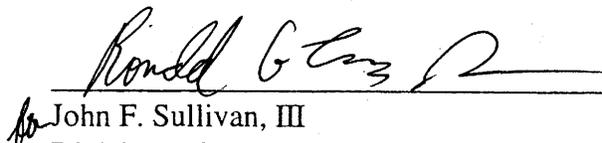
DIVISION OF HIGHWAYS

APPROVED:

7/31/03  
DATE

  
for Gregory J. Thorpe, Ph.D.,  
Environmental Management Director  
Project Development and Environmental Analysis Branch, NCDOT

7/31/03  
DATE

  
for John F. Sullivan, III  
Division Administrator  
Federal Highway Administration

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July 2003

Documentation Prepared by:  
Mulkey Engineers & Consultants  
Cary, North Carolina

7-31-03

Date

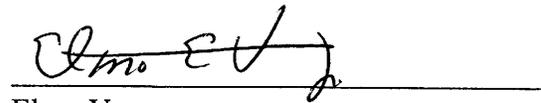
  
Clifton T. Register, PE  
Project Manager



For the North Carolina Department of Transportation

7-31-03

Date

  
Elmo Vance  
Project Manager  
Consultant Engineering Unit

## **PROJECT COMMITMENTS**

**NC 41 (Tomahawk Road)  
Bridge No. 12 and Bridge No. 26  
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In addition to the standard Nationwide Permit No. 23 Conditions, the General Nationwide Permit Conditions, Section 404 Only Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for the Protection of Surface Waters, Pre-Construction Guidelines for Bridge Demolition and Removal, Policy: Bridge Demolition and Removal in Waters of the United States, and Best Management Practices for Bridge Demolition, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

### **Division**

A moratorium on in-stream activities in the Black River between February 15 and August 15 to protect anadromous fish spawning.

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**INTRODUCTION:** The replacement of Bridge No. 12 and Bridge No. 26 is included in the North Carolina Department of Transportation (NCDOT) 2002-2008 Transportation Improvement Program (T.I.P.) and in the Federal-Aid Bridge Replacement Program. The location of the bridges is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

**I. PURPOSE AND NEED**

The NCDOT Bridge Maintenance Unit records indicate that Bridge No. 12 has a sufficiency rating of 37 out of a possible 100 for a new structure and is considered structurally deficient. Bridge No. 26 has a sufficiency rating of 33.8 out of a possible 100 for a new structure and is considered structurally deficient. The replacement of these inadequate structures will result in safer and more efficient traffic operations.

**II. EXISTING CONDITIONS**

Bridge No. 12 and Bridge No. 26 are located on NC 41 (Tomahawk Road) over the Black River and the Black River Overflow in Sampson County. The project is approximately 3.2 miles (5.1 kilometers) west of the town of Harrells.

NC 41 is a two lane facility and is classified as a rural major collector in the statewide functional classification system. NC 41 has a posted speed limit of 55 miles per hour (90 kilometers per hour). Land use in the project area is mostly agricultural and woodland with some residential property.

The 2003 estimated average daily traffic (ADT) volume is 2,300 vehicles per day (VPD). The projected ADT is 4,900 VPD for the design year 2030. The percentages of truck traffic are 5% duals and 15% truck-tractor semi trailers.

Four crashes were reported in the project vicinity during the three year period from December 1, 1999 to November 30, 2002. There were no fatalities.

This section of NC 41 in Sampson County is not part of a designated bicycle route nor is it listed in the T.I.P. as needing incidental bicycle accommodations.

Two school buses cross Bridge No. 12 and Bridge No. 26 twice daily.

## **Bridge No. 12**

Bridge No. 12 was constructed in 1950. The structure includes six spans with an overall length of approximately 226 feet (69 meters) with a clear roadway width of 24 feet (7.2 meters). The superstructure is a reinforced concrete floor on continuous steel I-beams. The end bents are a reinforced concrete spill through design. The substructure is composed of reinforced concrete caps on timber piles (Figure 4). Bridge No. 12 has a posted weight restriction of 34 tons (31 metric tons) for single vehicles and 38 tons (34 metric tons) for truck-tractor semi-trailers. The vertical clearance from crown height to stream bed is approximately 28 feet (9 meters).

The approach roadway consists of two 10-foot (3.0 meter) travel lanes with 6-foot (1.8 meter) grass shoulders. Approximately 160 feet (48 meters) west of Bridge No. 12 the approach roadway is on a curve with a radius of approximately 1480 feet (451 meters). Approximately 250 feet (76 meters) east of Bridge No. 12 the approach roadway is on a curve with a radius of approximately 1500 feet (456 meters).

There are no utilities attached to Bridge No. 12. Along the north side of Bridge No. 12 aerial power lines run parallel to NC 41. It is anticipated that utility impacts will be low.

## **Bridge No. 26**

Bridge No. 26 was constructed in 1950. The structure includes six spans with an overall length of approximately 151 feet (46 meters) with a clear roadway width of 24 feet (7.2 meters). The superstructure is a reinforced concrete floor on continuous steel I-beams. The end bents are a reinforced concrete spill through design. The substructure is composed of reinforced concrete caps on timber piles (Figure 4A). Bridge No. 26 has a posted weight restriction of 32 tons (29 metric tons) for single vehicles and legal gross weight for truck-tractor semi-trailers.

The approach roadway consists of two 10-foot (3.0 meter) travel lanes with 6-foot (1.8 meter) grass shoulders. The approach west of Bridge No. 26 is on a tangent alignment for approximately 900 feet (274 meters). Approximately 196 feet (60 meters) east of Bridge No. 26 the approach roadway is on a curve with a radius of approximately 1480 feet (451 meters).

There are no utilities attached to Bridge No. 26. Along the north side of Bridge No. 26 aerial power lines run parallel to NC 41. It is anticipated that utility impacts will be low.

### **III. ALTERNATIVES**

#### **A. Project Description**

This project will be designed to meet the AASHTO design requirements for a design speed of 60 miles per hour (100 kilometers per hour). A reasonable effort will be made to provide top down construction.

##### **Bridge No. 12**

The proposed replacement structure for Bridge No. 12 will be a cored slab bridge approximately 235 feet (71 meters) in length. A minimum grade of 0.3 percent will be required to facilitate deck drainage. The existing vertical clearance will be maintained. The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined, by a detailed hydraulic analysis to be performed during the final design of the project.

The proposed bridge will consist of two 12-foot (3.6 meter) travel lanes with 3-foot (1.0 meter) shoulders (See Figure 3).

The proposed approach roadway will consist of two 12-foot (3.6 meter) travel lanes with 8 foot (2.4 meter) shoulders, including 2-foot (0.6 meter) paved (See Figure 3).

##### **Bridge No. 26**

The proposed replacement structure for Bridge No. 26 will be a cored slab bridge approximately 155 feet (47 meters) in length. A minimum grade of 0.3 percent will be required to facilitate deck drainage. The existing vertical clearance will be maintained. The length and opening size of the proposed structure may increase or decrease as necessary to accommodate peak flows as determined, by a detailed hydraulic analysis to be performed during the final design of the project.

The proposed bridge will consist of two 12-foot (3.6 meter) travel lanes with 3-foot (1.0 meter) shoulders (See Figure 3).

The proposed approach roadway will consist of two 12-foot (3.6 meter) travel lanes with 8 foot (2.4 meter) shoulders, including 2-foot (0.6 meter) paved (See Figure 3).

#### **B. Build Alternatives**

##### **1. Alternative A (Preferred)**

Alternative A replaces Bridge No. 12 and Bridge No. 26 at the existing location (See Figure 2A). Alternative A is approximately 2970 feet (905 meters) in length. During construction, traffic will be detoured off site along the following route: SR 1125 (Clear

Run School Road) and NC 411 (Harrell's Highway) (See Figure 1). SR 1125 will be resurfaced and widened 2 feet (0.6 meters) on each side of the road. The detour route is approximately 7.9 miles (12.7 kilometers) in length.

## **2. Alternative C**

Alternative C replaces Bridge No. 12 and Bridge No. 26 on new alignment. Bridge No. 12 will be located south of the existing bridge and Bridge No. 26 will be located north of the existing bridge (See Figure 2B). Traffic will be maintained on the existing roadway and structures during construction. Alternative C was not selected as the preferred alternative because it has greater wetland impacts than Alternative A and is less economical than Alternative A.

### **C. Alternatives Eliminated from Further Study**

Alternative B replaces Bridge No. 12 and Bridge No. 26 at the existing location. During construction, traffic will be maintained by temporary on site detours located just south of Bridge No. 12 and just north of Bridge No. 26. Alternative B was eliminated from further study due to the high wetland impacts. Also, this alternative was less economical than the other alternatives due to the temporary structures necessary to accommodate traffic during construction.

Alternative D replaces Bridge No. 12 and Bridge No. 26 on new alignment. Bridge No. 12 and Bridge No. 26 will be located just south of the existing bridges. Traffic will be maintained on the existing roadway and structures during construction. Alternative D was eliminated from further study due to the high wetland impacts and difficulty of constructing in the wetlands.

The “**do-nothing**” alternative will eventually necessitate removal of the existing structures and closure of NC 41 (Tomahawk Road). This is not desirable due to the service provided by NC 41.

Investigation of the existing structures by the Bridge Maintenance Unit indicates that these bridges cannot be rehabilitated due to the timber substructure and inadequate load capacity.

### **D. Preferred Alternative**

**Alternative A** was selected as the preferred alternative because it minimizes wetland impacts and is more economical than Alternative C. Also, use of an offsite detour expedites completion of construction.

The Division Construction Engineer concurs with Alternative A as the preferred alternative.

#### E. Anticipated Design Exceptions

A design exception is not anticipated for this project.

#### IV. ESTIMATED COST

The estimated costs based on current prices are as follows:

	ALTERNATIVES	
	A (Preferred)	C
Proposed Structure Bridge No. 12	\$ 528,750	\$ 528,750
Proposed Structure Bridge No. 26	372,000	420,000
Structure Removal Bridge No. 12	56,700	56,700
Structure Removal Bridge No. 26	42,600	42,600
Roadway Approach	299,550	844,950
Temp. Detour Bridge No. 12	0	0
Temp. Detour Structure No. 26 (72" Pipe Culvert)	0	0
Temp. Roadway Approach	0	0
Miscellaneous and Mobilization	285,400	538,000
Engineering Contingencies	265,000	369,000
ROW/Const. Easements/Utilities	28,000	29,700
<b>TOTAL</b>	<b>\$1,878,000</b>	<b>\$2,829,700</b>

The estimated cost of the project as shown in the 2002-2008 Transportation Improvement Program for B-1382 replacing Bridge No. 26 is \$1,960,000, including \$200,000 for prior years, \$160,000 for right-of-way and \$1,600,000 for construction.

#### V. NATURAL RESOURCES

##### A. Methodology

Field investigations along the project study area were conducted by qualified scientists during December 2002. Investigators walked the entire project area to determine natural

resource conditions and to document natural communities, wildlife, and the presence of protected species or their habitats.

Published information regarding the project area and region was derived from a number of resources including: United States Geological Survey (USGS) 7.5-minute topographic quadrangle maps (Tomahawk and Harrells, NC), United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, NCDOT planimetric maps of the project area (1"=50'), and Natural Resources Conservation Service (NRCS) soil survey maps of Sampson County. Water resources information was obtained from publications of the North Carolina Division of Water Quality (NCDWQ). Information concerning the occurrence of federal and state protected species within the project area and vicinity was gathered from the USFWS list of protected species (updated 2/25/2003) and the North Carolina Natural Heritage Program (NCNHP) database of rare species and unique habitats (December 2002).

Dominant plant species were identified in each strata for all natural communities encountered. Plant community descriptions were based on those classified in Schafale and Weakley (1990), where applicable. These communities were subsequently compared with updated plant community descriptions in Weakley *et al.* (1998, draft). For the context of this report, community classifications have been modified in some instances to better reflect field observations. Names and descriptions of plant species generally follow Radford *et al.* (1968), unless more current information is available. Animal names and descriptions follow Martof *et al.* (1980), Stokes (1996), Rohde *et al.* (1994), and Webster *et al.* (1985). Scientific nomenclature and common names (when applicable) are provided for each plant and animal species listed. Subsequent references to the same organism include the common name only.

During surveys, wildlife identification involved a variety of observation techniques: visual observations (both with and without the use of binoculars), and observation of the characteristic signs of wildlife (sounds, scats, tracks, and burrows). Quantitative water sampling was not undertaken to support existing data.

Jurisdictional wetland delineations were performed using the three parameter approach as prescribed in the *Field Guide for Wetland Delineation: 1987 Corps of Engineers Manual* (Wetland Training Institute, 2001). Supplementary technical literature describing the parameters of hydrophytic vegetation, hydric soils, and hydrological indicators was also utilized. Wetland functions were evaluated according to the Division of Water Quality's Rating System, 4<sup>th</sup> version (1995). Surface waters in the project area were evaluated and classified based on a preponderance of perennial stream characteristics as defined in NCDWQ's *Stream Classification Method*, 2<sup>nd</sup> version (1999).

## **B. Physiography and Soils**

The project site is located in the southern portion of Sampson County along NC 41, where it bisects the Black River and its adjacent floodplain. It is situated in the

southeastern portion of the Middle Coastal Plain physiographic province. The topography of Sampson County consists of nearly level terrain with some gently sloping areas near streams and floodplains. Elevations in the project area range from approximately 25 feet (7.6 meters) above mean sea level (msl) at the Black River and the Black River overflow to approximately 45 feet (13.7 meters) near NC 41, as depicted on the USGS topographic quadrangle maps. Land use within the Sampson County portion of this basin, including the study area, consists of rural residential, undeveloped swamp forests, and agricultural lands.

The geology near the project area is comprised of fluvial and marine sediments belonging to the Cretaceous period, specifically the Black Creek formation. The Black Creek formation sediments consist of fine-grained, micaceous sand and thick lenses of cross-bedded sand with the upper portions of the formation containing fossiliferous clayey sand lenses (NCDLR, 1985). Soils in the Middle Coastal Plain are comprised of fluvial and marine sediments characteristic of their underlying geology. Soils found in this area were generally formed during the Pliocene (5 to 1.8 million years) and Pleistocene (<1.8 million years) ages (Daniels et al., 1999).

The process of soil development depends on both biotic and abiotic influences. These influences include past geologic activities, nature of parent materials, environmental and human influences, plant and animal activity, time, climate, and topographical position. Soil associations are defined as landscapes that exhibit distinctive proportional patterns of soils consisting of one or more major soils and at least one minor soil. The Johnston-Bibb association covers the entire project study area.

Based on information obtained from Brandon (1985), the Johnston-Bibb map unit is comprised of nearly level, poorly drained and very poorly drained soils that are found on flood plains with a loamy or sandy surface soil and loamy or sandy subsoil. The soil association comprises approximately 19 percent of Sampson County. The soil association is comprised of 32 percent Johnston soils, 17 percent Bibb soils, and the remainder is represented by Chipley, Johns, Kalmia, Lumbee, Paxville, Roanoke, and Pamlico soils. Soils in this association are generally found in woodland areas. Wetness and flooding are the major limitations for most of the soils in this association. A brief description of the soils within the project study area can be found in Table 1.

Hydric soils are defined as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions that favor the growth and regeneration of hydrophytic vegetation (Wetland Training Institute, 2001). Soils referred to as "Hydric-A" contain all hydric soils or have hydric soils as a major component (Gregory, 2000). Soils listed as "Hydric-B" soils contain inclusions of hydric soils or have wet areas (Gregory, 2000).

A commonly applied indirect measure of the quality of soil/site potential in forest production is site index. Site index is the relationship between the average tree height of dominant and codominant trees in a stand to the age of a stand, usually an even-aged

stand of 50 years (Avery and Burkhart, 1983; Brandon, 1985). Site index for the soils found within the project study area are shown in Table 1.

Symbol	Series	Taxonomy (Subgroup)	Slope (%)	Permeability	Hydric Class.	Drainage Class <sup>A</sup>	Available Water Capacity	High Water Table	Shrink-swell Potential	Site Index <sup>B</sup>
ChA	Chipleay	Aquic Quartzipsammits	0-2	Rapid	-	MW	Low	2.0-3.0 ft.	Low	80-90
GtC	Gritney	Typic Hapludults	4-8	Slow	B	W to MW	Moderate	>6.0 ft.	High	65-80
Jo	Johns	Aquic Hapludults	0-2	Moderate	B	SP to MW	Moderate	1.5-3.0 ft.	Low	86-90
Lm	Lumbee	Typic Ochraquults	0-2	Moderate	A	P	Moderate	0.0-1.5 ft.	Low	91-94
Px	Paxville	Typic Umbraquults	0-2	Moderate	A	VP	High	+1.0-1.5 ft.	Low	77-96

**Notes:**  
<sup>A</sup> Drainage Classifications -- MW=Moderately Well, P=Poorly, SP=Somewhat Poorly, and W=Well.  
<sup>B</sup> Site Index -- Based on a base age of 50 years; the range presented covers the species listed by the USDA-NRCS.

## C. Water Resources

### 1. Waters Impacted

The project region is in the Cape Fear River basin, a drainage basin covering approximately 9,149 square miles (3,702.6 square kilometers) in North Carolina's middle Coastal Plain physiographic province. The Cape Fear River basin is North Carolina's largest river basin. Land use within the Sampson County portion of this basin, including the study area, consists of rural residential, undeveloped swamp forests, and agricultural lands.

### 2. Water Resource Characteristics

The project study area is located within the Cape Fear River Subbasin 03-06-19 and the USGS hydrologic unit 03030006 (USEPA, 2003). The project study area crosses the Black River, which originates at the confluence of Great Coharie Creek and Six Runs Creek approximately 6.6 miles (10.6 kilometers) north of the project. The Black River is approximately 75 to 100 feet (22.9 to 30.5 meters) wide within the project study area. The Black River has been assigned the Stream Index Number (SIN) 18-68 by the DWQ from its source to its confluence with the Cape Fear River (NCDWQ, 2000).

The NCDWQ classifies surface waters of the state based on their intended best uses. The Black River and its associated tributaries in the project study area have been assigned a "C Sw ORW" classification. The "C" classification denotes freshwaters protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival. The "Sw" designation is used for waters with low velocities and other natural characteristics which are different from adjacent streams. The "ORW" classification indicates unique and special waters of exceptional state or national recreational or ecological significance

which require special protection to maintain existing uses. The Black River was designated as "ORW" in 1994 by the NCDWQ.

The Ambient Monitoring System (AMS) is a network of stream, lake, and estuarine water quality monitoring stations strategically located for the collection of physical and chemical water quality data. The type of water quality data or parameters collected is determined by the waterbodies' classification and corresponding water quality standards. The AMS determines the "use support" status of waterbodies, meaning how well a waterbody supports its designated uses.

The nearest benthic macroinvertebrate sampling site (B8750000) to the project area is located approximately 2.5 miles (4.0 kilometers) upstream of the project study. This site was sampled in 1995 and 1998 and was given a bioclassification rating of "Excellent" during both years (NCDWQ 2000). One fish tissue sampling station is located near Ivanhoe on the Black River. Fish tissue samples were taken from this station in 1995 and indicated elevated levels of mercury in the bowfin fish population.

Another measure of water quality being used by the NCDWQ is the N.C. Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish community. The Black River was sampled five times between September 1985 and August 1998. This sampling site consistently received a bioclassification of Excellent from September 1985 until August 1998 when it was downgraded to Good. A NCIBI rating of Excellent indicates these waters are comparable to the best situations without human disturbance. All regionally expected species for the habitat and stream size, including the most intolerant forms, are present along with a full array of size classes and a balanced trophic structure (NCDWQ 1999). The Black River was sampled again in August 1998 following Hurricane Bonnie and received a bioclassification of Good. The lower NCIBI rating experienced in 1998 may be the result of higher flow during that sampling event. A NCIBI rating of good indicates species richness somewhat below expectation, especially due to the loss of the most intolerant species; some species are present with less than optimal abundances or size distributions; and the trophic structure shows some signs of stress (NCDWQ 1999).

