STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

October 27, 2004

U.S. Army Corps of Engineers
P.O. Box 1890
Wilmington, NC 28402-1890

Attention: Mr. Dave Timpy, USACE
NCDOT Coordinator

Dear Sir:

Subject: **Application for Nationwide 23 Permit**

Proposed replacement of Bridge No. 3 over Little Northeast Creek, in Onslow County, Division 3, Fed. Project No. BRSTP-1423(3), State Project No. 8.2261201, WBS Element 33224.1.1, TIP **B-3682.**

Proposed widening and realignment of SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to SR 1427 (Grants Creek Loop), in Onslow County, Division 3, Fed. Project No. STP-1423(2), State Project No. 8.7326024, WBS Element 35052.1.1, TIP **W-3413**.

Please find the enclosed copies of the Categorical Exclusion (CE), permit drawings, Restoration Plan, EEP mitigation acceptance letter, half size plans, and the North Carolina Division of Water Quality Stormwater Management Permit.

The proposed bridge replacement project, TIP B-3682, calls for the replacement of Bridge No. 3 on SR 1423. Bridge No. 3 crosses Little Northeast Creek, located in the New River and Tributaries Subbasin 03-05-02. The current bridge is 70 feet long, with a 24 foot roadway width. Built in 1964, it consists of four spans and has a reinforced concrete floor and timber joists on timber caps and piles. The deck is 12 feet above the streambed of Little Northeast Creek. According to NCDOT Bridge Maintenance records, the bridge's sufficiency rating is 19.9 out of a possible 100.0. Part of the roadway will be realigned, and a new bridge will be built on a new location to replace the existing bridge. Traffic will be maintained on the existing alignment during the construction period. The existing bridge will be removed upon completion of the new bridge.

Roadway improvement project W-3413 is located adjacent to the proposed bridge replacement project and will be included with B-3682 for permitting purposes. This 2.0 mile project proposes to improve the horizontal curvature of SR 1423 from SR 1427 to SR 1413 in Onslow

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1500
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
PLB SUITE 168
RALEIGH NC 27604

County. Bridge No. 3 will be removed and replaced at a new location in conjunction with this proposed alignment. Currently SR 1423 is a two-lane paved facility, with pavement width varying from 18 feet to 21 feet. The existing roadway is characterized by tangent sections with abrupt transitions to sharp curvature. The existing horizontal alignments are substandard for the posted speed limit. The realigned roadway will be upgraded to AASHTO standards. The realigned roadway will have a 24 foot travelway, with 4 foot paved shoulders and 4 foot grassed shoulders along each side. Where guardrail is required, shoulders will be increased by a minimum of 3 feet on each side. The new roadway will be at approximately the same elevation as the existing structure. This proposed project (W-3413) crosses three intermittent unnamed tributaries (UT) and one perennial UT of Horse Swamp.

An on-site field meeting was held on September 27, 2004. Attendees of this meeting include: Mr. Bill Arrington (NC Division of Coastal Management (DCM)), Mr. Dave Timpy (Army Corps of Engineers (USACOE)), Mr. Mason Herndon (Division 3 Environmental Officer) and Ms. Cheryl Knepp (NCDOT Office of Natural Environment (ONE)). This meeting addressed the following issues:

1) Summarize any discrepancies between the permit drawing impacts and impacts addressed in the CE.
   Discrepancies are minor between impacts accrued in the CE and in the permit drawings. The CE offers a guideline on proposed work, where the permit drawings are the actual designed impacts. When the CE is signed, the design plan is preliminary; and, therefore, impacts are estimates. Wetlands A, B, and L were avoided with only temporary impacts being associated with them as stated in the CE (Table 3, CE B-3682). The impacts shown in the permit drawings for wetlands D, K, Q and P differed slightly from those shown in the CE (see also Table 13, CE W-3413). Channel impacts weren't calculated in the CE; channel impacts were associated with adjacent wetlands. The main difference between the CE and the permit drawings is the impact to UT 2 and wetlands M and N; the CE shows impacts totaling 0.0135 acre. The proposed permit drawings avoid impacts to that area altogether by decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes and /or road shoulder width.
2) Describe the bridge construction methods to be used.
   After review of the structure plans, Mr. Mason Herndon determined the bridge will be cored slab concrete; therefore, top down construction will be used with pile driving installation methods.
3) Each TIP has a separate Categorical Exclusion document associated with it. For efficiency purposes, Mr. Timpy agreed to allow the projects to be permitted together.
4) The designation of Little Northeast Creek as a "public trust area" is questionable. The stream is marginally navigable by canoe. It seems the area directly under the bridge may have been dredged years ago to allow for greater clearance underneath. This dredging was done to allow safe passage of materials under the bridge during flood events. There is a navigational difference about 50 feet up and downstream of the bridge where the stream returns to its natural meander. It is questionable if a canoe could navigate that area. Mr. Arrington wanted to review the determination made in 2001. Upon conference with Mr. Arrington's supervisor, Ms. Cathy Brittingham, he came to the conclusion on 10/6/04, that the project does not fall within an AEC therefore not requiring a CAMA permit.
5) Create a restoration plan for the causeway and bridge removal.
   The removal of Bridge No. 3 should include extracting (or cutting to streambed elevation) the pilings, including those from previous bridge replacements. This will allow boat traffic to better maneuver Little Northeast Creek. The causeway will be graded down to normal elevation and replanted with indigenous wetland vegetation. The wetlands surrounding the

causeway will be reconnected after the extirpation of the roadway. This on-site mitigation will allow other impacts within the project area to counterbalance, therefore eliminating the off site mitigation request to the EEP. The complete Restoration Plan is attached.

6) All streams and tributaries that are to be impacted by roadway fill and pipe extensions were reviewed. This included UT #: 0, 1, 5, & 6. After examination, Mr. Timpy decided all would be considered intermittent, not requiring mitigation.
Also, at the time of the site visit, all linear impacts were calculated from easement to easement. However, upon review, impacts will not extend that far. The following changes have been made:
For "Fill in Surface Water", the impacts are shown from the end of the existing pipe out to the end of the new pipe on the upstream end and out to the end of the rip rap pad on the downstream end.
For "Existing Channel Impacted," the channel length was measured from the end of the existing pipe to the end of the new pipe on the upstream end. For the downstream end, measurements were taken from the end of the existing pipe to the downstream end of the rip rap pad.

PROPOSED IMPACTS TO WATERS OF THE UNITED STATES

General Description: Horse Swamp and Little Northeast Creek are located in the White Oak River Basin (Hydrological Cataloging Unit 03030001) and are both classified by the Division of Water Quality as **C NSW**. **Neither High Quality Waters (HQW), Water Supplies (WS-I or WS-II), nor Outstanding Resource Waters (ORW) occur within 1.0 mile (1.6 km) of the project area.**

The structure targeted for replacement spans the open water stream associated with Little Northeast Creek. This section of Little Northeast Creek has been assigned Stream Index Number 19-16-2 by the NC DWQ. Little Northeast Creek flows into Northeast Creek approximately 3.8 miles downstream (south) of Bridge No. 3. Field investigations indicate that floodplain wetlands (WL: A, B, D, L) occur along both sides of Little Northeast Creek north and south of SR 1423. Little Northeast Creek is classified as a 303(d) Biologically Impaired Water from its source to Northeast Creek. According to the North Carolina 2003 Impaired Waters List, the cause of impairment is due to its low dissolved oxygen levels. Potential sources of this impairment are urban runoff or storm sewers. Table 1 explains the Cowardin Classification and NC DWQ rating for each impacted wetland. Additional streams or tributaries impacted by the widening roadway improvements are associated with Horse Swamp, which has been assigned Stream Index Number 19-16-2-1 by the NC DWQ. Horse Swamp flows into Little Northeast Creek. There are 3 wetlands (WL: K, Q, P) that will be associated with the impacts of the roadway widening project (see Table 2).

Table 1. Classification of Wetlands within the Project Area

PERMIT DRAWING STATION	CE SITE ID	COWARDIN CLASS	NC DWQ RATING
L 27+70 Lt/Rt	WL A	PFO1EM1	59
L 28+60 LT/RT	WL B	PFO1EM1	29
L 29+50 RT	WL D	PFO1EM1	33
L 25+50 RT	WL K	PFO1EM2B	42
L 27+20 LT/RT	WL L	PFO1EM1B	59
L 102+10 LT	WL Q	PFO1E	40
L 116+15 RT	WL P	PEM1	13

Wetland Impacts: The permanent wetland impacts, summarized in Table 2, total 0.15 acre of palustrine: forested broad-leaved deciduous wetlands. These impacts are associated with mechanized clearing, roadway fill and the installation of 24"and 48" Reinforced Concrete Pipes (RCP). These impacts are related to widening SR 1423. The temporary wetland impacts associated with this project are due to hand clearing inside the wetlands for placement of the new bridge. These temporary impacts total 0.16 acre (see permit drawing sheets 5-10 for further details).

Stream Impacts: The stream impacts, summarized in Table 2, include four intermittent UTs of Horse Swamp (DEM Index No. 19-16-2-1, 8/1/91). Permanent impacts associated with fill in surface water total 0.05 acre and 208 feet of impacts. These impacts are due to installation of 24", 36", 42" and 48" RCPs (see permit drawing sheets 5-10 for further details). ACOE had determined these streams to be intermittent requiring no mitigation (see field meeting summary above).

Table 2: Summary of Jurisdictional Impacts

Permit Drawing Station	CE Site ID	Permanent Wetlands (ac)		Temporary Wetlands (ac)		Surface Waters (SW)	
		R	NR	R	NR	Fill in SW (ac)	Channel Impacts (ft)
L 19+00 Rt	UT 0					0.02	47
L 27+70 Lt/Rt	WL A			0.07			
L 28+60 Lt/Rt	WL B				0.03		
L 29+50 Rt	WL D		0.05		0.02		
L 25+50 Rt	WL K		0.03				
L 27+20 Lt/Rt	WL L				0.05		
L 51+00 Lt/Rt	UT 1					0.01	60
L 102+10 Lt	WL Q	0.05					
L 102+30 Rt	UT 5					0.01	35
L 108+50 Lt/Rt	UT 6					0.01	66
L 116+15 Rt	WL P		0.02				
TOTAL		0.05	0.10	0.07	0.10	0.05	208

R = Riverine NR = Non-Riverine

Utility Impacts: There will be no permanent utility impacts associated with this site. Any necessary clearing of wetlands for utility installation will utilize mats and non-mechanized means, no grubbing methods will be used. All areas where new buried cable or aerial electric utility lines cross the creeks will be installed by the directional bore method. A detailed description of utility work to be performed follows:

Sta. 19+00 -L-
UT # 0 (UT= Unnamed Tributary) Permit Drawing says:
- Fill in surface water and Existing Channel Impacted
* proposed waterline on the north end of the proposed drainage pipe
* proposed water line does not impact the wetland permit drawing site and is outside (beyond) proposed drainage pipe on north side

Note: Sta. 28+00 -L- Northeast Little Creek
* utilize existing water line crossing under creek
* wetland on northside of bridge might be impacted slightly (if any) due to proposed water line relocation/construction

Sta. 51+00 -L-
UT #1 Permit Drawing says:
- Fill in surface water and Existing channel impacted
* proposed water line on the north end of the proposed pipe
* proposed water line is within toe of cut slope and under proposed drainage pipe

Sta. 102+50 -L-
Wetland Q Permit Drawing says:
- Excavation in wetland and Mechanized clearing
* proposed water line will be under the proposed drainage pipe
* proposed water line is within toe of fill slope

Sta. 108+50 -L-
UT #6 Permit Drawing says:
- Fill in surface water and Existing channel impacted
* proposed water line will be under drainage

Bridge Demolition: When removing the existing bridge, NCDOT shall not allow debris to fall into the water. The contractor shall remove the bridge and submit plans for demolition in accordance with Article 402-2 of the Standard Specifications. Possible methods for bridge removal involve the contractor lifting out each span with a crane, or saw cutting the bridge in sections, and then lifting these sections out. The piles would either be pulled, or cut off at the mud line.

Removal of Bridge No. 3 should not cause any impacts to Little Northeast Creek or its adjacent wetlands, however, installation of a turbidity curtain is recommended for pile removal and installation.

Due to the possibility of anadramous fish in Little Northeast Creek, bridge demolition is classified as a Case 2, which allows no work at all in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas. This moratorium period begins February 15 and lasts until September 30.

Schedule for Construction: It is assumed that the Contractor will begin construction of the proposed bridge work shortly after the date of availability for the project. The let date is March 15, 2005 with a date of availability of April 26, 2005.