Point source dischargers located throughout North Carolina are regulated through the National Pollutant Discharge Elimination System (NPDES) program. Dischargers are required by law to register for a permit. According to NCDWQ (2003), there are eight NPDES dischargers within the 03-06-19 subbasin; all located greater than 6 miles (9.6 kilometers) upstream of the project area. There are no permitted dischargers on the Black River. Table 2 denotes each discharger and its location.

Permit No.	Facility	County	Type	Discharge (mgd)	Stream	Distance from Project Area
NC0020117	Clinton, City of - WWTP	Sampson	Major	3	Williams Old Mill Branch	<20 miles upstream
NC0086649	Clinton, City of – WWTP	Sampson	Minor	Not Limited	Rowans Branch	>20 miles upstream
NC0020346	Magnolia, Town of - WWTP	Duplin	Minor	0.09	UT Millers Creek	<25 miles upstream
NC021903	Warsaw, Town of - WWTP	Duplin	Minor	0.061	Stewarts Creek	<25 miles upstream
NC0024791	NCDOT – US 421 Rest Area	Sampson	Minor	0.006	Six Runs Creek	>30 miles upstream
NC0025569	Garland, Town of – WWTP	Sampson	Minor	0.126	Great Coharie Creek	>5 miles upstream
NC0026816	Roseboro, Town of – WWTP	Sampson	Minor	0.7	Little Coharie Creek	>20 miles upstream
NC0072877	Newton Grove, Town of – WWTP	Sampson	Minor	0.02	Beaverdam Swamp	>35 miles upstream

Source: NCDWQ, 2003

Non-point source pollution refers to runoff that enters surface waters through storm water flow or no defined point of discharge. Most non-point source pollution within the project vicinity likely comes from storm water runoff from NC 41, agriculture, and minor rural residential inputs.

### 3. Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act require the identification and protection of important marine and fish habitat. The National Marine Fisheries Service (NMFS) and regional fishery management councils (FMC), as well as other federal agencies, have identified essential fish habitat (EFH) for managed species. These important habitats include the waters and substrates necessary for spawning, breeding, feeding, or growth to maturity (NMFS 1999). All federal agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding the potential effects of their actions (NMFS 1999). NMFS has oversight for the consultation process when potential impacts to EFH may occur due to Federal or state project-related activities. These sensitive areas do not have additional regulatory protection but are subject to more careful scrutiny during the consultation process and may be subject to stringent conservation recommendations (NMFS 1999).

The Magnuson-Stevens Act also provides protection for important habitats of anadromous fish species. Anadromous fish are species that spend most of their adult lives in salt water and migrate to freshwater rivers and lakes to reproduce (Page and Burr 1991). According to the NCWRC there are three anadromous fish species of concern in the Black River (Ashley, 2003). These species are the American shad (*Alosa sapidissima*), striped bass (*Morone saxatili*), and river herring or alewife (*Alosa pseudoharengus*). The NCWRC has requested a moratorium on in-stream work between February 15 and August 15 to protect anadromous fish species. The moratorium applies to the Black River only, not the Black River Overflow.

#### **4. Anticipated Impacts to Water Resources**

##### **a. General Impacts**

The primary sources of water quality degradation in rural or undeveloped areas are agriculture and construction. The construction associated with this roadway project will replace some land currently being used for recreation/wildlife and woodlands, with additional roadway and rights-of-way. Increased impervious areas may introduce elements of degradation to water resources. These elements include hydrocarbons, toxic substances, debris, and other pollutants. Anticipated impacts to water resources may include: additional substrate destabilization, erosion, increased turbidity, altered flow patterns, and possible temperature fluctuations within smaller stream channels caused by the removal of streamside vegetation.

The primary sources of water-quality degradation in developed areas are replacement of natural vegetation with pavement and artificial drainage systems, removal of riparian buffers, and managed lawns which further reduce the ability of the watershed to filter pollutants before they enter surface waters. Artificial drainage systems, including curb and guttered roadways, also allow urban pollutants to reach surface waters quickly, with little or no filtering. Pollutants include lawn care products such as pesticides and fertilizers, automobile-related pollutants such as fuel and lubricants, and fecal coliform bacteria (from animals and failing septic systems). Concentrated areas of urban development contribute to impaired water quality.

In the short term, construction and approach work may increase sediment loads in the Black River and adjacent wetlands. The NCDOT, in cooperation with the NCDWQ, has developed a sedimentation control program for highway projects which adopts formal best management practices (BMPs) for the protection of surface waters and wetlands. The following are some of the standard methods to reduce sedimentation and water quality impacts:

- ◆ Strict adherence to BMPs for the protection of surface waters during the life of the project.
- ◆ Reduction and elimination of direct and non-point discharge into water bodies and minimization of activities conducted in the water and adjacent wetlands.
- ◆ Placement of temporary ground cover or re-seeding of disturbed sites to reduce runoff and decrease sediment loadings.
- ◆ Reduction of clearing and grubbing along stream banks.

Precautions will be taken to minimize impacts to water resources in the project area. Construction related impacts to water resources include loss of aesthetic values, substrate destabilization, and increased turbidity of adjacent waters due to sedimentation from runoff and erosion. Aquatic organisms are very sensitive to changes in water quality due to discharges and inputs resulting from construction. Appropriate measures must be

taken to avoid runoff, erosion, and spillage. Such measures will include an erosion and sedimentation control plan, provisions for waste materials and storage, stormwater management measures, and appropriate road maintenance measures. The NCDOT's *Best Management Practices for Protection of Surface Waters* and Sedimentation Control guidelines will be strictly enforced during the construction stages of the project.

## **5. Impacts Related to Bridge Demolition and Removal**

In order to protect the water quality and aquatic life in the area affected by this project, the NCDOT and all potential contractors will follow appropriate guidelines for bridge demolition and removal. These guidelines are presented in three NCDOT documents entitled "*Pre-Construction Guidelines for Bridge Demolition and Removal*," "*Policy: Bridge Demolition and Removal in Waters of the United States*," and "*Best Management Practices for Bridge Demolition and Removal*" (all documents dated 9/20/99). Guidelines followed for bridge demolition and removal are in addition to those implemented for *Best Management Practices for the Protection of Surface Waters*.

### **a. Bridge No. 12**

Bridge No. 12 was constructed in 1950. The structure includes six spans with an overall length of approximately 226 feet (69 meters) with clear roadway width of 24 feet (7.2 meters). The superstructure is a reinforced concrete floor on continuous steel I-beams. The end bents are a reinforced concrete spill through design. The substructure is composed of reinforced concrete caps on timber piles (Figure 4). Bridge No. 12 has a posted weight restriction of 34 tons (31 metric tons) for single vehicles and 38 tons (34 metric tons) for truck-tractor semi-trailers.

Under the guidelines presented in the documents noted in the first paragraph of this section, work done in the water for this project would fall under Case 1, which states that "in water" work is restricted to an absolute minimum, due to the presence of Outstanding Resource Waters (ORW) or Threatened and/or Endangered Species (T&E Species). All work potentially affecting the resource will be carefully coordinated with the agency having jurisdiction. This conclusion is based upon the classification of the waters within the project area and vicinity, and agency comments received from the North Carolina Division of Marine Fisheries (DMF), US Army Corps of Engineers (USACE), USFWS, North Carolina Division of Coastal Management (DCM), and North Carolina Wildlife Resources Commission. Specific agency comments are noted later in the report.

### **b. Bridge No. 26**

Bridge No. 26 was constructed in 1950. The structure includes six spans with an overall length of approximately 151 feet (46.0 meters) with a clear roadway width of 24 feet (7.2 meters). The superstructure is a reinforced concrete floor on continuous steel I-beams. The end bents are a reinforced concrete spill through design. The substructure is composed of reinforced concrete caps on timber piles (Figure 4A). Bridge No. 26 has a

posted weight restriction of 32 tons (29 metric tons) for single vehicles and legal gross weight for truck-tractor semi-trailers. The structure crosses the Black River overflow, which is a wetland.

Since Bridge No. 26 crosses a wetland and not a stream channel, this project can be classified as a Case 3 as defined by NCDOT (1999). A Case 3 situation places no special restrictions beyond those outlined in BMPs for Protection of Surface Waters (NCDOT, 1999).

#### **D. Biotic Resources**

This section describes the existing vegetation and associated wildlife that occur within the project area. The project area is composed of different vegetative communities based on topography, soils, hydrology, and disturbance. These systems are interrelated and in many aspects interdependent. Potential impacts affecting these communities are also discussed. Scientific nomenclature and common name (when applicable) are provided for each plant and animal species listed. Subsequent references to the same organism include only the common name.

##### **1. Plant Communities**

The field survey team observed four plant communities in the project study area: mixed pine/hardwood, bottomland hardwoods (blackwater subtype), cypress-gum swamp (blackwater subtype), and man-dominated (right-of-way easement).

###### **a. Mixed Pine/Hardwood**

The mixed pine hardwood community comprises the majority of the project study area. The community is located upslope of the cypress-gum and bottomland hardwood communities. The community ranges from a large component of pines to an equal mix of all species as one travels away from NC 41. The canopy primarily consists of red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), hickory (*Carya* spp.), water oak (*Quercus nigra*), and loblolly pine (*Pinus taeda*). The groundcover is made up of greenbrier (*Smilax* spp.), Japanese honeysuckle (*Lonicera japonica*), partridge berry (*Mitchella repens*), and blackberry (*Rubus* spp.).

###### **b. Bottomland Hardwood**

The bottomland hardwoods community comprises approximately 10 percent of the project study area and is situated along the banks and the adjacent floodplains of the Black River. It is best classified as a variation of Schafale and Weakley's (1990) Coastal Plain Bottomland Hardwoods (Blackwater Subtype). This community type occurs on blackwater river floodplains, abandoned or relict levee deposits, or point bar ridges. Blackwater rivers tend to have highly variable flow regimes, with floods of short duration and periods of very low flow. The water tends to be very acidic, and is low in both

sediment load and nutrients. The bottomland hardwood communities tend to be seasonally to intermittently flooded (Schafale and Weakley 1990). In the project area, this forest is located on the west side of the Black River and south of NC 41 on the east side of the river. It has an open to dense understory or shrub layer and a limited herb layer. Timber logging may have occurred at some time during the past, as evidenced by relic skidder rows and logging deck debris piles.

Dominant species observed in the canopy of the bottomland hardwood community included loblolly pine, sweetgum, mockernut hickory (*Carya tomentosa*), overcup oak (*Quercus lyrata*), turkey oak (*Q. laevis*), Southern red oak (*Q. falcata*), river birch (*Betula nigra*), and red maple. The diverse understory layer was dominated by woody shrubs and vines, including fetterbush (*Lyonia lucida*), staggerbush (*L. mariana*), sweetbay (*Magnolia virginiana*), red bay (*Persea borbonia*), American holly (*Ilex opaca*), wax myrtle (*Myrica cerifera*), sparkleberry (*Vaccinium arboreum*), and deerberry (*V. stamineum*), greenbrier (*Smilax rotundifolia*), saw greenbrier (*S. bona-nox*), and blaspheme vine (*S. laurifolia*). The herbaceous community was very sparse with dominant species clustered near canopy openings. These species included giant cane (*Arundinaria gigantea*), panic grass (*Panicum* sp.), bentgrass (*Agrostis* sp.), velvet grass (*Dichanthelium scoparium*), creeping grass (*Microstegium vimineum*), spike grass (*Chasmanthium laxum*), wild ginger (*Hexastylis* sp.), and royal fern (*Osmunda regalis*).

#### c. Cypress-Gum Swamp

The cypress-gum swamp community in the project area is generally located in low-lying areas where surface water and saturated soils are common. This community appears to be a variation of the Cypress-Gum Swamp (Blackwater Subtype - Relict Slough Variant) identified by Schafale and Weakley (1990). These communities occur in back swamps, sloughs, swales, and floodplains of blackwater rivers where they are seasonally to semipermanently flooded. (Schafale and Weakley 1990). The cypress-gum swamp community at the project site is located north of NC 41 on the east side of the Black River. Dominant canopy species included bald cypress (*Taxodium distichum*), black gum (*Nyssa biflora*), river birch, sweetgum, and overcup oak. The sparse understory canopy of woody shrubs and vines included American holly, wax myrtle, and greenbrier. Herbaceous species were also sparse and primarily located near a few canopy openings. These species included spike grass, wild ginger, and sedges (*Carex* spp.).

#### d. Man-Dominated Community

Man-dominated communities represent areas that are periodically maintained by human influences, such as roadside and power line rights-of-way, regularly mowed lawns, and open areas. The man-dominated community at the project site includes an 8-foot (2.4-meter) wide easement along the north and south side of NC 41. This area is dominated by herbaceous vegetation that includes various grasses (Family *Poacea*), dandelion (*Taraxacum officinale*), chickweed (*Cerastium* sp.) and healall (*Prunella vulgaris*).

## 2. Terrestrial Wildlife

The forested communities offer a high diversity of foraging, nesting, and cover habitat for many species of amphibians, reptiles, birds, and mammals. Species that may be associated with these types of communities are described below. An asterisk (\*) indicates the species that were directly observed or that evidence was noted during field reconnaissance.

The project area likely has a small amphibian population which may include salamanders and frogs. Salamanders forage on insects, both aquatic and terrestrial, crustaceans, worms, and other organisms in forest floodplains and vernal pools. Salamanders can be found in a variety of habitats, although most are associated with small streams and seepages. They can also be found along streams where stones, large branches and other wood debris offer shelter for both the salamander and their food. They are active mostly at night, but can be found by overturning logs and stones in wet areas along the stream banks. Species that may occur in the project area include the marbled salamander (*Ambystoma opacum*) and Eastern newt (*Notophthalmus viridescens*). Spring peepers (*Hyla crucifer*), bullfrogs (*Rana catesbeiana*), green frogs (*R. clamitans*), and pickerel frogs (*R. palustris*) may also be present. These frog species are commonly found in vegetated fields, streams, marshes, and swamps. No amphibians were observed during the December field visit.

Reptile species associated with the project area likely to include turtles such as the Eastern mud turtle (*Kinosternon subrubrum*), common cooter (*Pseudemys floridana*), and Eastern box turtle (*Terrapene carolina*). These turtle species can be found throughout North Carolina in woods, meadows, and marshes. Other reptile species expected to occur in damp forest habitats include the ring-necked snake (*Diadophis punctatus*), common kingsnake (*Lampropeltis getula*), plain-bellied water snake (*Nerodia erythrogaster*), rough green snake (*Opheodrys aestivus*), and Northern water snake (*Nerodia sipedon*). These species often forage among the loose leaves, or in vines and along branches of shrubs and trees along stream banks and in marshy wetlands. No reptiles were observed during the site visit.

Many bird species may inhabit or migrate through the project area. Inhabitants may include red-bellied woodpecker\* (*Melanerpes carolinus*), Northern flicker (*Colaptes auratus*), hairy woodpecker (*Picoides villosus*), downy woodpecker (*P. pubescens*), blue jay (*Cyanocitta cristata*), Carolina chickadee\* (*Parus carolinensis*), tufted titmouse\* (*P. bicolor*), white-breasted nuthatch (*Sitta carolinensis*), American robin (*Turdus migratorius*), northern cardinal (*Cardinalis cardinalis*), northern mockingbird\* (*Mimus polyglottos*), brown thrasher (*Toxostoma rufum*), and American crow (*Corvus brachyrhynchos*). Predatory species may include red-tailed hawk\* (*Buteo jamaicensis*), eastern screech owl (*Otus asio*), and barred owl (*Strix varia*).

A wide variety of mammals are expected to inhabit the project area and surrounding landscape. Virginia opossum (*Didelphis virginiana*), woodchuck (*Marmota monax*), gray

squirrel\* (*Sciurus carolinensis*), eastern harvest mouse (*Reithrodontomys humulis*), raccoon (*Procyon lotor*), eastern spotted skunk (*Spilogale putorius*), marsh rabbit (*Sylvilagus palustris*), American beaver\* (*Castor canadensis*), and white-tailed deer\* (*Odocoileus virginianus*) are species mostly likely to be found. In addition, bats such as the little brown myotis (*Myotis lucifugus*), Eastern red (*Lasiurus borealis*), and big brown bat (*Eptesicus fuscus*) may also be present in the project study area.

### 3. Aquatic Communities

The Black River provides the primary aquatic habitat found within the project study area. It is characteristic of blackwater rivers throughout the Coastal Plain. It provides spawning habitat for several anadromous fish species such as the American shad (*Alosa sapidissima*), striped bass (*Morone saxatili*), and the river herring or alewife (*Alosa pseudoharengus*), which return to their natal fresh waters to spawn. Other fish species may include longnose gar (*Lepisosteus osseus*), bowfin (*Amia calva*), American eel (*Anguilla rostrata*), eastern silvery minnow (*Hybognathus regius*), redbfin pickerel (*Esox americanus*), eastern mosquitofish (*Gambusia holbrooki*), pumpkinseed (*Lepomis gibbosus*), bluegill (*L. macrochirus*), and yellow perch (*Perca flavescens*).

Animals possibly inhabiting the aquatic communities are river otter and beaver (*Castor canadensis*). Many of the avian species identified above including great blue heron (*Ardea herodias*), green heron (*Butorides virescens*), wood duck (*Aix sponsa*), mallard (*Anas platyrhynchos*), American black duck (*Anas rubripes*), and hooded merganser (*Lophodytes cucullatus*) are likely present at some time during the year. Snapping turtle (*Chelydra serpentina*), eastern musk turtle (*Stenothernus odoratus*), painted turtle (*Chrysemys picta*), northern water snake (*Nerodia sipedon*), and cottonmouth (*Agkistrodon piscivorus*) are a few of the reptiles potentially occurring within the aquatic areas associated with the project area. Amphibians may include bullfrog (*Rana catesbeiana*) and green frog (*R. clamitans*), as well as eastern newt (*Notophthalmus viridescens*) and two-toed amphiuma (*Amphiuma means*).

### 4. Anticipated Impacts to Biotic Communities

#### a. Terrestrial Communities

Temporary fluctuation in populations of animal species that utilize terrestrial areas is anticipated during the course of construction. Slow-moving, burrowing, and/or subterranean organisms will be directly impacted by construction activities, while more mobile organisms will be displaced to adjacent communities. Competitive forces in the adapted communities may result in a redefinition of population equilibria. Table 3 presents anticipated impacts to terrestrial communities occurring in the project area.

The Man-Dominated Community has the largest potential for impact; however, this community is highly altered from past disturbances. As a result, impacts throughout this

community are not considered substantial in terms of degrading habitat quality in the project area or in terms of types of vegetation that will be impacted.

**Table 3. Anticipated Impacts to Terrestrial and Wetland Communities**

	Terrestrial Communities					
	Non-Wetland Impacts		Wetland Impacts <sup>A</sup>			
B-1382 Alternatives	Mixed Pine & Hardwood	Man-Dominated	Bottomland Hardwood (PFO1)	Cypress-Gum Swamp (PFO6)	Scrub/Shrub (PSS1)	Total Wetland Impacts
Alternative A (Preferred)	2.28 acres (0.923 ha)	2.75 acres (1.113 ha)	0.01 acres (0.004 ha)	0.05 acres (0.020 ha)	0.00 acres (0.000 ha)	0.06 acres (0.242 ha)
Alternative C	3.92 acres (1.586 ha)	3.62 acres (1.465 ha)	0.14 acres (0.056 ha)	0.037 acres (0.015 ha)	0.00 acres (0.000 ha)	0.18 acres (0.072 ha)

<sup>A</sup> Impacts are calculated from 10 feet outside of the proposed slope stake lines. Actual impacts are anticipated to be less.