AVOIDANCE, MINIMIZATION AND MITIGATION

Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States". The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional stages; minimization measures were incorporated as part of the project design.

Practical means to minimize impacts to surface waters and wetlands impacted by the proposed project include:

- Decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes and /or road shoulder widths.
- Installation of temporary silt fences, turbidity curtains, earth berms, and temporary ground cover during construction.
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters and wetlands.
- Reduction of clearing and grubbing activity in and adjacent to water bodies.

The project was designed to avoid and minimize impacts to wetlands in the area to the maximum extent practicable. The project alignment was chosen to cross the narrowest band of wetlands at the bridge approaches. Additionally, a 200 foot long bridge is proposed which will span and avoid filling most of the wetlands in the area. As a result, impacts were avoided to wetlands A, B, E, F, H, and L. NCDOT also coordinated with the USACE to avoid filling the highest quality wetlands A and L. We were not able to avoid all impacts, however. Impacts to wetlands D and K were unavoidable due to the bridge approach fill. Impacts to wetlands D and K were minimized by decreasing the project footprint in wetlands by the use of 3:1 side slopes and crossing wetlands perpendicularly. Additionally, measures to control erosion during construction will be incorporated as well as strict enforcement of BMPs. The Ecosystem Enhancement Program has confirmed that they will provide mitigation for all impacts. If the proposed restoration plan (see attached) is approved for on-site mitigation then EEP will be promptly notified. Project Development & Environmental Analysis Natural Environment Engineering Unit shall be notified before any construction begins with the onsite mitigation proposal.

INDIRECT AND CUMMULATIVE IMPACTS

Based on the forecast in the Onslow County, North Carolina 1997 Land Use Plan, during the next seven to ten year period, Onslow County anticipates no substantial development in the study area. However, Onslow County has no formal zoning requirements; therefore, unplanned development may occur. The proposed improvements, while enhancing safety, are not expected to make the study area more attractive to developers. In addition, the lack of sewer services within the study area is expected to deter development. Furthermore, the proposed improvements will improve vehicle and driver safety along the roadway but will not increase capacity along the roadway. No public or private actions have taken place in the study area that would adversely affect its residents. Therefore, it is concluded that no past or present actions combine to result in a cumulative impact that would either adversely or beneficially affect the study area. Presently, a more thorough ICI report is being compiled and will be distributed upon its completion.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 of the Endangered Species Act of 1973, as amended.

As of January 29, 2003 the U.S. Fish and Wildlife Service (FWS) now lists twelve federally protected species for Onslow County (Table 3). Since the completion of the referenced CE, the bald eagle (*Haliaeetus leucocephalus*) has been added to this list. A species habitat determination is provided below along with a biological conclusion.

Table 3. Federally-Protected Species for Pender County

Scientific Name	Common Name	Status	Habitat Determination	Biological Conclusion
Dernochelys coriacea	Leatherback sea turtle	E	No	No Effect
Picoides borealis	Red-cockaded woodpecker	E	No	No Effect
Charardrius melodus	Piping plover	T	No	No Effect
Alligator mississippiensis	American Alligator	T(S/A)	No	Not Required
Caretta caretta	Loggerhead sea turtle	T	No	No Effect
Chelonia mydas	Green sea turtle	T	No	No Effect
Amaranthus pumilus	Seabeach amaranth	T	No	No Effect
Carex lutea	Golden sedge	PE	No	No Effect
Lysimachia asperulaefolia	Rough leaved loosestrife	E	No	No Effect
Felis concolor cougar	Eastern cougar	E*	No	No Effect
Thalictrum cooleyi	Cooley's meadowrue	E	No	No Effect
Haliaeetus leucocephalus	Bald Eagle	T (proposed for delisting)	No	No Effect

Essential Fish Habitat: The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act (MSFCMA) set forth a new mandate for the National Marine Fisheries Service (NMFS), regional fishery management councils (FMC) and other Federal agencies to identify and protect important marine and anadromous fish habitat. The FMCs, with the assistance from NMFS, have delineated "essential fish habitat" (EFH) for managed species.