**b. Aquatic Community Impacts**

Aquatic communities are acutely sensitive to changes in their environment. Environmental impacts from construction activities may result in long-term or irreversible effects to these areas. Impacts associated with in-water construction activities include scouring of the substrate, which can increase siltation and turbidity. This siltation can clog the gills and/or feeding mechanisms of benthic and aquatic organisms. Bridge demolition and construction may also result in discharges of highway construction materials, and pollutants that are detrimental to early life stages of fishery resources. Settling of sediments on aquatic vegetation can reduce or prevent photosynthesis and thereby cause die-off. The Black River will be impacted as a result of project construction. Table 4 provides a summary of aquatic impacts.

Table 4. Anticipated Aquatic Community Impacts <sup>A</sup>	
B-1382 Alternatives	Stream Impacts Acres (Hectares)
Alternative A	0.16 (0.07)
Alternative C	0.16 (0.07)

<sup>A</sup> Impacts were derived by considering the footprints of the new bridges, the establishment of detour bridges, and the removal of original bridges.

## **E. Special Topics**

### **1. Waters of the United States**

Wetlands and surface waters fall under the broad category of “Waters of the United States” as defined in 33 CFR 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). Waters within the banks of the Black River and adjacent wetlands are considered jurisdictional as Waters of the United States and are regulated by the USACE. The USACE regulatory program is defined in 33 CFR 320-330.

Water bodies, including lakes, rivers, and streams, are subject to jurisdictional consideration under the Section 404 program. Wetlands are also identified as “Waters of the United States”. Wetlands, defined in 33 CFR 328.3, are those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Any action that proposes to place fill into these areas falls under the jurisdiction of the USACE under Section 404 of the Clean Water Act (33 U.S.C. 1344).

#### **a. Surface Waters**

The NCDWQ defines a perennial stream as clearly defined channel that contains water for the majority of the year. These channels usually have some or all of the following characteristics: distinctive stream bed and bank, aquatic life, and groundwater flow or discharge.

#### **b. Jurisdictional Wetlands**

Wetlands as defined by the USACE are those areas that are inundated or saturated by surface or groundwater long enough and frequent enough under normal conditions to support a prevalence of vegetation adapted for life in saturated conditions (Wetland Training Institute, 2001). Based on this definition, delineation of jurisdictional wetlands is based on the presence of three diagnostic indicators: hydrophytic vegetation, hydric soils, and hydrology.

Jurisdictional wetlands were delineated in May 2002 for the replacement of Bridge No. 26. The delineated wetlands were verified by USACE, on May 16, 2002 (Action ID: 200200726).

Wetlands delineated during May 2002 centered on Bridge No. 26 and the adjacent floodplain associated with the Black River overflow. It was determined that three wetland types existed as a result of the delineations. These wetland types as defined by Cowardin et al. (1979) included a palustrine, forested, deciduous (PFO6) wetland, a

palustrine, forested, broad-leaved deciduous (PFO1) wetland, and a palustrine, scrub/shrub, broad-leaved deciduous (PSS1) wetland.

Wetland 1 is a cypress-gum swamp that exhibits characteristics of a palustrine, forested, deciduous (PFO6F) wetland (Cowardin et al. 1979). Wetland 1 is located north of NC 41 at the western end of the project study area. The vegetation present within this wetland is hydrophytic in nature, including bald cypress, swamp tupelo (*Nyssa aquatica*), and red maple. Soils exhibit hydric characteristics (Munsell color 2.5Y 3/1) and are mapped as Paxville fine sandy loam. Presence of jurisdictional hydrology was noted with hydrologic indicators observed including inundation, water marks, and presence of saturation at the soil surface.

Wetland 2 is a cypress-gum swamp that exhibits characteristics of a palustrine, forested, deciduous (PFO6F) wetland (Cowardin et al. 1979). Wetland 2 is the Black River overflow that is proposed for the bridge replacement and is located north and south of NC 41 near the center of the project study area. The vegetation present within this wetland is hydrophytic in nature, including bald cypress, swamp tupelo, and red maple. Soils exhibit hydric characteristics (Munsell color 10YR 2/1) and are mapped as Paxville fine sandy loam. Presence of jurisdictional hydrology was noted with hydrologic indicators observed including inundation, water marks, and presence of saturation at the soil surface.

Wetland 3 is a forested wetland that exhibits characteristics of a palustrine, forested, broad-leaved deciduous (PFO1B) wetland (Cowardin et al. 1979). Wetland 3 is located north of NC 41 near the eastern end of the project study area. The vegetation present within this wetland is hydrophytic in nature, including red maple, sweetgum, sweet pepperbush (*Clethra* sp.), and netted chain-fern (*Woodwardia* sp.). Soils exhibit hydric characteristics (Munsell color 10YR 3/1) and are mapped as Paxville fine sandy loam. Presence of jurisdictional hydrology was noted with hydrologic indicators observed including water stained leaves and saturation within 12 inches (30.5 centimeters) of the soil surface.

Wetland 4 is a forested wetland that exhibits characteristics of a palustrine, forested, broad-leaved deciduous (PFO1B) wetland (Cowardin et al. 1979). Wetland 4 is located south of NC 41 near the eastern end of the project study area. The vegetation present within this wetland is hydrophytic in nature, including red maple, sweetgum, sweet pepperbush, and netted chain-fern. Soils exhibit hydric characteristics (Munsell color 10YR 3/1) and are mapped as Paxville fine sandy loam. Presence of jurisdictional hydrology was noted with hydrologic indicators observed including water stained leaves and saturation within 12 inches (30.5 centimeters) of the soil surface.

Wetland 5 is a scrub/shrub wetland that exhibits characteristics of a palustrine, scrub/shrub, broad-leaved deciduous (PSS1B) wetland (Cowardin et al. 1979). Wetland 5 is located south of NC 41 near the eastern end of the project study area. The vegetation present within this wetland is hydrophytic in nature, including red maple, sweetgum, netted chain-fern, and cattails (*Typha latifolia*). Soils exhibit hydric characteristics

(Munsell color 2.5Y 2.5/1) and are mapped as Paxville fine sandy loam. Presence of jurisdictional hydrology was noted with hydrologic indicators observed including water marks, water stained leaves, and saturation within 12 inches (30.5 centimeters) of the soil surface.

Bridge No. 12 over the Black river was added to this project including approximately 1,000 linear feet (304.8 meters) to the project corridor. Wetland delineations were completed for the additional section of corridor.

Wetland delineations for the project study area near Bridge No. 12 over the Black River were conducted in December 2002. The delineated wetlands were verified by USACE, on April 3, 2003 (Action ID: 200200726). Six wetlands were delineated during field surveys (WA, WB, WC, WD, WE, and WF). A general description of the wetlands located within the project study area is presented below.

This delineation noted six wetland areas that are best described by the USFWS classification system (Cowardin et al. 1979) as palustrine forested wetlands. Four of these wetland areas (WA, WB, WE, and WF) can be classified as wetland type PFO1C, or coastal plain bottomland systems, which occur east of the Uwharries, especially in the western part of the Coastal Plain. Dominant species include overcup oak, Southern red oak, Shumard oak (*Quercus shumardii*), laurel oak (*Q. laurifolia*), black gum, river birch, and water hickory (*Carya aquatica*). The remaining wetland areas (WC and WD) are best described as type PFO6F, or bald cypress and blackgum wetlands, which frequently occur along coastal plain rivers and large creeks. Palustrine systems are freshwater, nontidal wetlands dominated by trees, shrubs, and persistent emergent vegetation and are typically bounded by upland areas.

Wetland A is a Coastal Plain bottomland system (PFO1B) as defined by Cowardin et al. (1979). Wetland A lies on the southern side of NC 41 approximately 500 feet (152.4 meters) west of Bridge No. 12. The vegetation consists primarily of giant cane, red maple, sweetgum, American holly, loblolly pine, red bay, and sweetbay. The soils contain low chroma soil (10 YR 2/1, black) colors and are mapped as Paxville fine sandy loam, a hydric soil in Sampson County. Water marks and drainage patterns were the primary hydrologic indicators present at the site. No surface water was observed during field investigations. Wetland A received a rating of 24 out of a possible 100, based on NCDWQ protocols.

Wetland B is a Coastal Plain bottomland system (PFO1B) as defined by Cowardin et al. (1979). The wetland lies on the northern side of NC 41 approximately 500 feet (152.4 meters) west of Bridge No. 12. The vegetation in the wetland area contains blaspheme vine, water oak, sweetgum, loblolly pine, fetterbush, American holly, and Virginia willow (*Itea virginiana*). The soils in the wetland contained low chroma soil (10 YR 2/1, black) and are mapped as Paxville fine sandy loam. Soils were saturated at 24 inches (61 cm); however, no surface water was observed during field investigations. Water marks, drainage patterns, water-stained leaves, and buttressed trees were common hydrologic

indicators throughout the wetland. Wetland B received a rating of 24 out of a possible 100, based on NCDWQ protocols.

Wetland C is a cypress-gum swamp that is best classified by Cowardin et al. (1979) as a palustrine, forested deciduous (PFO6F) wetland. Wetland C is a continuation of Wetland 1 previously delineated by ESI. Wetland C is located on the north side of NC 41 approximately 600 feet (182.9 meters) east of Bridge No. 12. The vegetation consists of bald cypress, swamp tupelo, red maple, river birch, and water oak. Soils contained low chromas and the series was determined to be Paxville fine sandy loam (Hydric-A). The wetland area contained water marks, drainage patterns, drift lines, buttressing, and sediment deposits indicative of wetland hydrologic criteria; however, no surface water was present during field surveys. Wetland C received a rating of 61 out of a possible 100, based on NCDWQ protocols.

Wetland D is also a cypress-gum swamp (PFO6F) located on the southern side of NC 41 approximately 750 feet (228.6 meters) east of Bridge No. 12. Wetland D is a continuation of Wetland 2 previously delineated by ESI. The vegetation in Wetland D is primarily comprised of bald cypress, swamp tupelo, wax-myrtle (*Myrica cerifera*), red maple, and marsh mallow (*Hibiscus moscheutos*). The soils in the wetland contain low chroma color (10 YR 2/1, black) soils and are also mapped as Paxville fine sandy loam. The hydrologic characteristics of the area include water marks, drift lines, sediment deposits, buttressing, and drainage patterns. The soil was also found to be saturated at a depth of 14 inches (35.6 centimeters) and free water was seen at 16 inches (40.6 centimeters). Wetland D received a rating of 61 out of a possible 100, based on NCDWQ protocols.

Wetland E is characterized as a coastal plain bottomland system (PFO1B) as defined by Cowardin et al. (1979). Wetland E is located approximately 100 feet (30.5 meters) east of the Black River on the southern side of NC 41. The area exhibits characteristics of an old borrow area, possibly used during constructing the NC 41. The vegetation present within this wetland area consists primarily of river birch, red maple, water oak, and willow oak. The soils contained low chroma (10 YR 7/1, light gray) values within 12 inches (30.5 centimeters) of the soil surface. The soils in this area are mapped as Chipley sand. Hydrologic indicators within the wetland area are mainly drainage patterns, drift lines, and its low-lying topography. No surface water was observed during field investigations. Wetland E received a rating of 24 out of a possible 100, based on NCDWQ protocols.

Wetland F is also characterized as a coastal plain bottomland system (PFO1B). Wetland F is located approximately 600 feet (182.9 meters) east of Bridge No. 12 on the south side of NC 41. This small wetland area is located at the base of the roadway. Vegetation in this area is sparse and mainly consists of river birch, red maple, giant cane, sweetgum, and blaspheme vine. Soils in the wetland area have low chromas (10 YR 2/1, black) and are mapped as Paxville fine sandy loam. The hydrologic indicators present at this wetland include water marks, drainage patterns, and water stained leaves. No surface

water was observed during field investigations. Wetland F received a rating of 24 out of a possible 100, based on NCDWQ protocols.

## 2. Permit Requirements

In accordance with Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344), a permit is required from the USACE for projects of this type for the discharge of dredged or fill material into Waters of the United States. The USACE issues two types of permits for these activities. A general permit may be issued on a nationwide or regional basis for a category or categories of activities when: those activities are substantially similar in nature and cause only minimal individual and cumulative environmental impacts, or when the general permit would result in avoiding unnecessary duplication or regulatory control exercised by another federal, state, or local agency. This is provided that the environmental consequences of the action are individually and cumulatively minimal. If a general permit is not appropriate for a particular activity, then an individual permit must be utilized. Individual permits are authorized on a case-by-case evaluation of a specific project involving the proposed discharges. Two permits which would likely apply to this particular project are the nationwide permit no. 23 and 33. A description of these permits is provided below.

### **Nationwide Permit No. 23.**

**Approved Categorical Exclusions:** Activities undertaken, assisted, authorized, regulated, funded, or financed, in whole or in part, by another Federal agency or department where that agency or department has determined, pursuant to the Council on Environmental Quality Regulation for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) (40 CFR part 1500 et seq.), that the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment, and the Office of the Chief of Engineers (ATTN: CECW-OR) has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination. Before to approval for purposes of this nationwide permit of any agency's categorical exclusions, the Chief of Engineers will solicit public comment. In addressing these comments, the Chief of Engineers may require certain conditions for authorization of an agency's categorical exclusions under this nationwide permit. (Sections 10 and 404)

### **Nationwide Permit No. 33.**

**Temporary Construction, Access and Dewatering:** Temporary structures, work and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites; provided that the associated primary activity is authorized by the Corps of Engineers or the U.S. Coast Guard (USCG), or for other construction activities not subject to the Corps or USCG regulations. Appropriate measures must be taken to maintain near normal downstream flows and to minimize

flooding. Fill must be of materials, and placed in a manner, that will not be eroded by expected high flows. The use of dredged material may be allowed if it is determined by the District Engineer that it will not cause more than minimal adverse effects on aquatic resources. Temporary fill must be entirely removed to upland areas, or dredged material returned to its original location, following completion of the construction activity, and the affected areas must be restored to the pre-project conditions. Cofferdams cannot be used to dewater wetlands or other aquatic areas so as to change their use. Structures left in place after cofferdams are removed require a section 10 permit if located in navigable waters of the United States. (See 33 CFR part 322). The permittee must notify the District Engineer in accordance with the "Notification" general condition. The notification must also include a restoration plan of reasonable measures to avoid and minimize adverse effects to aquatic resources. The District Engineer will add special conditions, where necessary, to ensure environmental adverse effects is minimal. Such conditions may include: Limiting the temporary work to the minimum necessary; requiring seasonal restrictions; modifying the restoration plan; and requiring alternative construction methods (e.g., construction mats in wetlands where practicable.). (Sections 10 and 404)

Section 401 of the Clean Water Act delegates authority to the states for issuing 401 water quality certification for projects that also require a federal permit. A Section 401 General Water Quality Certification is also required for any activity which may result in a discharge into "Waters of the United States" or for which an issuance of a federal Section 404 permit is required. The USACE can not issue a Section 404 permit until a Section 401 certification is issued. Certifications are administered through the North Carolina Department of Environment and Natural Resources (NCDENR). The NCDOT will coordinate with the USACE after the completion of final design to obtain the necessary permits.

The Rivers and Harbors Act of 1899 (33 U.S.C. 403) prohibits the creation of any obstruction to the navigable capacity of any Waters of the United States without approval of the USACE. Section 10 of this Act requires permits to be issued whenever Section 404 permits are issued for wetlands that are defined as navigable. Section 9 of this Act prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the United States without approval. Structures authorized by State legislatures may be built if the affected navigable waters are totally within one state, provided that the plan is approved by the USACE (33 U.S.C. 401). Under Section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without approval, and excavation or fill within navigable waters requires the approval of the USACE.

The NCDOT is subject to the NPDES stormwater permitting program for roadway construction and material storage facilities. The permit requirements include the implementation of a comprehensive stormwater management program, monitoring of the program, and annual reports to outline the program's effectiveness and direction (NCDWQ, 2003).

### 3. Mitigation

The USACE has adopted, through the Council on Environmental Quality (CEQ), a mitigation policy which embraces the concepts of “no net loss of wetlands” and sequencing. The purpose of this policy is to restore and maintain the chemical, biological, and physical integrity of “Waters of the United States,” specifically wetlands. Mitigation of wetland impacts has been defined by the CEQ to include avoidance of impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered in sequential order.

Avoidance examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOE) between the United States Environmental Protection Agency (USEPA) and the USACE, in determining “appropriate and practicable” measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practicable steps to reduce the adverse impacts to Waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Minimization typically focuses on decreasing the footprint of the proposed project through the reduction of median widths, right-of-way widths, fill slopes, and/or road shoulder widths. The following methods will be implemented to minimize adverse impacts to Waters of the United States:

- ◆ Strictly enforce Best Management Practices (BMPs) to control sedimentation during project construction.
- ◆ Minimize clearing and grubbing activity.
- ◆ Decrease or eliminate discharges into the Black River.
- ◆ Reestablish vegetation on exposed areas with judicious pesticide and herbicide management.
- ◆ Minimize “in-stream” activity.
- ◆ Use responsible litter control practices.

Compensatory mitigation is not normally considered until anticipated impacts to Waters of the United States have been avoided and minimized to the maximum extent possible. It is recognized that “no net loss of wetlands” functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required. Compensatory actions often include restoration, creation and enhancement of Waters of the United States, specifically

wetlands. Such action should be undertaken in areas adjacent to or contiguous to the discharge site.

**F. Rare and Endangered Species**

Some populations of fauna and flora have been, or are, in the process of decline due to either natural forces or other factors such as their inability to coexist with humans, habitat destruction, and competition with introduced species.

**1. Federally Protected Species**

Federal law (under the provisions of Section 7 of the Endangered Species Act (ESA) of 1973, as amended) requires that any action likely to adversely affect a species classified as federally-protected be subject to review by the USFWS. Any species with the federal classification of Endangered (E) or Threatened (T), or officially proposed for such listing, are protected under this Act. As of February 25, 2003, the USFWS identifies the following federally-listed species potentially occurring in Sampson County (Table 5). Brief descriptions and biological conclusions are given for each species immediately following the table.

<b>Table 5. Federal-Listed Species Potentially Occurring in Sampson County</b>			
Common Name	Scientific Name	Federal Listing	State Listing
American alligator	<i>Alligator mississippiensis</i>	Threatened (S/A)	Threatened
Red cockaded woodpecker	<i>Picoides borealis</i>	Endangered	Endangered
Pondberry	<i>Lindera melissifolia</i>	Endangered	Endangered

Note: S/A denotes similarity of appearance to another species

**American alligator (*Alligator mississippiensis*)**

Federal Status: THREATENED S/A

State Status: THREATENED

The American Alligator is listed as T(S/A) due to its similarity of appearance to another rare species that is listed for protection. Species listed as T (S/A) are not subject to Section 7 consultation of the Endangered Species Act. **A biological conclusion for the species is not required.**

Potential habitat for the American alligator does exist within the project study area; however, no individuals were observed during field surveys. The bridge replacements may cause temporary impacts to the alligator’s habitat, but no long-term impacts are anticipated.

**Red-cockaded woodpecker (*Picoides borealis*)**

Federal Status: ENDANGERED

State Status: ENDANGERED

This bird is a small, 7.0 to 8.0-inch (17.8 to 20.3-centimeter) tall woodpecker with a black and white barred back and conspicuous large white cheek surrounded by a black cap, nape, and throat. Males have a very small red mark at the upper edge of the white cheek and just behind the eye. The red-cockaded woodpecker (RCW) is found in open pine forests in the southeastern United States. The RCW uses open old growth stands of southern pines, particularly longleaf pine, for foraging and nesting habitat. A forested stand optimally should contain at least 50% pine and lack a thick understory. The RCW is unique among woodpeckers because it nests exclusively in living pine trees. These birds excavate nests in pines greater than 60 years old that are contiguous with open, pine dominated, foraging habitat. The foraging range of the RCW may extend 500 acres (200 hectares) and must be contiguous with suitable nesting sites.

Living pines infected with red-heart disease (*Formes pini*) are often selected for cavity excavation because the inner heartwood is usually weakened. Cavities are located from 12 to 100 feet (3.6 to 30.3 m) above ground level and below live branches. These trees can be identified by "candles," a large encrustation of running sap that surrounds the tree. Colonies consist of one to many of these candle trees. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 10-12 days later.

**Biological Conclusion:** *No Effect*

**Suitable habitat for RCW does not exist within the project area. The age and size of the pine stands within the project area are not suitable for sustaining the red-cockaded woodpecker for nesting or foraging. Proposed project construction will not impact this species.**

**Pondberry (*Lindera melissifolia*)**

Federal Status: ENDANGERED

State Status: ENDANGERED

Pondberry grows to approximately 6 feet (1.8 meters) tall, and spreads vegetatively by stolons. Pale yellow flowers appear in the spring before the leaves. The bright red, one-half-inch (12-millimeters) long, oval-shaped fruits mature in the fall. Pondberry is distinguished from the two other North American members of the genus (*Lindera benzoin* and *Lindera subcoriacea*) by its drooping, thin, membranaceous, and ovately to elliptically shaped leaves that have a strong, sassafras-like odor when crushed.

Pondberry is a deciduous shrub with a limited distribution occurring in two portions of the Southeastern United States, the Mississippi Valley and the Coastal Plain of the Carolinas (USFWS 1993). Within the two portions of its range, pondberry is known to occupy different habitats. While pondberry is known from hardwood depressional areas

with perched water tables in the Mississippi Valley, in the Carolinas pondberry occurs along margins of sink holes, ponds, and depressions in pinelands (USFWS, 1993). Within North Carolina, potential habitat for pondberry is described as: 1) Shallow ponds with a sandy substrate, especially sites containing the shrub pondspice (*Litsea aestivalis*); and 2) Carolina bays containing a combination of pond cypress (*Taxodium ascendens*) with loblolly pine and red maple.

**Biological Conclusion:** *No Effect*

**Suitable habitat for pondberry does not exist within the project study area. Surveys were conducted by Mulkey during December 2002, and by ESI, Inc. in the early part of 2002. No specimens were observed during the surveys. Proposed project construction will not impact this species.**

## 2. Federal Species of Concern

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Species designated as FSC are defined as taxa which may or may not be listed in the future. These species were formerly Candidate 2 (C2) species or species under consideration for listing for which there is insufficient information to support listing.

Some of these species are listed as Endangered, Threatened, or Special Concern by the NCNHP list of rare plant and animal species and are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. The NCNHP database showed no recorded occurrences of FSC within the project vicinity during the review of their maps on December 26, 2002 (NCNHP database updated January 2003). FSC found in Sampson County are listed in Table 6.

Table 6. Federal Species of Concern for Sampson County, North Carolina				
Common Name	Scientific Name	State Status	Preferred Habitat	Potential Habitat
<b>Vertebrates</b>				
Bachman's sparrow	<i>Aimophila aestivalis</i>	SC	Open longleaf pine forests, old fields of Coastal Plain and Piedmont.	No
Rafinesques's big-eared bat	<i>Corynorhinus rafinesquii</i>	SC (PT)*	Roosts in old buildings, hollow trees, caves, mines, and under bridges, usually near water	Yes
Southern hog-nosed snake	<i>Heterodon simus</i>	SC	Sandy woods, particularly pine-oak sandhills in Coastal Plain and Piedmont.	Yes
Mimic glass lizard	<i>Ophisaurus mimicus</i>	SC (PT)*	Pine flatwoods, savannas, pine-oak sandhills	Yes
Carolina gopher frog	<i>Rana capito capito</i>	T	Breeds in temporary fish-free pools; forages in sandy woods, especially pine-oak sandhills	No
<b>Invertebrates</b>				
American sand burrowing mayfly	<i>Dolania americana</i>	SR*	Only known NC occurrence is from the Black River [Sampson County]; not seen since 1974	Yes
<b>Vascular Plants</b>				
Butternut	<i>Juglans cinerea</i>	W5*	Cove forests, rich woods	Yes
White wicky	<i>Kalmia cuneata</i>	E-SC	Pocosins	No
Pondspice	<i>Litsea aestivalis</i>	C	Limesink ponds, other pools.	No
Carolina bogmint	<i>Macbridea caroliniana</i>	T*	Blackwater swamps, savanna/pocosin ecotones, ditches	Yes
Spring-flowering goldenrod	<i>Solidago verna</i>	T	Mesic to moist pinelands, pocosin ecotones	No
Venus flytrap	<i>Dionea muscipula</i>	C-SC	Savannas, seepage bogs, pocosin edges	No
<b>Notes:</b>				
E	Endangered	A taxon "in danger of extinction throughout all or a significant portion of its range."		
T	Threatened	A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."		
SC	Special Concern	Any species of wild animal native or once-native to North Carolina which is determined by the N.C. Wildlife Resources Commission to require monitoring but which may be taken under certain regulations.		
SR	Significantly Rare	Any species which has not been listed by the N.C. Wildlife Resources Commission as Endangered, Threatened, or Special Concern species, but which exists in the state in small numbers and has been determined by the N.C. Natural Heritage Program to need monitoring.		
C	Candidate	Species which are very rare in North Carolina and are substantially reduced in numbers by habitat destruction. They are also rare throughout their ranges and their fate depends on conservation in NC. These species are likely to merit listing as Endangered or Threatened if habitat destruction continues.		
P	Proposed	Species has been proposed by a Scientific Council as a status (Endangered, Threatened, Special Concern, Watch List, or for Delisting		
W5	Watch List	(W) Any other species believed to be rare and of conservation concern in the state but not warranting active monitoring at this time; (5) Rare because of severe decline		
*	Historic Record	The species was last observed in the county more than 50 years ago.		

## **VI. Cultural Resources**

### **A. Compliance Guidelines**

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, and with the Advisory Council on Historic Preservation's Regulations for Compliance Section 106, codified at 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places, and to afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings.

### **B. Historic Architecture**

A field survey of the Area of Potential Effects (APE) was conducted on May 2, 2002. All structures within the APE were photographed, and later reviewed by the NCDOT Architectural Historians and the State Historic Preservation Office (HPO). In a concurrence form dated October 1, 2002 the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed on or eligible for listing in the National Register of Historic Places within the APE. A copy of the concurrence form is included in the Appendix.

### **C. Archaeology**

The SHPO, in a memorandum dated March 25, 2002 stated, "There are no recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources. Therefore, we recommend an archaeological survey be conducted of the project area." An Archaeological Survey was completed by NCDOT on April 28-30, 2003. This survey was conducted in order identify and assess the presence of archaeological materials in the project area that may have been eligible for listing in the National Register of Historic Places. No further archaeological work within the APE is recommended unless design plans change prior to construction. A finding of "no historic properties affected" is, therefore, considered appropriate for this bridge replacement. In a memo dated July 25, 2003 the SHPO concurred with the recommendation of the archaeological survey. A copy of the SHPO memorandums are included in the Appendix.

## **VII. Environmental Effects**

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The project is a Federal "Categorical Exclusion" due to its limited scope and lack of significant environmental consequences.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of current NCDOT standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No significant change in land use is expected to result from construction of the project.

No adverse impact on families or communities is anticipated. Right of way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

In compliance with Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations) a review was conducted to determine whether minority or low-income populations were receiving disproportionately high and adverse human health or environmental impacts as a result of this project. The investigation determined the project would not disproportionately impact any minority or low-income populations.

No adverse effect on public facilities or services is anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

There are no publicly owned recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

The project is located in Sampson County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Parts 51 and 93 are not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

This project is an air quality "neutral" project, so it is not required to be included the regional emission analysis (if applicable) and a project level CO analysis is not required.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be substantial.

Noise levels could increase during construction but will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 772) and for air quality (1990 CAAA and NEPA) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section and the North Carolina

Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area

Sampson County is currently participating in the National Flood Insurance Regular Program. The project site on Black River is located in an approximate flood hazard zone. Attached is a Flood Hazard Boundary Map for Sampson County, Figure 5, on which are shown the approximate limits of the 100-year flood plain in the vicinity of the project. This project is not anticipated to have any adverse impacts to the existing flood plain.

On the basis of the above discussion, it is concluded that no substantial adverse environmental effects will result from implementation of the project.

### **VIII. Public Involvement**

Efforts were undertaken early in the planning process to contact local officials to involve them in the project development with scoping letters. Scoping letters were also sent to various agencies including, the US Army Corps of Engineers (COE) on October 24, 2002.

A newsletter describing the proposed project and the preferred alternative was mailed to local residents on May 13, 2003 to inform them of the project status.

### **IX. Agency Comments**

#### **U. S. Coast Guard**

Comment: The Black river is subject to tidal influence and thus considered legally navigable for Bridge Administration purposes. But this waterway also meets the criteria for advance approval waterways outlined in Title 33, CFR, Section 115.70. Therefore, an individual permit will not be required.

#### **National Marine Fisheries**

Comment: "We recommend that an Essential Fish Habitat Assessment (EFH) be included in any environmental document for these projects."

Response: Per phone conversation on January 14, 2003 with Ron Sechler, NMF, "No EFH needs to be completed for B-1382."

#### **U. S. Fish and Wildlife Services**

Comment: "The Service recommends the following general conservation measures..."

- Recommends the general conservation measures to avoid and minimize environmental impacts to fish and wildlife resources which included a general moratorium period for anadromous fish from February 15 – June 30.
- New bridges should be long enough to allow for sufficient wildlife passage along stream corridors.

Response: The Stream Crossing Guidelines for Anadromous Fish Passage will be implemented, as applicable.

**NCDENR-Division of Water Quality: No response to scoping letter.**

**NCWRC: Have not received comments from scoping letter.**

NCWRC: Comment made in NRTR,

There are three anadromous fish species of concern in the Black River (Ashley, 2003). These species are the American shad (*Alosa sapidissima*), striped bass (*Morone saxatilis*), and river herring or alewife (*Alosa pseudoharengus*). The NCWRC requests an instream construction moratorium from February 15 to August 15 to protect anadromous fish species. Copy of NCWRC letter included in appendix.

US Army Corps of Engineers (COE)

Comment: Letter dated May 9, 2002 "No information provided."

State Historic Preservation Office

Comment: "we recommend an archaeological survey be conducted of the project."

Response: An Archaeological Survey was completed by NCDOT on April 28-30, 2003. No further archaeological work within the APE is recommended unless design plans change prior to construction. A finding of "no historic properties affected" is, therefore, considered appropriate for this bridge replacement. In a memo dated July 25, 2003 the SHPO concurred with the recommendation of the archaeological survey.

Sampson County School System:

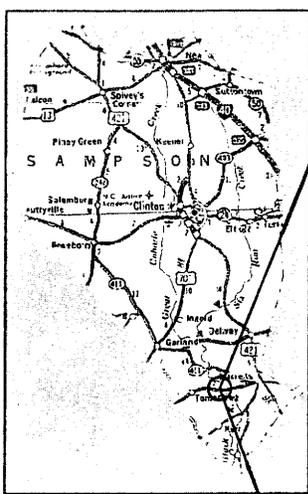
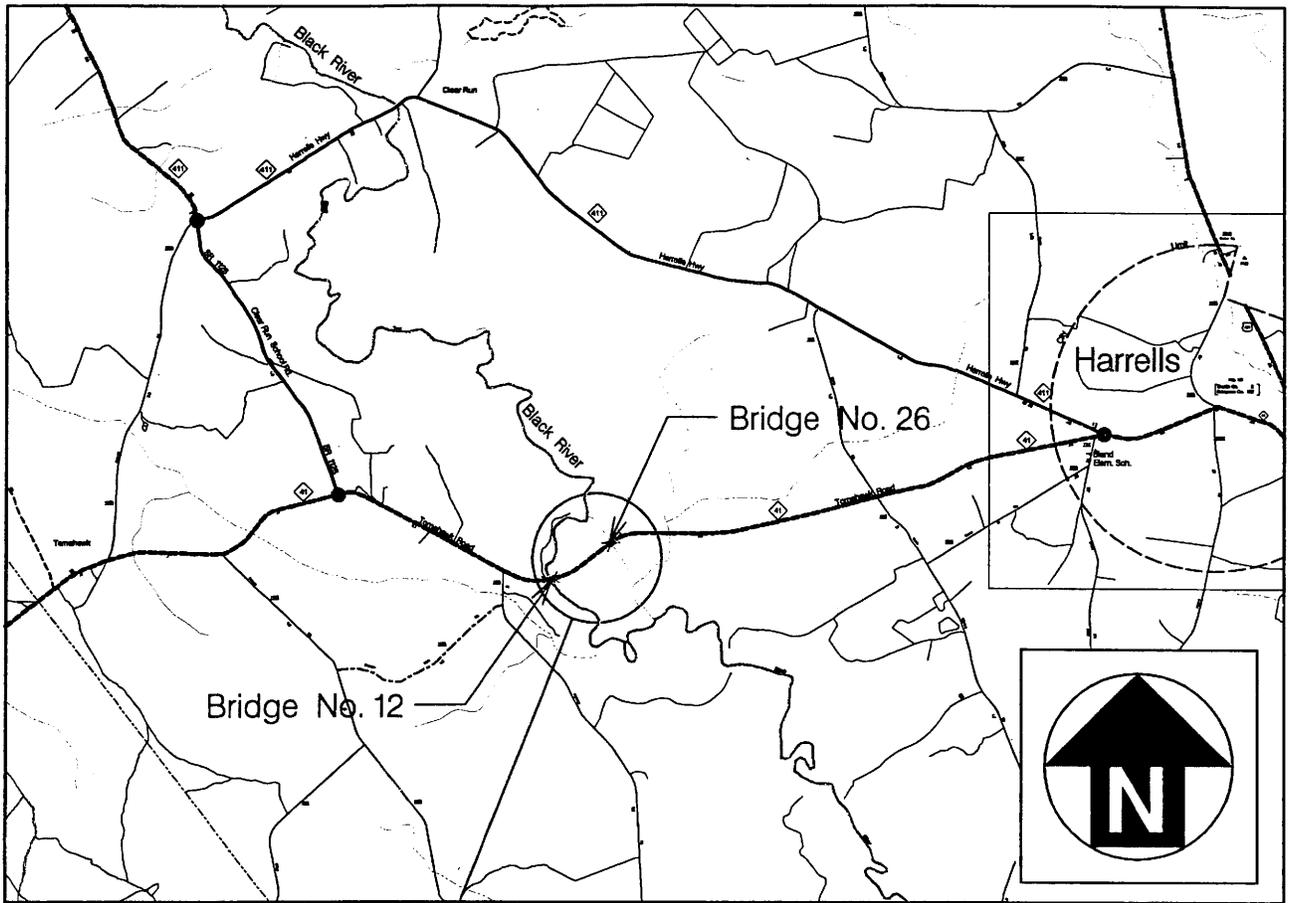
In a letter dated November 1, 2002 the TIMS Coordinator stated: "we only have 2 buses crossings on these bridges. The detour route adds about 25 minutes each way on each route crossing. This would add approximately 1 hour & 40 minutes to passenger ride time, to driver time, and of course extra fuel."

Sampson County Emergency Management

Comment; "Please be advised that this would not cause any significant impact on Sampson County."

RPO Coordinator

Comment: "There is no opposition to these projects."



PROPOSED DETOUR ROUTE


 North Carolina Department of Transportation  
 Project Development & Environmental Analysis

SAMPSON COUNTY  
 BRIDGE NO. 12 & BRIDGE NO. 26  
 OVER THE  
 BLACK RIVER & BLACK RIVER OVERFLOW  
 ON NC 41  
 B-1382

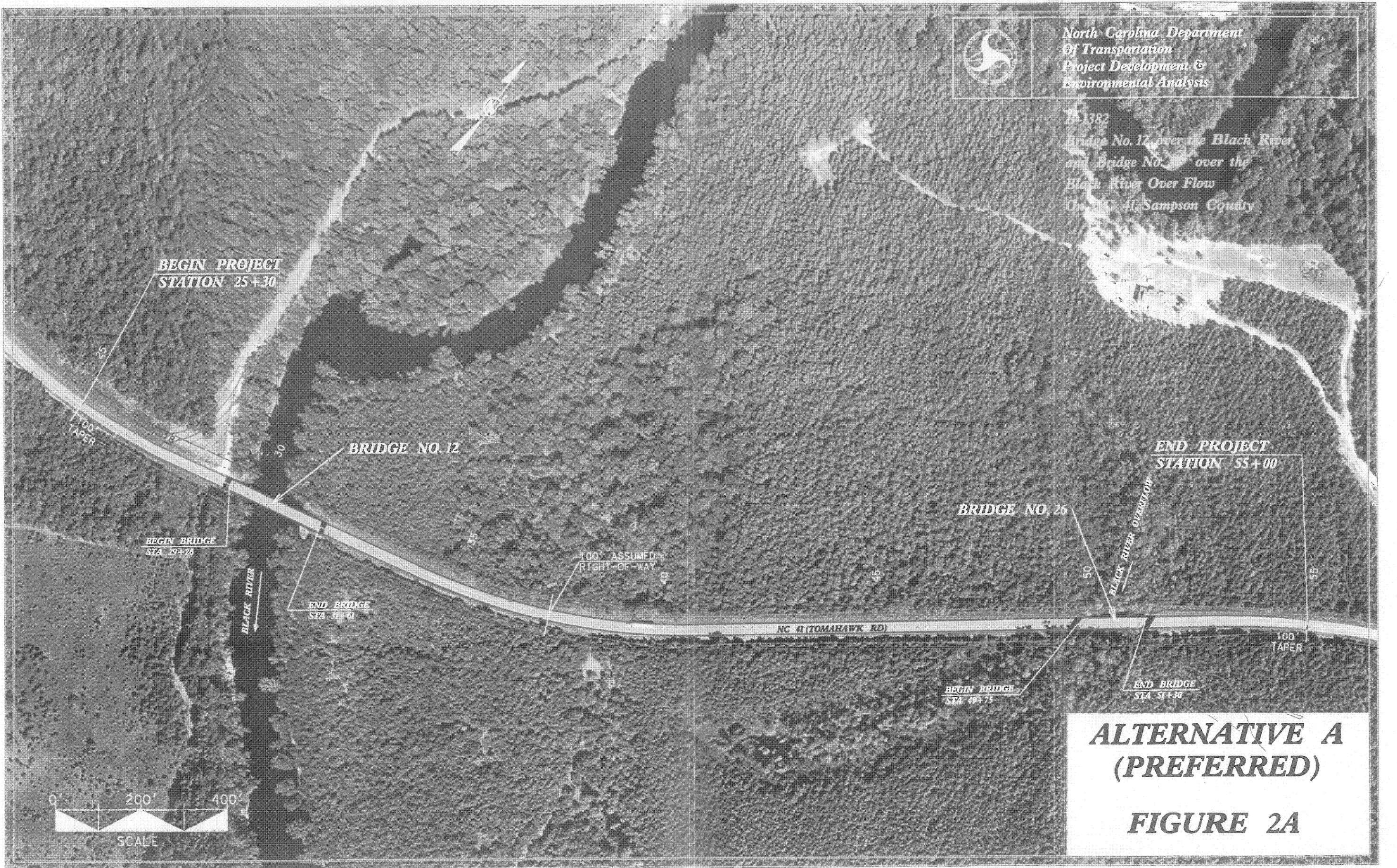
FIGURE 1





North Carolina Department  
 of Transportation  
 Project Development &  
 Environmental Analysis