Onslow County is listed as a county that contains waterbodies in which EFH species are found. None of the waterbodies listed are located immediately within the project study area or vicinity, however, Little Northeast Creek flows into Northeast Creek which converges with the New River, a listed waterbody. The New River is approximately 8.9 miles downstream from the project site. Ron Sechler, of NMF, commented that an Essential Fish Habitat study "would not be necessary because the (project study) area was far enough away from the waters of primary concern." He also agreed that, due to the presence of freshwater mussels in Little Northeast Creek, it is not likely that EFH species would be found in the project study area. EFH species are usually found in waters of higher salinity content than freshwater mussels can live in.

REGULATORY APPROVALS

Section 404 Permit: This project is being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). Therefore, we do not anticipate requesting an individual permit but propose to proceed under a Nationwide 23 as authorized by a Nationwide Permit (67 FR 2020; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification number 3403 will apply to this project. The NCDOT will adhere to all general conditions of the Water Quality Certification. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their review.

A copy of this permit application will be posted on the DOT website at: http://www.ncdot.org/planning/pe/naturalunit/Permit.html.

If you have any questions or need additional information, please contact Ms. Cheryl Knepp at cknepp@dot.state.nc.us or (919) 715-1489.

Sincerely,

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA

cc:
w/attachment
Mr. John Hennessy, Division of Water Quality (7 Copies)
Mr. Travis Wilson, NCWRC
Ms. Cathy Brittingham, NCDCM
Mr. Bill Arrington, NCDCM
Dr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design
Mr. H. Allen Pope, P.E., Division Engineer
Mr. Mason Herndon, DEO

w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Mark Staley, Roadside Environmental
Mr. David Franklin, USACE, Wilmington
PDEA Project Planning Engineer
Ms. Beth Harmon, EEP

On-site Mitigation Plan

Proposed Replacement of Bridge No. 3 on SR 1423 over Little Northeast Creek and SR 1423 from SR 1411 to SR 1413 in Onslow County, North Carolina.

TIP No. B-3682/W-3413

October 22, 2004

Overview

Roadway improvement project W-3413 is located adjacent to the proposed bridge replacement project and will be included with B-3682 for permitting purposes. This 2.0 mile project proposes to improve the horizontal curvature of SR 1423 from SR 1427 to SR 1413 in Onslow County. Bridge No. 3 will be removed and replaced at a new location in conjunction with this proposed alignment. The NCDOT will replace the existing 70-foot long bridge over Little Northeast Creek with a new bridge approximately 200 feet in length, therefore, spanning a large portion of the existing wetlands. Moving the bridge to a new location approximately 80 feet downstream will allow for the removal of approximately 300 linear feet of causeway in previously filled wetlands beginning left of station 26+95-L- to left of station 30+50-L-, not including the bridge over Little Northeast Creek. The existing causeway will be removed and returned to an elevation resembling that of the adjacent wetlands.

Existing Conditions

Bridge No. 3 is currently a causeway, which fills wetland habitat adjacent to Little Northeast Creek. The adjacent community consists of green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), willow oak (*Quercus phellos*) and water oak (*Quercus nigra).*

Proposed Mitigation Activity: Causeway Removal

The removal of the old causeway will mean that approximately 0.28 acres of fill will be removed from wetlands associated with Little Northeast Creek. Approximately 300 feet of existing causeway will be lifted, restoring the palustrine broad leaved wetland underneath. It is anticipated that after the causeway is removed, existing wetlands will again be connected, allowing the natural wetland hydrology to return. Therefore, NCDOT proposes 0.28 acre of riverine wetland restoration credit.

The causeway should be removed to an elevation representative of the adjacent wetlands, not to the wetland delineation line. The elevation at the delineation line is the uppermost point of the wetland, consequently acting as the boundary between wetland conditions and upland dry conditions. Excavating the causeway to a representative elevation prevents a levee effect around the existing wetlands. The wetlands must be connected for hydrology to return. If the uncovered causeway soils are slightly lower than the adjacent wetlands, it is anticipated that organic materials carried by the wind, rain and/or brought in and out by the flushing of the adjacent wetlands will settle into the restored area. This will create the desired upper layer of natural material. It will also create small areas of micro-habitat for fish, amphibians, and small mammals.

Proposed Vegetation:

The NCDOT proposes to replant with indigenous vegetation. The area to be restored will be planted with green ash (*Fraxinus pennsylvanica*), river birch (*Betula nigra*), willow oak (*Quercus phellos*) and water oak (*Quercus nigra).* The NCDOT also expects natural colonization of native flora to occur around the removed causeway.