HA 1382  
 Bridge No. 12 over the Black River  
 and Bridge No. 26 over the  
 Black River Over Flow  
 Over the Sampson County



**ALTERNATIVE A  
 (PREFERRED)**  
**FIGURE 2A**



North Carolina Department  
Of Transportation  
Project Development &  
Environmental Analysis

B-1382  
Bridge No. 12 over the Black River  
and Bridge No. 26 over the  
Black River over Ficus  
On NC 41, Sampson County

**BEGIN PROJECT**  
**STATION 10+00 +/-**

**BRIDGE NO. 12**

**END PROJECT**  
**STATION 54+00 +/-**

**BLACK RIVER OVERFLOW**

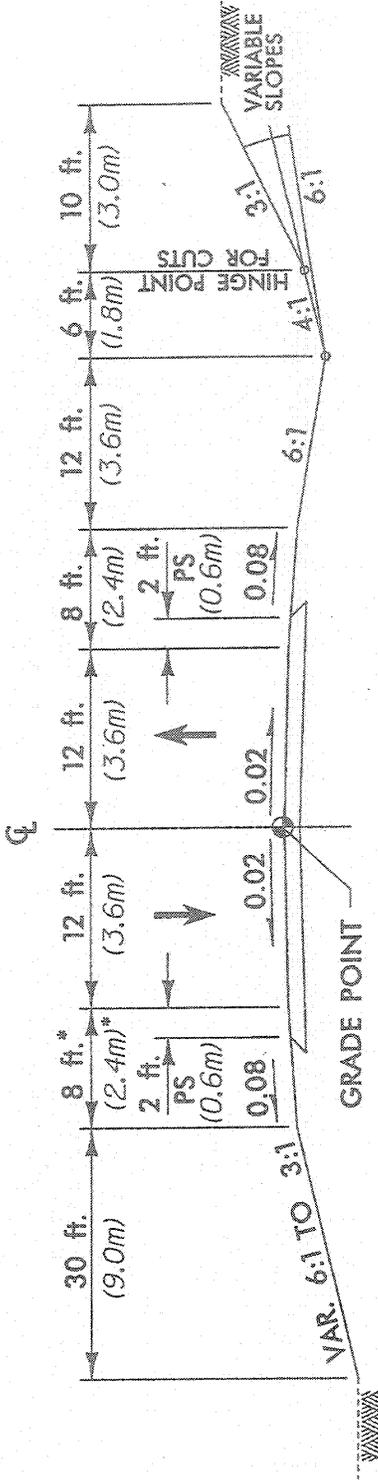
**BLACK RIVER**

**BRIDGE NO. 26**



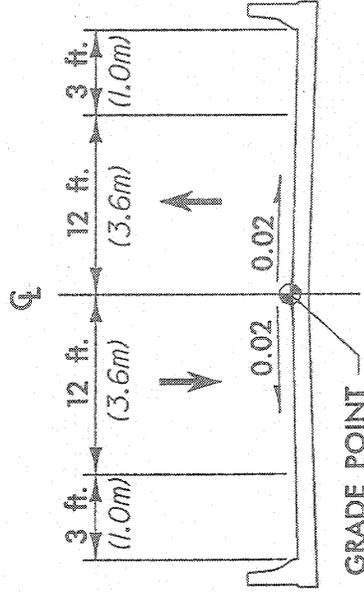
**ALTERNATIVE C**

**FIGURE 2B**



TYPICAL APPROACH SECTION  
(PROPOSED)

\* 11 ft. (3.3m) WHEN GUARDRAIL IS WARRANTED



TYPICAL BRIDGE SECTION  
(PROPOSED)

TRAFFIC DATA

(EXISTING)	2003 ADT =	2,296	LOS C
(CONST. YR.)	2005 ADT =	2,500	LOS C
(DESIGN YR.)	2025 ADT =	4,400	LOS C

DUAL 5%  
TTST 15%

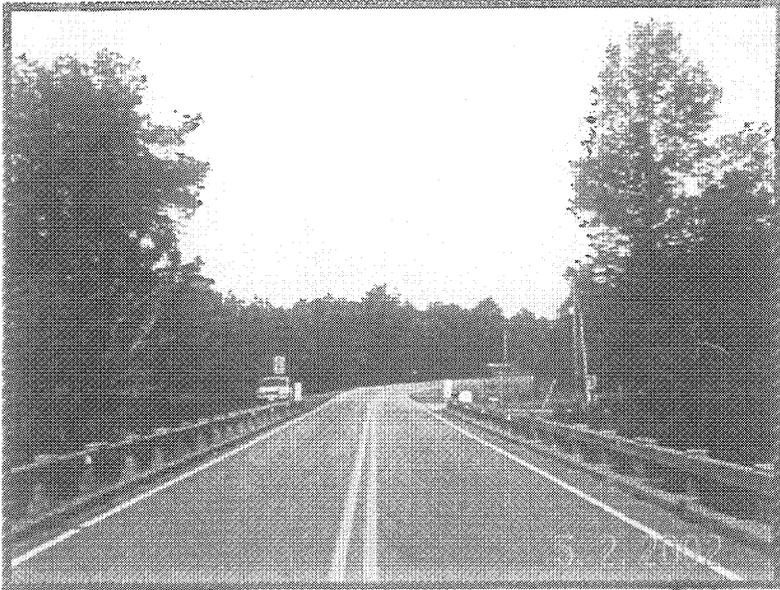
FUNCTIONAL CLASSIFICATION :  
MAJOR COLLECTOR - RURAL



North Carolina Department  
Of Transportation  
Project Development &  
Environmental Analysis

SAMPSON COUNTY  
BRIDGE NO. 26 AND NO. 12 ON NC 41  
OVER BLACK RIVER OVER FLOW  
AND BLACK RIVER  
TIP NO: B-1382

FIGURE 3



VIEW OF APPROACH LOOKING EAST FROM  
BRIDGE NO. 12



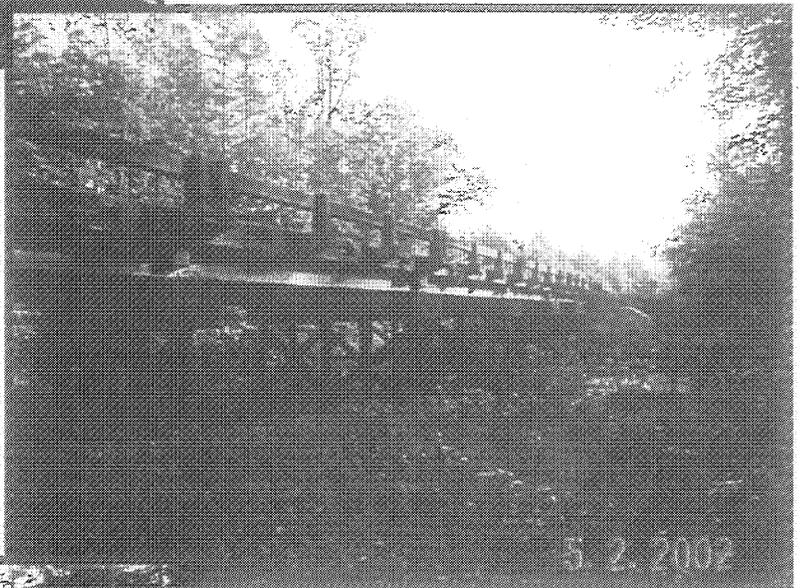
SIDE VIEW OF BRIDGE NO. 12.



VIEW OF APPROACH, LOOKING WEST  
FROM BRIDGE NO. 12



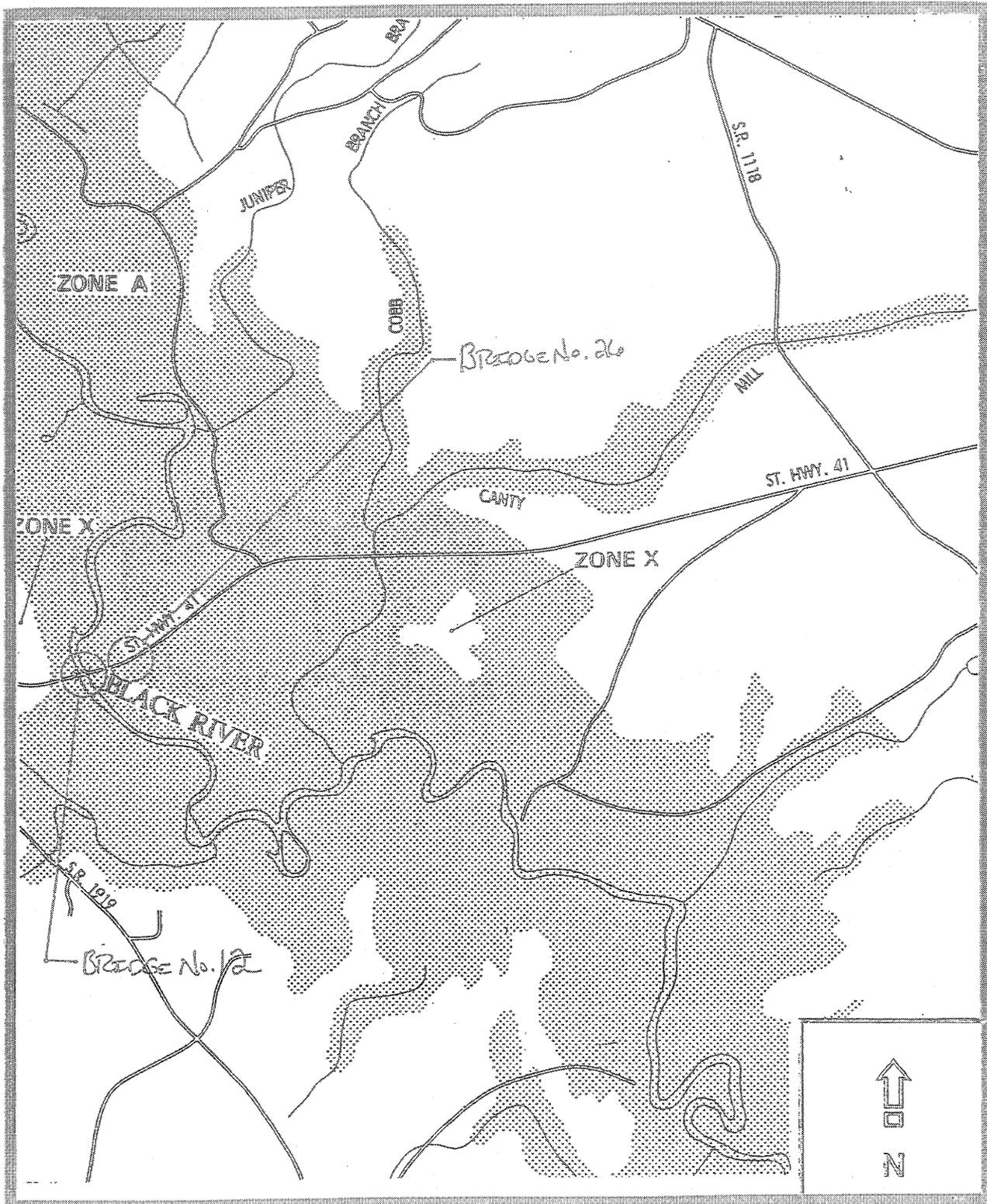
Looking west across Bridge No. 26



Profile view of Bridge No. 26



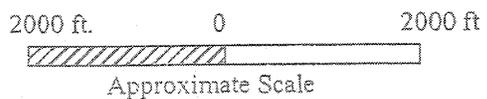
Looking East across Bridge No. 26



FEMA FLOOD STUDY 100 YEAR FLOOD PLAIN

**FIGURE 5**

Panel No. 370220 0325 B  
Date: July 16, 1991  
Street Name: NC 41  
Sampson County, North Carolina Uninc Areas

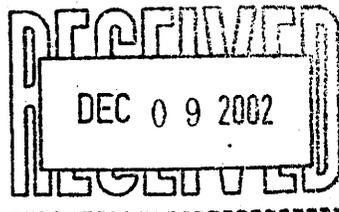


# APPENDIX



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Habitat Conservation Division  
101 Pivers Island Road  
Beaufort, North Carolina 28516-9722

December 6, 2002



Gregory J. Thorpe, Ph. D.  
Environmental Management Director  
Project Development and  
Environmental Analysis Branch  
NC Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Attention: John Wadsworth, P.E.

Dear Dr. Thorpe:

The National Marine Fisheries Service (NOAA Fisheries) has reviewed your October 24, 2002, letter requesting comments on eight bridge replacement projects included in the North Carolina Department of Transportation 2002-2008 Transportation Improvement Plan. We understand that the NCDOT is preparing the planning and environmental studies necessary to process these projects as Categorical Exclusions and offers the following comments for your consideration:

The environmental documents for these projects should address measures designed to avoid and minimize loss of open water and wetlands that support fishery resources. In addition, we support findings contained in the May 9, 2002, letter from the Wilmington District, U.S. Army Corps of Engineers, which identified the following issues and concerns as being relevant to the proposed bridge replacement projects:

- Replacing bridges with culverts
- Permanent and temporary wetland losses
- Offsite versus onsite detours
- Time of year restrictions on instream work
- Treatment of wetland restoration areas
- Existing bridge demolition and removal
- Lengthening existing bridges as a wetland restoration measure

Group I - The following projects will have no impact on resources for which NOAA Fisheries has stewardship responsibility, therefore, we have no comments:

Bridge Number	Project Number	County
No. 416	B - 4103	Davidson County
No. 28	B - 4255	Rowan County
No. 54	B - 4282	Stokes County

Group II - These projects have the potential to affect fishery resources and their associated habitat for which NOAA Fisheries has stewardship responsibility:

Bridge Number	Project Number	County
No. 12	B - 1382	Sampson County
No. 26	B - 1382	Sampson County
No. 72	B - 4031	Brunswick County
No. 24	B - 4214	Onslow County
No. 21	B - 4223	Pender County

Bridges 12, 26, 21 and 24 are located in the Cape Fear and New River basins and in areas which provide habitat for anadromous fishery resources including American shad and river herring. Bridges 72 and 24 are located in areas with brackish to saline waters that also support estuarine dependent fishery resources such as spot, Atlantic croaker, and blue crab. In addition, these projects may affect **Essential Fish Habitat** for Federally managed species such as red drum and shrimp which are managed by the South Atlantic Fishery Management Council, and summer flounder which is managed by the Mid-Atlantic Fishery Management Council. Accordingly, we recommend that an Essential Fish Habitat Assessment be included in any environmental document for these projects.

Spawning and nursery habitat for anadromous and estuarine fishes may be adversely impacted by these projects unless measures to avoid and minimize impacts to waters and wetlands are included in the project plans. Therefore, NOAA Fisheries may recommend against Department of the Army authorization of these projects under Nationwide Permit 23 unless the following recommendations are incorporated:

1. Following impact avoidance and minimization, unavoidable wetland losses shall be offset through implementation of a compensatory mitigation plan that has been approved by the Corps of Engineers and in consultation with NOAA Fisheries.
2. All construction activities in waters and associated wetlands shall utilize techniques that avoid and minimize adverse impacts to those systems and their associated flora and fauna

Although the stated purpose of the project is to improve timber production, no information is provided regarding any ongoing silviculture operation. Furthermore, there is no indication of existence of a forest management plan for the site which might indicate that the existing excavation and filling of wetlands is in compliance with the Clean Water Act (CWA), Section 404 (f)(1)(A) exemptions for silviculture.

NOAA Fisheries concludes that the loss of wetlands at this site is highly detrimental to commercially, recreationally, and ecologically important fishery resources that utilize the Newport River. Therefore, we recommend that Department of the Army authorization not be granted in this case. We further recommend that if authorization is denied, the applicant should be required to restore pre-project elevations and contours and restore, through planting and other measures, all impacted wetlands.

Thank you for the opportunity to provide these comments. Related questions or comments should be directed to the attention of Mr. Ronald S. Sechler at our Beaufort Office, 101 Pivers Island Road, Beaufort, North Carolina, or at (252) 728-5090.

Sincerely,



*AS* Andreas Mager, Jr.  
Assistant Regional Administrator  
Habitat Conservation Division

U.S. Department  
of Transportation

United States  
Coast Guard

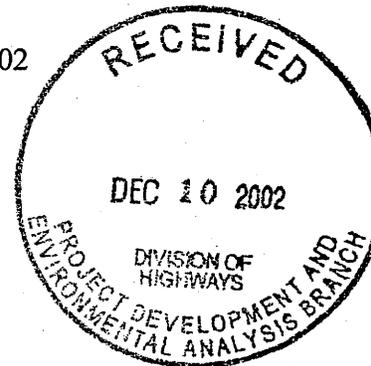


Commander  
United States Coast Guard  
Atlantic Area

431 Crawford Street  
Portsmouth, Va. 23704-5004  
Staff Symbol: (Aowb)  
Phone: (757)398-6587

Bill Goodie

16590  
03 DEC 02



Mr. Gregory J. Thorpe, Ph. D.  
North Carolina Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Mr. Thorpe:

This is in response to your letter dated October 24, 2002 requesting the Coast Guard to review the proposed projects to replace the following nine bridges: Black River Over Flow, Black River, Jenny's Branch, Beaver Dam Creek, New River, Stone Creek, N.E. Cape Fear River, Withrow Creek and Pinch Gut Creek all located throughout North Carolina.

The Coast Guard Authorization Act of 1982 exempts bridge projects from Coast Guard bridge permits when the bridge project crosses nontidal waters which are not used, susceptible to use in their natural condition, or susceptible to use by reasonable improvement as a means to transport interstate commerce. Such conditions for some of these waterways were confirmed in a telephone conversation on November 27, 2002. Due to this, the bridge projects on Beaver Dam, Withrow, and Pinch Gut Creeks and Black River Over Flow are exempt, and will not require Coast Guard Bridge Permits.

Black River, Jenny's Branch, and Stone Creek are subject to tidal influence and thus considered legally navigable for Bridge Administration purposes. But these waterways also meet the criteria for advance approval waterways outlined in Title 33, Code of Federal Regulations, Section 115.70. Advance approval waterways are those that are navigable in law, but not actually navigated by other than small boats. The Commandant of the Coast Guard has given his advance approval to the construction of bridges across such waterways; therefore, an individual permit will not be required for these projects either.

Further information is required to assess the bridge replacement projects over the New River and the North East Cape Fear River. Such information as, is the waterway affected by lunar tides? Is there any commercial navigation? What types and sizes of boats operate on the waterway? Bridge Permits may be required based on the answers to these questions. If a permit is required, a higher level of environmental review will also be required.

The fact that Coast Guard permits are not required for some of these projects does not relieve you of the responsibility for compliance with the requirements of any other Federal, State, or

16590  
03 DEC 02

local agency who may have jurisdiction over any aspect of the project. If you have any questions, please contact Terrance Knowles at the phone number or address show above.