The proposed restoration area is currently a standing palustrine: forested broad-leaved deciduous wetland community. The canopy of this area is dominated by willow oak, water

oak, American beech (*Fagus grandifolia*), green ash, red maple (*Acer rubrum*), and American elm (*Ulmus americana*).

Proposed Hydrology:

The proximity of the restoration areas to Little Northeast Creek ensures that area will be saturated and/or inundated for extended periods of time. It is anticipated that after the causeway is removed, existing wetlands will again be connected, allowing the natural wetland hydrology to return.

Monitoring

As requested by the Army Corps of Engineers, the NCDOT will perform 3 years of photo monitoring with a site visit to determine if jurisdictional status has been met.

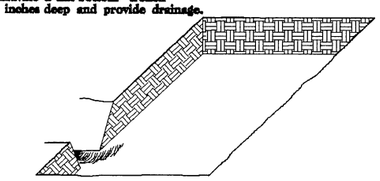
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3682/W-3413	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

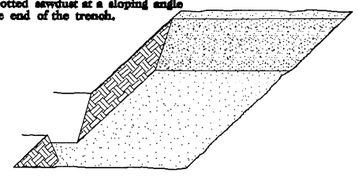
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

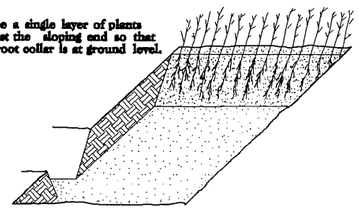
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



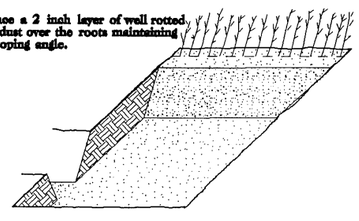
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

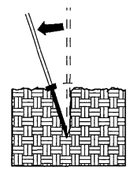


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

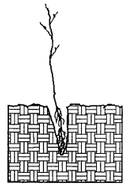


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

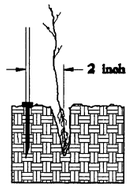
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



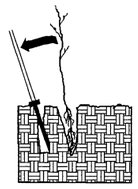
1. Insert planting bar as shown and pull handle toward planter.



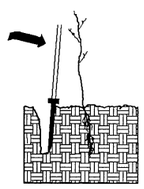
2. Remove planting bar and place seedling at correct depth.



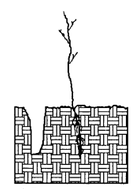
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25% QUERCUS NIGRA	WATER OAK	12 in – 18 in BR
25% QUERCUS PHELLOS	WILLOW OAK	12 in – 18 in BR
25% BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

23+00 24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00

NOTE: OLD ROADWAY EMBANKMENT WILL WILL BE REMOVED DOWN TO NATURAL GROUND WITH 2:1 SLOPES.
QUANTITY OF EXCAVATION = 2600 CY

SBG FROM STA. 28+85 TO STA. 29+10.77 LT.& RT.