Sincerely,

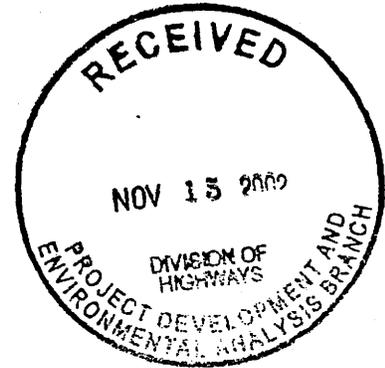


ANN B. DEATON  
Chief, Bridge Administration Section  
By direction of the Commander  
Fifth Coast Guard District



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Raleigh Field Office  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726



November 14, 2002

Dr. Gregory J. Thorpe  
Environmental Management Director  
North Carolina Department of Transportation  
Project Development and Environmental Analysis  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed replacement of several bridges in multiple counties of North Carolina. Please note that the projects listed for Davidson, Rowan and Stokes Counties in your October 24, 2002 letter were forwarded to the Service's Asheville Ecological Services Office for review. The following projects were reviewed by the Raleigh Ecological Services Office:

- B-1382, Sampson County, Replace Bridge No. 26 over the Black River Overflow and Bridge No. 12 over the Black River on NC 41;
- B-4031, Brunswick County, Replace Bridge No. 72 over Jinnys Branch (tributary to Saucepan Creek) on NC 179 (Beach Drive);
- B-4214, Onslow County, Replace Bridge No. 24 over the New River on US 17 (Marine Boulevard);
- B-4215, Onslow County, Replace Bridge No. 19 over Stone Creek on NC 210; and,
- B-4223, Pender County, Replace Bridge No. 21 over the North East Cape Fear River on NC 210.

These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

For bridge replacement projects, the Service recommends the following general conservation measures to avoid or minimize environmental impacts to fish and wildlife resources:

1. Wetland, forest and designated riparian buffer impacts should be avoided and minimized to the maximum extent practical;
2. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity via conservation easements, land trusts or by other means should be explored at the outset;
3. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;
4. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;
5. New bridges should be long enough to allow for sufficient wildlife passage along stream corridors;
6. Best Management Practices (BMP) for Protection of Surface Waters should be implemented;
7. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;
8. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. To the extent possible, piers and bents should be placed outside the bank-full width of the stream;
9. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or floodplain. If spanning the floodplain is not feasible, culverts should be installed in the floodplain portion of the approach to restore some of the hydrological functions of the floodplain and reduce high velocities of floodwaters within the affected area.

Enclosed are lists of species from Sampson, Brunswick, Onslow and Pender Counties that are on the *Federal List of Endangered and Threatened Wildlife and Plants*, as well as federal species of concern. Federal species of concern are not legally protected under the ESA and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as

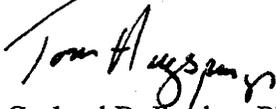
endangered or threatened. We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of your project. Information about the habitats in which these endangered and threatened species are often found is provided on our web site, <http://endangered.fws.gov>. If suitable habitat for any of the listed species exists in the project areas, biological surveys for the listed species should be conducted. All survey documentation must include survey methodologies and results.

We reserve the right to review any federal permits that may be required for these projects, at the public notice stage. Therefore, it is important that resource agency coordination occur early in the planning process in order to resolve any conflicts that may arise and minimize delays in project implementation. In addition to the above guidance, we recommend that the environmental documentation for these projects include the following in sufficient detail to facilitate a thorough review of the action:

1. A clearly defined and detailed purpose and need for the proposed project;
2. A description of the proposed action with an analysis of all alternatives being considered, including the "no action" alternative;
3. A description of the fish and wildlife resources, and their habitats, within the project impact area that may be directly or indirectly affected;
4. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory (NWI). Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers;
5. The anticipated environmental impacts, both temporary and permanent, that would be likely to occur as a direct result of the proposed project. The assessment should also include the extent to which the proposed project would result in secondary impacts to natural resources, and how this and similar projects contribute to cumulative adverse effects;
6. Design features and construction techniques which would be employed to avoid or minimize the fragmentation or direct loss of wildlife habitat and waters of the US;
7. If unavoidable wetland impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts.

The Service appreciates the opportunity to comment on these projects. Please continue to advise us during the progression of the planning processes, including your official determination of the impacts of this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

  
for Garland B. Pardue, Ph.D.  
Ecological Services Supervisor

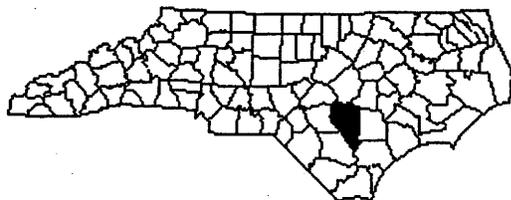
Enclosure

cc: Dave Timpy, USACE, Wilmington, NC  
John Hennessy, NCDWQ, Raleigh, NC  
David Cox, NCWRC, Northside, NC  
Chris Militscher, USEPA, Raleigh, NC

Updated: 02/25/2003

U.S. Fish &amp; Wildlife Service

## SAMPSON COUNTY



Common Name	Scientific Name	Status
<b>Vertebrates</b>		
<u>American alligator</u>	<i>Alligator mississippiensis</i>	T(S/A)
Bachman's sparrow	<i>Aimophila aestivalis</i>	FSC
"Broadtail" madtom	<i>Noturus</i> sp. 1	FSC
Carolina gopher frog	<i>Rana capito capito</i>	FSC
Mimic glass lizard	<i>Ophisaurus mimicus</i>	FSC*
Rafinesque's big-eared bat	<i>Corynorhinus (=Plecotus) rafinesquii</i>	FSC**
<u>Red-cockaded woodpecker</u>	<i>Picoides borealis</i>	Endangered
Southern hognose snake	<i>Heterodon simus</i>	FSC*
<b>Invertebrates</b>		
American sand burrowing mayfly	<i>Dolania americana</i>	FSC
<b>Vascular Plants</b>		
Butternut	<i>Juglans cinerea</i>	FSC
Carolina bogmint	<i>Macbridea caroliniana</i>	FSC
Long beach seedbox	<i>Ludwigia brevipes</i>	FSC
<u>Pondberry</u>	<i>Lindera melissifolia</i>	Endangered
Pondspice	<i>Litsea aestivalis</i>	FSC
Spring-flowering goldenrod	<i>Solidago verna</i>	FSC
Venus flytrap	<i>Dionea muscipula</i>	FSC
<b>Nonvascular Plants</b>		
A liverwort	<i>Cylindrocolea andersonii</i>	FSC*

## KEY:

Status	Definition
<b>Endangered</b> -	A taxon "in danger of extinction throughout all or a significant portion of its range."
<b>Threatened</b> -	A taxon "likely to become endangered within the foreseeable future throughout all or a significant portion of its range."

- Proposed -** A taxon proposed for official listing as endangered or threatened.
- C1 -** A taxon under consideration for official listing for which there is sufficient information to support listing.
- FSC -** A Federal species of concern--a species that may or may not be listed in the future (formerly C2 candidate species or species under consideration for listing for which there is insufficient information to support listing).
- T(S/A) -** Threatened due to similarity of appearance (e.g., American alligator)--a species that is threatened due to similarity of appearance with other rare species and is listed for its protection. These species are not biologically endangered or threatened and are not subject to Section 7 consultation.
- EXP -** A taxon that is listed as experimental (either essential or nonessential). Experimental, nonessential endangered species (e.g., red wolf) are treated as threatened on public land, for consultation purposes, and as species proposed for listing on private land.

Species with 1, 2, 3, or 4 asterisks behind them indicate historic, obscure, or incidental records.

\*Historic record - the species was last observed in the county more than 50 years ago.

\*\*Obscure record - the date and/or location of observation is uncertain.

\*\*\*Incidental/migrant record - the species was observed outside of its normal range or habitat.

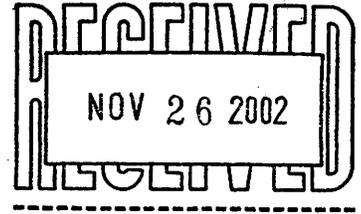
\*\*\*\*Historic record - obscure and incidental record.

For additional information regarding this Web page, contact Mark Cantrell, in Asheville, NC, at [mark\\_a\\_cantrell@fws.gov](mailto:mark_a_cantrell@fws.gov)

Visit the [North Carolina ES Homepage](#)

Visit the [U.S. Fish and Wildlife Service Home Page](#)

Keywords={same keywords listed above - used for search tools}



May 9, 2002

Regulatory Division

Action ID No. 200101169, 200101170, 200101171, 200101172, 200101174, 200101175, and 200200726.

Mr. William D. Gilmore, P.E., Manager  
Project Development & Environmental Analysis  
1548 Mail Service Center  
Raleigh, N.C. 27699-1548

Dear Mr. Gilmore:

Reference your letters February 18, 2002, March 1, 2002, March 18, 2002, and April 24, 2002 regarding our scoping comments on the following proposed bridge replacement projects:

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4272, Bridge No. 191 on SR 1845 over Great Coharie Creek, Sampson County, Action ID 200101170.
3. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.
4. TIP Project No. B-4223, Bridge No. 21 on NC 210 over NE Cape Fear River, Pender County, Action ID 200101172.
5. TIP Project No. B-4214, Bridge No. 24 on US 17 over New River, Onslow County, Action ID 200101174.
6. TIP Project No. B-4215, Bridge No. 19 on NC 210 over Stones Creek, Onslow County, Action ID 200101175.

~~7. TIP Project No. B-1382, Action ID 200200726, no information provided.~~

~~Based on the information provided for each project in the referenced letter (except~~  
~~TIP Project No. B-1382)~~ and jurisdictional delineations conducted on October 9, 2001, it appears that each proposed bridge replacement project may impact jurisdictional wetlands. Department of the Army (DA) permit authorization, pursuant to Section 404 of the Clean Water Act of 1977, as amended, will be required for the discharge of excavated or fill material in waters of the United States or any adjacent wetlands in conjunction with these projects, including disposal of construction debris. Specific permit requirements will depend on design of the projects, extent of fill work within the waters of the United States,

including wetlands, construction methods, and other factors.

Although these projects may qualify as a Categorical Exclusion, to qualify for nationwide permit authorization under Nationwide Permit #23, the project planning report should contain sufficient information to document that the proposed activity does not have more than a minimal individual or cumulative impact on the aquatic environment. All activities, including temporary construction, access, and dewatering activities, should be included in the project planning report. Our experience has shown that replacing bridges with culverts often results in sufficient adverse impacts to consider the work as having more than minimal impacts on the aquatic environment. Accordingly, the following items need to be addressed in the project planning report:

a. The report should contain the amount of permanent and temporary impacts to waters and wetlands as well as a description of the type of habitat that will be affected by the proposed project.

b. Off-site detours are always preferable to on-site (temporary) detours in wetlands. If an on-site detour is the recommended action, justification should be provided that demonstrates that alternatives with lower wetland impacts are not practicable. On-site detours, unless constructed on a spanning structure or on a previous detour that was used in a past construction activity, can cause permanent wetland impacts due to sediment consolidation resulting from the on-site detour itself and associated heavy equipment. Substantial sediment consolidation in wetland systems may in turn cause fragmentation of the wetland and impair the ecological and hydrologic functions of the wetland. Thus, on-site detours constructed in wetlands can result in more than minimal wetland impacts. These types of wetland impacts will be considered as permanent wetland impacts. Please note that an onsite detour constructed on a spanning structure can potentially avoid permanent wetland impacts and should be considered whenever an on-site detour is the recommended action. For projects where a spanning structure is not feasible, the NCDOT should investigate the existence of previous onsite detours at the site that were used in previous construction activities. These areas should be utilized for onsite detours whenever possible to minimize wetland impacts.

For proposed projects and associated on-site detours that cause minimal losses of wetlands, an approved wetland restoration and monitoring plan will be required prior to issuance of a DA nationwide or Regional general permit. For proposed projects and associated on-site detours that cause significant wetland losses, an individual DA permit and a compensatory mitigation proposal for the unavoidable wetland impacts may be required.

In view of our concerns related to onsite detours constructed in wetlands, a cursory determination was made on the potential for sediment consolidation due to an onsite

detour at each of the proposed project sites. Based on these inspections, potential for sediment consolidation in wetlands exists at several of the proposed projects. Therefore, it is recommended that geotechnical evaluations be conducted at each project site to estimate the magnitude of sediment consolidation that can occur due to an on-site detour and the amount of undercutting that may be necessary. The results of this evaluation should be provided in the project planning report. Based on our field inspections, we strongly recommend that geotechnical evaluations be conducted at each of referenced proposed project sites. The following projects are considered as "red " projects as described in your letter of February 18, 2002.

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.

c. Project commitments should include the removal of all temporary fills from waters and wetlands and "time-of-year" restrictions on in-stream work if recommended by the NC Wildlife Resources Commission. In addition, if undercutting is necessary for temporary detours, the undercut material should be stockpiled on an upland site and later used to restore the site.

d. All restored areas should be planted with endemic vegetation including trees, if appropriate. For projects proposing a temporary onsite detour in wetlands, the entire detour area, including any previous detour from past construction activities, should be removed in its entirety.

e. The report should provide an estimate of the linear feet of new impacts to streams resulting from construction of the project.

f. If a bridge is proposed to be replaced with a culvert, NCDOT must demonstrate that the work will not result in more than minimal impacts on the aquatic environment, specifically addressing the passage of aquatic life including anadromous fish. The work must also not alter the stream hydraulics and create flooding of adjacent properties or result in unstable stream banks. In addition, the report should address the impacts that the culvert would have on recreational navigation.

g. The report should discuss and recommend bridge demolition methods and shall include the impacts of bridge demolition and debris removal in addition to the impacts of constructing the bridge. The report should also incorporate the bridge demolition policy recommendations pursuant to the NCDOT policy entitled "Bridge Demolition and Removal in Waters of the United States" dated September 20, 1999.

h. Lengthening existing bridges can often benefit the ecological and hydrological functions of the associated wetlands and streams. Most bridge approaches are connected to earthen causeways that were built over wetlands and streams. Replacing these causeways with longer bridges would allow previously impacted wetlands to be restored. In an effort to encourage this type of work, mitigation credit for wetland restoration activities can be provided to offset the added costs of lengthening an existing bridge. Of the referenced project sites, TIP Project No. 4031 connects to a 170 foot long causeway through coastal wetlands. It is recommended that this causeway be replaced with a bridge and associated wetland areas be restored.

i. Based on the information provided and the recent field investigations of the referenced project sites, the apparent level of wetland impacts and scope of the following projects warrant coordination pursuant to the integrated NEPA/Section 404-merger agreement:

1. TIP Project No. B-4268, Bridge No. 150 on SR 1006 over Little Coharie Creek, Sampson County, Action ID 200101169.
2. TIP Project No. B-4031, Bridge No. 72 on NC 179 over Jinnys Branch, Brunswick County, Action ID 200101171.

j. You have requested that the referenced projects be given a designation of "Red", "Green" or "Yellow" as explained in your letters. Projects designated as "Red" by our office are specified above. The remaining projects will be considered "yellow" projects. We believe that the "green" designation is misleading and should not be used.

Should you have any questions please call Mr. David L. Timpy at the Wilmington Field Office at 910-251-4634.

Sincerely,

E. David Franklin  
NCDOT Team Leader

Mr. Ron Sechler  
National Marine Fisheries Service  
Pivers Island

Beaufort, North Carolina 28516

Mr. John Dorney  
NCDENR-DWQ  
Wetlands Section  
1621 Mail Service Center  
Raleigh, NC 27699-1621

Mr. Doug Huggett  
North Carolina Division of  
Coastal Management  
1638 Mail Service Center  
Raleigh, North Carolina 27699-1638

Mr. David Cox  
Highway Coordinator  
North Carolina Wildlife Resources Commission  
1141 I-85 Service Road  
Creedmoor, North Carolina 27522

Mr. Howard Hall  
United States Fish & Wildlife Service  
Fish and Wildlife Enhancement  
Post Office Box 33726  
Raleigh, North Carolina 27636-3726

Mr. Allen Pope, PE  
North Carolina Department of Transportation  
Division 3  
124 Division Drive  
Wilmington, North Carolina 28401

Ms. Kathy Matthews  
Wetlands Regulatory Section  
USEPA/EAB  
980 College Station Road  
Athens, GA 30605



⊠ North Carolina Wildlife Resources Commission ⊠

Charles R. Fullwood, Executive Director

MEMORANDUM

March 25, 2003

FROM: Keith W. Ashley *KW*  
Division of Inland Fisheries

TO: Cindy S. Carr  
Barbara H. Mulkey Engineering, Inc.

SUBJECT: Request for information regarding essential fish (EFH) and anadromous fish spawning season work moratoriums for bridge replacements No. 12 and 26 over Black River at NC 41, Sampson County, North Carolina.

In response to your request for information regarding essential fish (EFH) and anadromous fish spawning season work moratoriums for bridge replacements No. 12 and 26 over Black River at NC 41, Sampson County, North Carolina, we would request that an anadromous fish spawning season work moratorium of February 15<sup>th</sup> through August 15<sup>th</sup> be implemented for any planned instream construction.

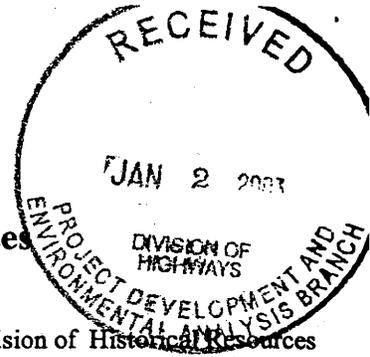
Measures to avoid or minimize impacts to sensitive resources, including wetlands, should be implemented throughout facility planning and construction. Where impacts to wetlands are unavoidable, the N. C. Wildlife Resources Commission will recommend mitigation for the losses. Professional wildlife and fisheries biologists should be consulted if aquatic, wetland, or terrestrial habitats are affected by this type of development.

Thank you for the opportunity to comment during the early planning stages of this project. If you have questions regarding these comments, please call me at (910) 866-4250.

cc: Bennett Wynne



**North Carolina Department of Cultural Resources**  
**State Historic Preservation Office**  
 David L. S. Brook, Administrator



Michael F. Easley, Governor  
 Lisbeth C. Evans, Secretary  
 Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources  
 David J. Olson, Director

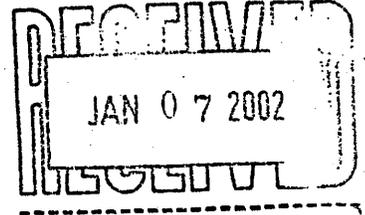
December 20, 2002

**MEMORANDUM**

**TO:** Greg Thorpe, Manager  
 Project Development and Environmental Analysis Branch  
 NCDOT Division of Highways

**FROM:** David Brook *DSB for David Brook*

**SUBJECT:** Replacement of Bridge No. 26 over the Black River Overflow, and  
 Bridge No. 12 over the Black River on NC 41, B-1382  
 Sampson County, ER02-8606



Thank you for your letter of October 24, 2002, concerning the above project.

Please see the attached March 25, 2002, memorandum outlining our recommendations for surveys.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

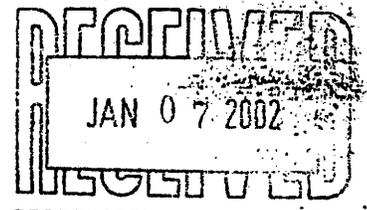
Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

DB:doc

Attachment

cc: Mary Pope Furr  
 Matt Wilkerson

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 • 733-8653
Restoration	515 N. Blount St, Raleigh, NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 • 715-4801
Survey & Planning	515 N. Blount St Raleigh, NC	4618 Mail Service Center Raleigh 27699-4618	(919) 733-4763 • 715-4801



North Carolina Department of Cultural Resources  
State Historic Preservation Office

David L. S. Brook, Administrator

Division of Historical Resources  
David J. Olson, Director

Michael F. Easley, Governor  
Isbeth C. Evans, Secretary  
Jeffrey J. Crow, Deputy Secretary  
Office of Archives and History

March 25, 2002

MEMORANDUM

TO: William D. Gilmore, Manager  
Project Development and Environmental Analysis Branch  
Division of Highways  
Department of Transportation

FROM: David Brook

SUBJECT: Replacement of Bridge 26 on NC 41, B-1382, Sampson County, ER 02-8606

We appreciate the project being plotted on the USGS quadrangle. This facilitated our review.