WOODS

SR 1423 - OLD THIRTY ROAD

12" CMP

TO SR 1411

TO SR 1413

200' TRANSITION

N 86° 52' 50" E

TUTTLE HOLLOW CREEK

BRIDGE

2 GI

PDE

PREFORMED SCOUR HOLE

6" PVC

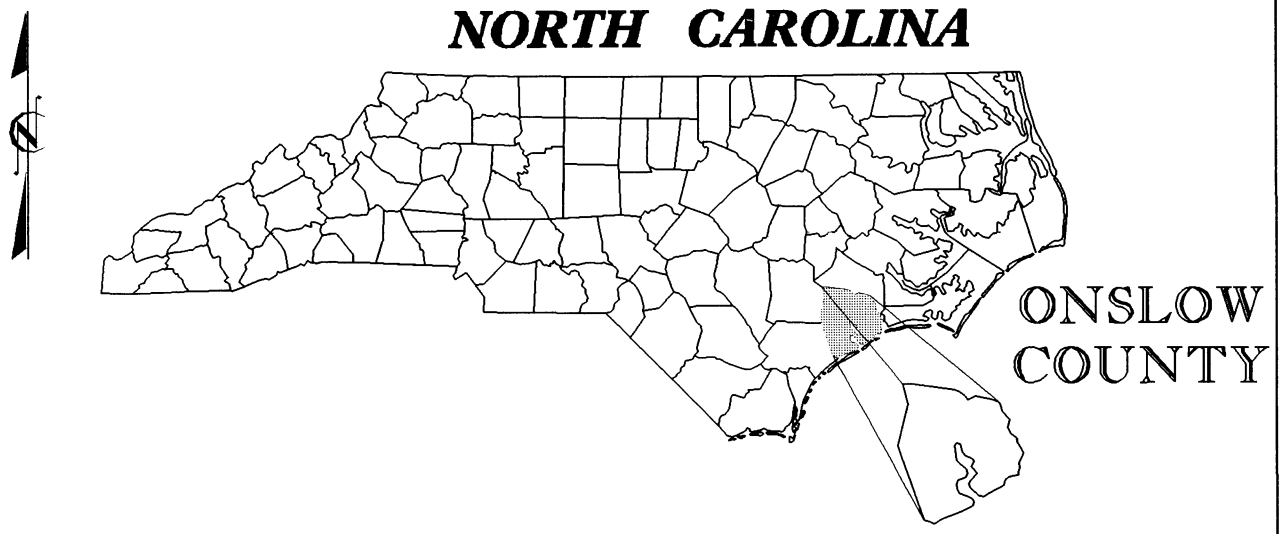
TB WE WE TB

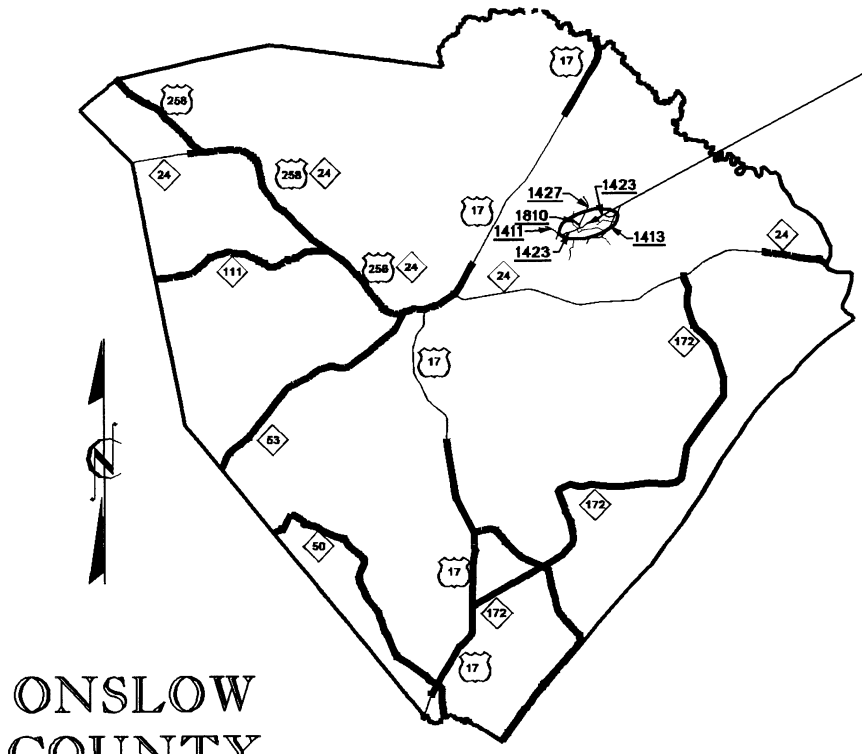
TB WE WE TB

MD. RIP.

LG. RIP.

C F





VICINITY MAP

(WETLANDS
&
SURFACE WATERS)