There are no recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources. Therefore, we recommend an archaeological survey be conducted of the projected area.

The principal investigator for the project will need to apply for a permit in accordance with the North Carolina Archaeological Resources Protection Act (ARPA) since the project is on state-owned or controlled property. Applications for permits may be obtained from the Office of State Archaeology, 4619 Mail Service Center, Department of Cultural Resources, Raleigh, NC 27699-4619. Issuance of an ARPA permit may take up to thirty days, so applications should be submitted well in advance of the planned archaeological investigation.

Because the Department of Transportation is in the process of surveying and evaluating the National Register eligibility of all of its concrete bridges, we are unable to comment on the National Register eligibility of the subject bridge. Please contact Mary Pope Furr, in the Architectural History Section, to determine if further study of the bridge is needed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Matt Wilkerson, NCDOT  
Claggett/Clauser  
County

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St. Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 • 733-8653
Operations	515 N. Blount St. Raleigh, NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 • 715-4801
Policy & Planning	515 N. Blount St. Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 • 715-4801



North Carolina Department of Cultural Resources  
State Historic Preservation Office

David L. S. Brook, Administrator

*Goodwin  
PEF*

Michael F. Easley, Governor  
Lisbeth C. Evans, Secretary  
Jeffrey J. Crow, Deputy Secretary  
Office of Archives and History  
March 25, 2002

Division of Historical Resources  
David J. Olson, Director

MEMORANDUM

TO: William D. Gilmore, Manager  
Project Development and Environmental Analysis Branch  
Division of Highways  
Department of Transportation

MAR 28 2002

FROM: David Brook

SUBJECT: Replacement of Bridge 26 on NC 41, B-1382, Sampson County, ER 02-8606

We appreciate the project being plotted on the USGS quadrangle. This facilitated our review.

There are no recorded archaeological sites within the project boundaries. However, the project area has never been systematically surveyed to determine the location or significance of archaeological resources.

~~Therefore we recommend an archaeological survey be conducted of the projected area.~~

The principal investigator for the project will need to apply for a permit in accordance with the North Carolina Archaeological Resources Protection Act (ARPA) since the project is on state-owned or controlled property. Applications for permits may be obtained from the Office of State Archaeology, 4619 Mail Service Center, Department of Cultural Resources, Raleigh, NC 27699-4619. Issuance of an ARPA permit may take up to thirty days, so applications should be submitted well in advance of the planned archaeological investigation.

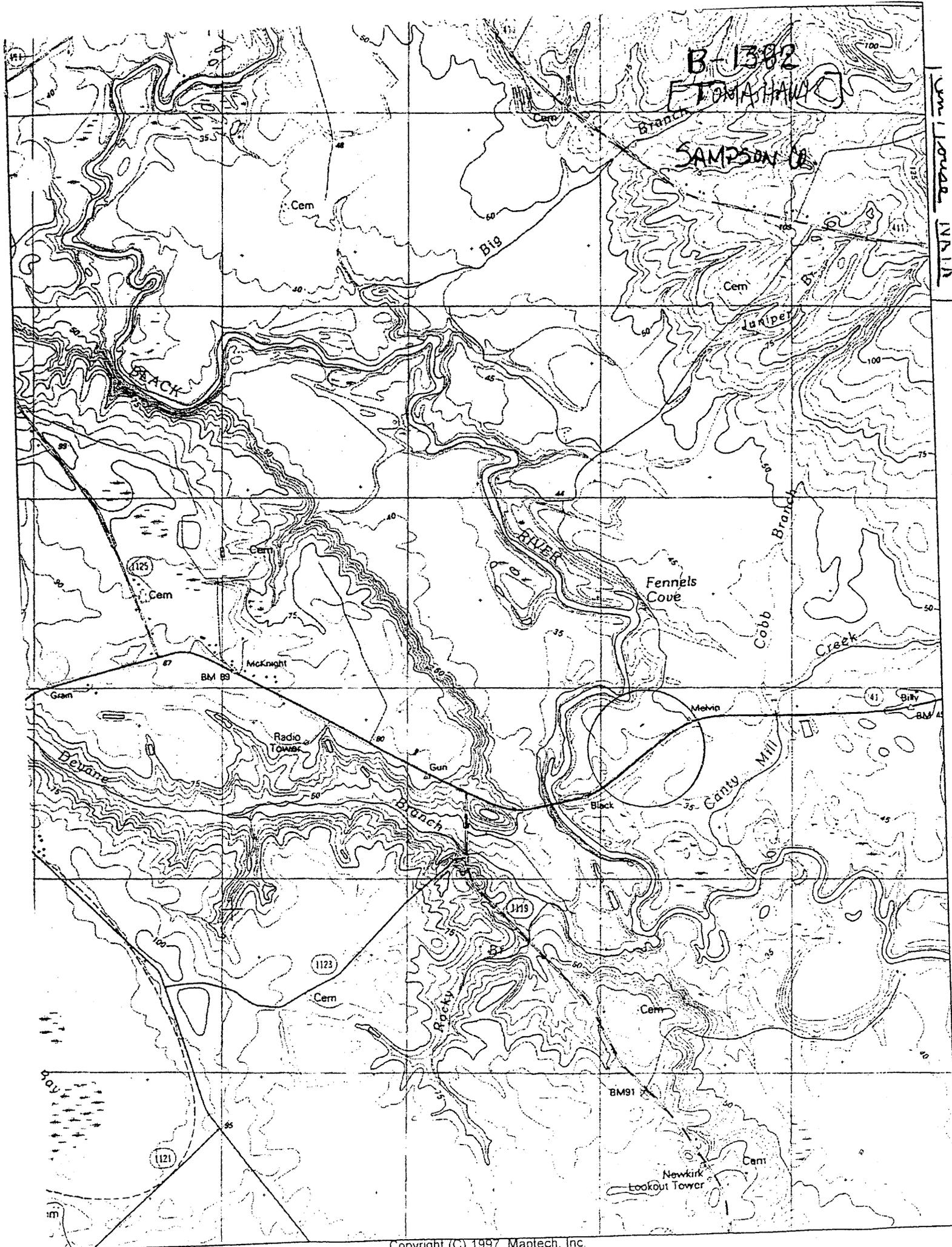
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The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Matt Wilkerson, NCDOT

	Location	Mailing Address	Telephone/Fax
Administration	507 N. Blount St, Raleigh, NC	4617 Mail Service Center, Raleigh 27699-4617	(919) 733-4763 • 733-8653
Restoration	515 N. Blount St, Raleigh, NC	4613 Mail Service Center, Raleigh 27699-4613	(919) 733-6547 • 715-4801
Survey & Planning	515 N. Blount St, Raleigh, NC	4618 Mail Service Center, Raleigh 27699-4618	(919) 733-4763 • 715-4801



**CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR  
THE NATIONAL REGISTER OF HISTORIC PLACES**

*Project Description:* Replace Bridge Nos. 12 & 26 on NC 41 over Black River and overflow

On 10/01/2002, representatives of the

- North Carolina Department of Transportation (NCDOT)  
 Federal Highway Administration (FHWA)  
 North Carolina State Historic Preservation Office (HPO)  
 Other

Reviewed the subject project at

- Scoping meeting  
 Historic architectural resources photograph review session/consultation  
 Other

All parties present agreed

- There are no properties over fifty years old within the project's area of potential effects.
- There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the property identified as Bridge NOS. 12 & 26 is considered not eligible for the National Register and no further evaluation of it is necessary.
- There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Mary Pope  
 Representative, NCDOT

10.01.2002  
 Date

R. H. A.  
 FHWA, for the Division Administrator, or other Federal Agency

10/1/02  
 Date

David Stain  
 Representative, HPO

10-01-2002  
 Date

David Hood  
 State Historic Preservation Officer

10/1/02  
 Date

If a survey report is prepared, a final copy of this form and the attached list will be included.



CITIZENS PARTICIPATION  
RECEIVED  
JUL 28 2003

**North Carolina Department of Cultural Resources**  
**State Historic Preservation Office**  
David L. S. Brook, Administrator

Michael F. Easley, Governor  
Lisbeth C. Evans, Secretary  
Jeffrey J. Crow, Deputy Secretary

Division of Historical Resources  
David J. Olson, Director

July 25, 2003

MEMORANDUM

TO: Gregory J. Thorpe, Ph.D., Manager  
Project Development and Environmental Analysis Branch  
Division of Highways  
Department of Transportation

FROM: David Brook *DLB* *David Brook*  
Deputy State Historic Preservation Officer

SUBJECT: Archaeological Survey Report: Replacement of Bridge No. 12 on NC 41 over the Black River and the Replacement of Bridge No. 26 on NC 41 over the Black River Overflow, Sampson County, North Carolina, TIP No. B-1382, Federal Aid No. BRSTP-004(8), State Project No. 8.1281501, Division 3, ER 02-8606

Thank you for your letter of May 28, 2003, transmitting the archaeological survey report by Mr. Paul Mohler of the Division of Highways, Project Development and Environmental Analysis Branch, for the above project.

Overall, the report is clear, concise, and well written. During the course of the survey, one insignificant archaeological site, 31SP369, was discovered. The report author has recommended that no further archaeological investigations are necessary or warranted for this project. We concur with this recommendation since the project will not involve any significant archaeological resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

cc: *Paul Mohler, NCDOT*

[www.hpo.dcr.state.nc.us](http://www.hpo.dcr.state.nc.us)

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

MID-CAROLINA COUNCIL OF GOVERNMENTS  
RURAL TRANSPORTATION PLANNING ORGANIZATION

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**MEMORANDUM**

**To:** John Blanton, Sampson County Commissioner  
Roland Hall, Roseboro Town Council

**CC:** Jim Caldwell, Mid-Carolina Executive Director

**From:** Tammye Rey, Mid-Carolina RPO Coordinator <sup>A</sup>

**Date:** December 2, 2002

**Re:** Request for comments on Bride Replacement Project B-1382

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The attached letter is a request from NC DOT to receive comments concerning the aforementioned bridge replacement project. Please take this opportunity to review the project summary. If you would like to provide any comments, please call or submit them in writing to Mr. Caldwell by Monday, December 9. If you have any questions feel free to call.

Thank you.

"PROGRESS THROUGH INTERGOVERNMENTAL COOPERATION"

**Jim Caldwell**

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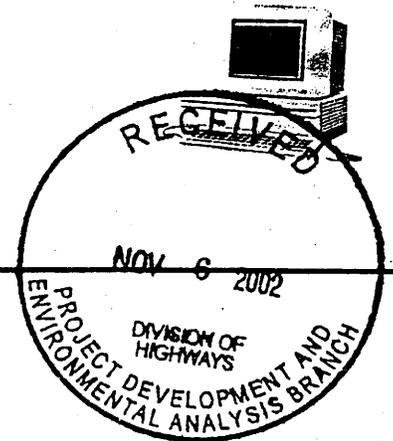
**From:** Roland <rhall@intrstar.net>  
**To:** Jim Caldwell <jcaldwell@fayetteville.net>  
**Sent:** Thursday, December 05, 2002 3:59 PM  
**Subject:** Bridge Replacement Projects B-1382

Mr. Caldwell: It does not appear the proposed projects will have any adverse impact. The projects will enhance and improve auto and heavy truck traffic safety conditions in the region. There is no opposition to these proposed projects that I am aware of.

Roland Hall



*Ricky T. Carter  
TIMS Coordinator  
Sampson County Schools  
1030 Indian Town Rd.  
Clinton, NC 28328  
592-1401 x 20168  
E-Mail [rcarter@sampson.k12.nc.us](mailto:rcarter@sampson.k12.nc.us)*



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November 1, 2002

Mr. Gregory Thorpe, Ph. D.  
Environmental Management Director  
NC Department of Transportation

Subject: Comments on B-1382, Sampson County, Replace Bridge No. 26 and Bridge No. 12 over Black River on NC 41.

Dear Mr. Thorpe:

I am writing concerning this bridge replacement and the effect on school bus routes in this area. At the present time, we only have 2 buses crossing on these bridges. The detour route would add about 25 minutes each way on each route crossing. This would add approximately 1 hour and 40 minutes to passenger ride time, to driver time, and of course extra fuel.

However, we know that changes must be made. We will certainly be glad to do whatever we must in the time of replacement of the bridges.

I hope this information helps in some small way. If I can be of any further service, please feel free to contact me.

Sincerely,

Ricky Carter  
TIMS Coordinator



**SAMPSON COUNTY  
EMERGENCY  
MANAGEMENT  
SERVICES**

**RAY HONRINE  
DIRECTOR  
(910) 592-8996**

POST OFFICE BOX 8, CLINTON, NORTH CAROLINA 28329-0008

MEMORANDUM:

TO: Mr. Davis Moore

FROM: Ray Honrine, <sup>RH/dhd</sup> Emergency Management

DATE: December 7, 2001

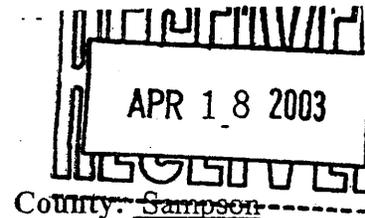
SUBJECT: Replacement of Bridge No. 26 on NC 41 over Black River Overflow,  
Sampson County, Federal Aid Project No. BRSTP-41(8), State Project No.  
8.1281501, TIP No. B-1382

Please be advised that this would not cause any significant impact on Sampson County.

RH/dhd

U.S. ARMY CORPS OF ENGINEERS  
Wilmington District

Action ID: 200200726



Notification of Jurisdictional Determination

Property

Owner:

Mr. William D. Gilmore, P.E., Manager  
Project Development & Environmental Analysis  
1548 Mail Service Center  
Raleigh, N.C. 27699-1548

Authorized Agent:

Mr. Tom Barrett ✓  
Barbara H. Mulkey Engineering, INC  
6750 Tryon Road  
Cary, North Carolina 27511

Size and Location of Property (waterbody, Highway name/number, town, etc.): TIP Project No. B-1382, Bridge No. 26 on NC 41 over the Black River and Bridge No.12 on NC 41 over Black River Overflow, Sampson County, North Carolina.

Basis for Determination: Onsite field inspection of selected wetland sites.

Indicate Which of the Following apply:

- There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.
- On April 3, 2003, the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and/or its representatives for the subject NCDOT project. A select number of wetland sites were inspected for the proposed project and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation as depicted in the May 16, 2002 letter submitted by Environmental Services, Inc and in the letter dated February 11, 2002 submitted by Barbara H. Mulkey Engineering, INC can be relied on for planning purposes and impact assessment.
- The wetlands on your lot have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

Placement of dredged or fill material in wetlands on this property without a Department of the Army permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Mr. Dave Timpy at 910-251-4634.

Project Manager Signature

Date April 10, 2003

Expiration Date April 10, 2008

U.S. ARMY CORPS OF ENGINEERS  
Wilmington District

Action ID: 200200726

County: Sampson

Notification of Jurisdictional Determination

Property

Owner:

Mr. William D. Gilmore, P.E., Manager  
Project Development & Environmental Analysis  
1548 Mail Service Center  
Raleigh, N.C. 27699-1548

Authorized Agent:

Josh Witherspoon ✓  
Environmental Services, INC  
524 New Hope Road  
Raleigh, North Carolina 27610

**Size and Location of Property (waterbody, Highway name/number, town, etc.):** TIP Project No. B-1382, Bridge No. 26 on NC 41 over the Black River, Sampson County, North Carolina.

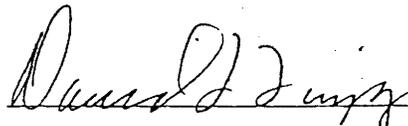
**Basis for Determination:** Onsite field inspection of selected wetland sites.

Indicate Which of the Following apply:

- There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.  
On May 16, 2002, the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and/or its representatives for the subject NCDOT project. A select number of wetland sites were inspected for the proposed project and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation as depicted in the May 16, 2002 letter by Environmental Services, Inc can be relied on for planning purposes and impact assessment.
- The wetlands on your lot have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

Placement of dredged or fill material in wetlands on this property without a Department of the Army permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Mr. Dave Timpy at 910-251-4634.

Project Manager Signature



Date May 16, 2002

Expiration Date May 16, 2007

CF: Mason Hemdon, NCDOT Division 3.



**SOILS**

Map Unit Name (Series and Phase) <u>Paxville fine sandy loam</u>		Drainage Class: <u>Poorly to Very Poorly</u>			
Taxonomy (Subgroup) <u>Typic Umbraquults</u>		Field Observations			
		Confirm Mapped Type: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>Profile Description:</b>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-1</u>	<u>Oi</u>	<u>10 YR 2/1</u>			<u>Sandy loam</u>
<u>1-18</u>	<u>A</u>	<u>10 YR 2/1</u>			<u>Sandy loam</u>
<u>18-24</u>	<u>Bt</u>	<u>10 YR 3/1</u>			<u>Sandy clay</u>
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input checked="" type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)		
Remarks: <i>Very dark soils indicative of wet or saturated conditions are present. Hydric Soils present.</i>					

**WETLAND DETERMINATION**

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

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>12/27/2002</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Mixed Pine/Hardwood</u> Transect ID: <u>WA</u> Plot ID: <u>WA1-Upland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Myrica cerifera</u>	<u>Shrub</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Pinus taeda</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Cornus florida</u>	<u>Tree</u>	<u>FACU</u>	11. _____	_____	_____
4. <u>Ilex opaca</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Carya tomentosa</u>	<u>Tree</u>	<u>NI</u>	13. _____	_____	_____
6. <u>Vaccinium arboreum</u>	<u>Shrub-Tree</u>	<u>FACU</u>	14. _____	_____	_____
7. <u>Vaccinium stamineum</u>	<u>Shrub</u>	<u>FACU</u>	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). <25

Remarks: *(NI) Carya tomentosa is not listed as an indicator plant by the USFWS's 1996 Plant List.*

**HYDROLOGY**

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

Remarks: *No hydrologic indicators present.*

# SOILS

Map Unit Name (Series and Phase) <u>Chipley sand, 0 to 2 % slopes</u>		Drainage Class: <u>Moderately Well to Well</u> Field Observations			
Taxonomy (Subgroup) <u>Aquic Quartzipsamments</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>Profile Description:</b>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-1</u>	<u>Oi</u>	<u>7.5 YR 3/2</u>	<u>                    </u>	<u>                    </u>	<u>Loamy sand</u>
<u>1-7</u>	<u>A</u>	<u>10 YR 3/2</u>	<u>                    </u>	<u>                    </u>	<u>Loamy sand</u>
<u>7-16</u>	<u>B1</u>	<u>10 YR 5/4</u>	<u>                    </u>	<u>                    </u>	<u>Loamy sand</u>
<u>16-24</u>	<u>B2</u>	<u>2.5 Y 6/4</u>	<u>                    </u>	<u>                    </u>	<u>Loamy sand</u>
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>	<u>          </u>
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol	<input type="checkbox"/> Histic Epipedon	<input type="checkbox"/> Sulfidic Odor	<input type="checkbox"/> Aquic Moisture Regime	<input type="checkbox"/> Reducing Conditions	<input type="checkbox"/> Gleyed or Low-Chroma Colors
<input type="checkbox"/> Concretions	<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils	<input type="checkbox"/> Organic Streaking in Sandy Soils	<input type="checkbox"/> Listed on Local Hydric Soils List	<input type="checkbox"/> Listed on National Hydric Soils List	<input type="checkbox"/> Other (Explain in Remarks)
Remarks: <i>No Hydric soil indicators present.</i>					

## WETLAND DETERMINATION

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



# SOILS

Map Unit Name (Series and Phase) <u>Gritney fine sandy loam, 4 to 8 % slopes</u>		Drainage Class: <u>Moderately well</u>			
Taxonomy (Subgroup) <u>Typic Hapludults</u>		Confirm Mapped Type: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>Profile Description:</b>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-4</u>	<u>A</u>	<u>10 YR 4/3</u>	<u></u>	<u></u>	<u>Loam</u>
<u>4-13</u>	<u>AB</u>	<u>10 YR 5/6</u>	<u></u>	<u></u>	<u>Loamy sand</u>
<u>13-24</u>	<u>Bt</u>	<u>10 YR 2/1</u>	<u></u>	<u></u>	<u>Clay loam</u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<u></u>	<u></u>	<u></u>	<u></u>	<u></u>	<u></u>
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concretions		
<input type="checkbox"/> Histic Epipedon			<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input type="checkbox"/> Aquic Moisture Regime			<input type="checkbox"/> Listed on Local Hydric Soils List		
<input type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
Remarks: <i>No indicators in upper 12 inches of soil.</i>					
Remarks: <i>Gritney is listed as a Hydric-B soil, but this sampling point showed no inclusions of Hydric-A soils (i.e. Bibb).</i>					

## WETLAND DETERMINATION

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

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>12/27/2002</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Bottomland Hardwood</u> Transect ID: <u>WB</u> Plot ID: <u>WB-5 (Wetland)</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Smilax laurifolia</u>	<u>Vine</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Quercus nigra</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Pinus taeda</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Lyonia lucida</u>	<u>Shrub</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Leucothoe racemosa</u>	<u>Shrub</u>	<u>FACW</u>	13. _____	_____	_____
6. <u>Ilex opaca</u>	<u>Shrub</u>	<u>FAC</u>	14. _____	_____	_____
7. <u>Itea virginiana</u>	<u>Shrub</u>	<u>FACW</u>	15. _____	_____	_____
8. <u>Liquidambar styraciflua</u>	<u>Tree</u>	<u>FAC</u>	16. _____	_____	_____

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

Remarks: Hydrophytic vegetation present.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input type="checkbox"/> Drift Lines <input type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input checked="" type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input checked="" type="checkbox"/> Other (Explain in Remarks)
<b>Field Observations:</b>  Depth of Surface Water: <u>N/A</u> (in.) Depth to Free Water in Pit: <u>N/A</u> (in.) Depth to Saturated Soil: <u>24</u> (in.)	
Remarks: <u>Buttressing at base of trees and presence of hummocks.</u> <u>Soil saturated at 24 inches.</u>	



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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>12/27/2002</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Cypress-Gum Swamp</u> Transect ID: <u>WC</u> Plot ID: <u>WC1-Wetland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Betula nigra</u>	<u>Tree</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Taxodium distichum</u>	<u>Tree</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Quercus nigra</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Nyssa aquatica</u>	<u>Tree</u>	<u>OBL</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

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

Remarks: Cypress and swamp tupelo are the primary species in this sampling area.

**HYDROLOGY**

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

Remarks: Obvious wetland characteristics present throughout. Buttressed trunks.

# SOILS

Map Unit Name (Series and Phase) <u>Paxville fine sandy loam</u>		Drainage Class: <u>Poorly to very poorly</u>
Taxonomy (Subgroup) <u>Typic Umbraquults</u>		Field Observations
		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Profile Description:					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-8</u>	<u>A</u>	<u>7.5 YR 3/1</u>			<u>Sandy loam</u>
<u>8-19</u>	<u>B1</u>	<u>10 YR 2/1</u>			<u>Loam</u>
<u>19-24</u>	<u>B2</u>	<u>10 YR 5/2</u>			<u>Sandy loam</u>

Hydric Soil Indicators:	
<input type="checkbox"/> Histosol <input type="checkbox"/> Histic Epipedon <input type="checkbox"/> Sulfidic Odor <input checked="" type="checkbox"/> Aquic Moisture Regime <input type="checkbox"/> Reducing Conditions <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors	<input type="checkbox"/> Concretions <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils <input type="checkbox"/> Organic Streaking in Sandy Soils <input checked="" type="checkbox"/> Listed on Local Hydric Soils List <input type="checkbox"/> Listed on National Hydric Soils List <input type="checkbox"/> Other (Explain in Remarks)

Remarks: *Soils in this area have significant layering of deposits from the Black River.*

## WETLAND DETERMINATION

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





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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Cypres-Gum Swamp</u> Transect ID: <u>WD</u> Plot ID: <u>WD-1 Wetland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Taxodium distichum</u>	<u>Tree</u>	<u>OBL</u>	9. _____	_____	_____
2. <u>Nyssa aquatica</u>	<u>Tree</u>	<u>OBL</u>	10. _____	_____	_____
3. <u>Scirpus cyperinus</u>	<u>Sedge</u>	<u>OBL</u>	11. _____	_____	_____
4. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Myrica cerifera</u>	<u>Shrub</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Pinus taeda</u>	<u>Tree</u>	<u>FAC</u>	14. _____	_____	_____
7. <u>Carpinus caroliniana</u>	<u>Tree</u>	<u>FAC</u>	15. _____	_____	_____
8. <u>Hibiscus moscheutos</u>	<u>Shrub</u>	<u>OBL</u>	16. _____	_____	_____

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

Remarks: Hydrophytic vegetation dominates the area.

**HYDROLOGY**

<input type="checkbox"/> Recorded Data (Describe in Remarks) <input type="checkbox"/> Stream, Lake, or tide Gauge <input type="checkbox"/> Aerial Photographs <input type="checkbox"/> Other <input checked="" type="checkbox"/> No Recorded Data Available	<b>Wetland Hydrology Indicators:</b> <b>Primary Indicators:</b> <input type="checkbox"/> Inundated <input type="checkbox"/> Saturated in Upper 12 Inches <input checked="" type="checkbox"/> Water Marks <input checked="" type="checkbox"/> Drift Lines <input checked="" type="checkbox"/> Sediment Deposits <input checked="" type="checkbox"/> Drainage Patterns in Wetlands <b>Secondary Indicators (2 or more required):</b> <input type="checkbox"/> Oxidized Root Channels in Upper 12 Inches <input checked="" type="checkbox"/> Water-Stained Leaves <input checked="" type="checkbox"/> Local Soil Survey Data <input type="checkbox"/> FAC-Neutral Test <input type="checkbox"/> Other (Explain in Remarks)
Field Observations:  Depth of Surface Water: <u>N/A</u> (in.) Depth to Free Water in Pit: <u>16</u> (in.) Depth to Saturated Soil: <u>14</u> (in.)	

Remarks: Strong indicators of wetland hydrology present.

**SOILS**

Map Unit Name (Series and Phase) Paxville fine sandy loam Drainage Class: Poorly  
 Field Observations  
 Taxonomy (Subgroup) Typic Umbraquults Confirm Mapped Type?  Yes  No

**Profile Description:**

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10 YR 2/1			Clay loam
9-18	Bt1	10 YR 2/1			Clay
18-24	Bt2	5 YR 4/1	7.5 YR 5/8	common, med., distinct	Clay

**Hydric Soil Indicators:**

- |   |   |
|---|---|
| <input type="checkbox"/> Histosol                               | <input type="checkbox"/> Concretions  |
| <input type="checkbox"/> Histic Epipedon                        | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor                          | <input type="checkbox"/> Organic Streaking in Sandy Soils                     |
| <input checked="" type="checkbox"/> Aquic Moisture Regime       | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List         |
| <input checked="" type="checkbox"/> Reducing Conditions         | <input type="checkbox"/> Listed on National Hydric Soils List                 |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input checked="" type="checkbox"/> Other (Explain in Remarks)                |

Remarks: *Oxidized rhizospheres in Bt1 horizon.*

**WETLAND DETERMINATION**

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

Remarks:

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Mixed pine-hardwood</u> Transect ID: <u>WD</u> Plot ID: <u>WD1-Upland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Pinus taeda</u>	<u>Tree</u>	<u>FAC</u>	9. _____	_____	_____
2. <u>Myrica cerifera</u>	<u>Shrub</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Quercus nigra</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax laurifolia</u>	<u>Vine</u>	<u>FACW</u>	12. _____	_____	_____
5. _____	_____	_____	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

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

Remarks: Pine and water oak are the primary species found in the area.

**HYDROLOGY**

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

# SOILS

Map Unit Name (Series and Phase) Paxville fine sandy loam Drainage Class: Moderately well  
 Taxonomy (Subgroup) Typic Umbraquults Confirm Mapped Type? Yes  No

**Profile Description:**

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10 YR 3/1			Loam
9-17	BA	10 YR 5/3	7.5 YR 5/8	common, fine, distinct	Loam
17-24	Bt	2.5 Y 5/2	7.5 YR 5/8	common, medium, distinct	Clay loam

**Hydric Soil Indicators:**

- |   |   |
|---|---|
| <input type="checkbox"/> Histosol                               | <input type="checkbox"/> Concretions  |
| <input type="checkbox"/> Histic Epipedon                        | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor                          | <input type="checkbox"/> Organic Streaking in Sandy Soils                     |
| <input checked="" type="checkbox"/> Aquic Moisture Regime       | <input checked="" type="checkbox"/> Listed on Local Hydric Soils List         |
| <input type="checkbox"/> Reducing Conditions                    | <input type="checkbox"/> Listed on National Hydric Soils List                 |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks)                           |

Remarks: *Some low chroma colors start to occur at 17 inches.*  
*Soil is mapped as Paxville in Sampson County soil survey, but has characteristics slightly different than the mapped series.*

## WETLAND DETERMINATION

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

Remarks: *Wetland hydrology criteria not met.*  
*Vegetation has large component of FAC species, especially loblolly pine.*

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Man-dominated</u> Transect ID: <u>WE</u> Plot ID: <u>WE2-Upland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Quercus phellos</u>	<u>Tree</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Liquidambar styraciflua</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Smilax bona-nox</u>	<u>Vine</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

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

Remarks: Willow oak makes up the majority of the species.

**HYDROLOGY**

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

Remarks: No hydrologic indicators present.

# SOILS

Map Unit Name (Series and Phase) Paxville fine sandy loam Drainage Class: Well to Moderately Well  
 Taxonomy (Subgroup) Typic Umbraquults Confirm Mapped Type? Yes  No

**Profile Description:**

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-2	A	10 YR 3/2			Loam
2-12	Bt	10 YR 5/2	7.5 YR 5/8		Clay loam
12-24	C	10 YR 6/6			Sandy loam

**Hydric Soil Indicators:**

- |   |   |
|---|---|
| <input type="checkbox"/> Histosol                               | <input type="checkbox"/> Concretions  |
| <input type="checkbox"/> Histic Epipedon                        | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor                          | <input type="checkbox"/> Organic Streaking in Sandy Soils                     |
| <input checked="" type="checkbox"/> Aquic Moisture Regime       | <input type="checkbox"/> Listed on Local Hydric Soils List                    |
| <input type="checkbox"/> Reducing Conditions                    | <input type="checkbox"/> Listed on National Hydric Soils List                 |
| <input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks)                           |

Remarks: *Soils could not be properly identified due to borrow activity.*  
*The area is mapped as Chipley sand but has characteristics of Paxville fine sandy loam.*

## WETLAND DETERMINATION

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

Remarks: *Hydrologic criteria not met.*

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Bottomland Hardwood</u> Transect ID: <u>WE</u> Plot ID: <u>WE2-Wetland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Betula nigra</u>	<u>Tree</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Liquidambar styraciflua</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Quercus nigra</u>	<u>Tree</u>	<u>FAC</u>	13. _____	_____	_____
6. <u>Quercus phellos</u>	<u>Tree</u>	<u>FACW</u>	14. _____	_____	_____
7. <u>Cyrilla racemiflora</u>	<u>Shrub</u>	<u>FACW</u>	15. _____	_____	_____
8. <u>Salix nigra</u>	<u>Tree</u>	<u>OBL</u>	16. _____	_____	_____

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

Remarks: *River birch is the primary species found in this area.*  
*The site shows signs of past disturbance.*

**HYDROLOGY**

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

Remarks: *Obvious drainage patterns and drift lines present.*

# SOILS

Map Unit Name (Series and Phase) <u>Chibley sand, 0 to 2% slopes</u>		Drainage Class: <u>Somewhat poorly to Poorly</u> Field Observations			
Taxonomy (Subgroup) <u>Aquic Quartzipsamments</u>		Confirm Mapped Type? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
<b>Profile Description:</b>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-3</u>	<u>Oi</u>	<u>10 YR 3/2</u>			
<u>3-8</u>	<u>A1</u>	<u>10 YR 5/6</u>	<u>10 YR 6/2</u>	<u>common, med., distinct</u>	<u>Loamy sand</u>
			<u>7.5 YR 5/8</u>	<u>common, med., distinct</u>	<u>Loamy sand</u>
<u>8-16</u>	<u>A2</u>	<u>10 YR 7/1</u>	<u>10 YR 7/6</u>	<u>common, coarse, distinct</u>	
<u>16-24</u>	<u>Bt</u>	<u>10 YR 7/2</u>	<u>7.5 YR 5/8</u>	<u>many, coarse, distinct</u>	<u>Sandy loam</u>
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol		<input type="checkbox"/> Concretions			
<input type="checkbox"/> Histic Epipedon		<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils			
<input type="checkbox"/> Sulfidic Odor		<input checked="" type="checkbox"/> Organic Streaking in Sandy Soils			
<input type="checkbox"/> Aquic Moisture Regime		<input type="checkbox"/> Listed on Local Hydric Soils List			
<input type="checkbox"/> Reducing Conditions		<input type="checkbox"/> Listed on National Hydric Soils List			
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors		<input type="checkbox"/> Other (Explain in Remarks)			
Remarks: <i>Soils are mapped as Chibley sand but have indicators of hydric soils. Slight disturbances from previous roadway work may have caused soil horizons to become mixed. Small areas of organic streaking.</i>					

## WETLAND DETERMINATION

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

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (C. Carr, S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Mixed Pine/Hardwood</u> Transect ID: <u>WF</u> Plot ID: <u>WF4-Upland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Carya tomentosa</u>	<u>Tree</u>	<u>NI</u>	9. _____	_____	_____
2. <u>Ilex opaca</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Quercus nigra</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax rotundifolia</u>	<u>Vine</u>	<u>FAC</u>	12. _____	_____	_____
5. <u>Pinus taeda</u>	<u>Tree</u>	<u>FAC</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

Percent of Dominant Species that are OBL, FACW, or FAC (excluding FAC-). <50

Remarks: Carya tomentosa comprises a large portion of the species composition.

**HYDROLOGY**

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

Remarks: No hydrologic indicators present.

# SOILS

Map Unit Name (Series and Phase) Chipley sand, 0 to 2% slopes Drainage Class: Moderately Well to Well  
 Field Observations  
 Taxonomy (Subgroup) Aquic Quartzipsamments Confirm Mapped Type?  Yes  No

**Profile Description:**

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-9	A	10 YR 4/3			<i>fine loamy sand</i>
9-18	B1	10 YR 5/6			<i>Loamy sand</i>
18-24	B2	10 YR 5/8			<i>Loamy sand</i>

**Hydric Soil Indicators:**

- |  |   |
|--|---|
| <input type="checkbox"/> Histosol                    | <input type="checkbox"/> Concretions  |
| <input type="checkbox"/> Histic Epipedon             | <input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils |
| <input type="checkbox"/> Sulfidic Odor               | <input type="checkbox"/> Organic Streaking in Sandy Soils                     |
| <input type="checkbox"/> Aquic Moisture Regime       | <input type="checkbox"/> Listed on Local Hydric Soils List                    |
| <input type="checkbox"/> Reducing Conditions         | <input type="checkbox"/> Listed on National Hydric Soils List                 |
| <input type="checkbox"/> Gleyed or Low-Chroma Colors | <input type="checkbox"/> Other (Explain in Remarks)                           |

Remarks: *No hydric soil indicators present.*

## WETLAND DETERMINATION

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

Remarks:

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

Project/Site: <u>B-1382, Bridge Nos. 12 &amp; 26</u> Applicant/Owner: <u>North Carolina Department of Transportation (NCDOT)</u> Investigator(s): <u>BHME (S. Mallory, &amp; T. Barrett)</u>	Date: <u>1/3/2003</u> County: <u>Sampson</u> State: <u>North Carolina</u>
Do Normal Circumstances exist on the site? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Is the site significantly disturbed (Atypical Situation)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Is this area a potential Problem Area? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If needed, explain on reverse)	Community ID: <u>Bottomland hardwood</u> Transect ID: <u>WF</u> Plot ID: <u>WF1-Wetland</u>

**VEGETATION**

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. <u>Betula nigra</u>	<u>Tree</u>	<u>FACW</u>	9. _____	_____	_____
2. <u>Liquidambar styraciflua</u>	<u>Tree</u>	<u>FAC</u>	10. _____	_____	_____
3. <u>Acer rubrum</u>	<u>Tree</u>	<u>FAC</u>	11. _____	_____	_____
4. <u>Smilax laurifolia</u>	<u>Vine</u>	<u>FACW</u>	12. _____	_____	_____
5. <u>Arundinaria gigantea</u>	<u>Grass</u>	<u>FACW</u>	13. _____	_____	_____
6. _____	_____	_____	14. _____	_____	_____
7. _____	_____	_____	15. _____	_____	_____
8. _____	_____	_____	16. _____	_____	_____

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

Remarks: Mixture of all the species listed above.

**HYDROLOGY**

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

Remarks: Small depression adjacent to the road.

# SOILS

Map Unit Name (Series and Phase) <u>Paxville fine sandy loam</u>		Drainage Class: <u>Poorly</u> Field Observations			
Taxonomy (Subgroup) <u>Typic Umbraquults</u>		Confirm Mapped Type? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
<b>Profile Description:</b>					
Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
<u>0-12</u>	<u>A</u>	<u>10 YR 2/1</u>			<u>Loam</u>
<u>12-20</u>	<u>B1</u>	<u>10 YR 3/2</u>			<u>Sandy loam</u>
<u>20-24</u>	<u>B2</u>	<u>10 YR 5/2</u>	<u>10 YR 5/6</u>	<u>few, fine, faint</u>	<u>Sandy loam</u>
<b>Hydric Soil Indicators:</b>					
<input type="checkbox"/> Histosol			<input type="checkbox"/> Concretions		
<input type="checkbox"/> Histic Epipedon			<input type="checkbox"/> High Organic Content in Surface Layer in Sandy Soils		
<input type="checkbox"/> Sulfidic Odor			<input type="checkbox"/> Organic Streaking in Sandy Soils		
<input checked="" type="checkbox"/> Aquic Moisture Regime			<input checked="" type="checkbox"/> Listed on Local Hydric Soils List		
<input type="checkbox"/> Reducing Conditions			<input type="checkbox"/> Listed on National Hydric Soils List		
<input checked="" type="checkbox"/> Gleyed or Low-Chroma Colors			<input type="checkbox"/> Other (Explain in Remarks)		
Remarks: <u>Hydric soils present.</u>					

## WETLAND DETERMINATION

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