NCDOT

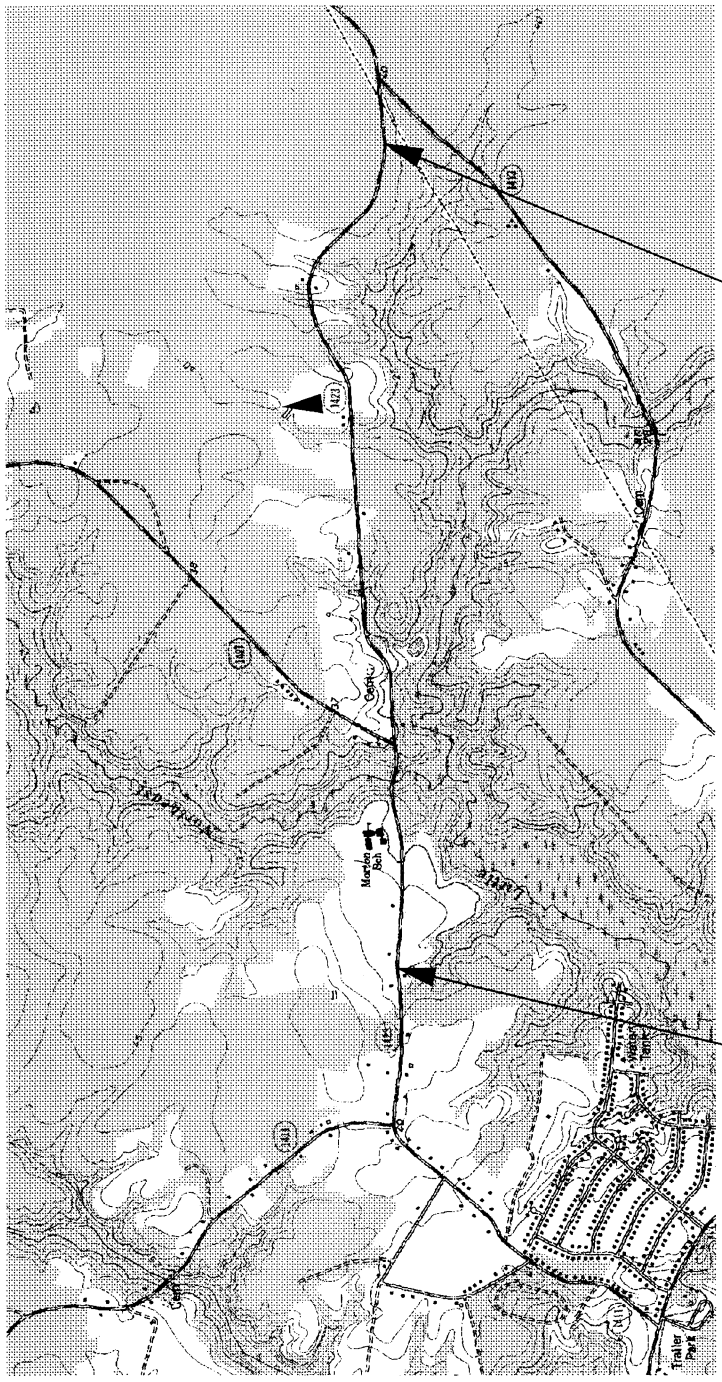
DIVISION OF HIGHWAYS

ONSLOW COUNTY

PROJECTS: 33224.1.1 (B-3682)
& 35052.1.1 (W-3413)

REPLACEMENT OF BRIDGE NO. 3
ON SR 1423 OVER LITTLE NE CREEK

SHEET 1 OF 12 8 JUL 04



SITE MAP

(WETLANDS & SURFACE WATERS)

NCDOT

DIVISION OF HIGHWAYS

ONSLOW COUNTY

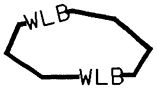
PROJECTS: 33224.1.1 (B-3682) & 35052.1.1 (W-3413)

REPLACEMENT OF BRIDGE NO. 3 ON SR 1423 OVER LITTLE NE CREEK

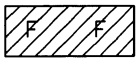
SHEET 2 OF 12 8 JUL 04

WETLAND LEGEND

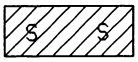
WLB WETLAND BOUNDARY



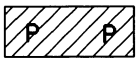
WETLAND



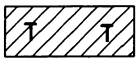
DENOTES FILL IN WETLAND



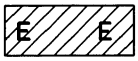
DENOTES FILL IN SURFACE WATER



DENOTES FILL IN SURFACE WATER (POND)

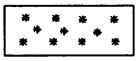


DENOTES TEMPORARY FILL IN WETLAND



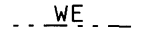
DENOTES EXCAVATION IN WETLAND

DENOTES TEMPORARY FILL IN SURFACE WATER

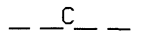

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

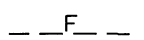
TOP OF BANK



EDGE OF WATER



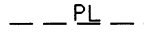
PROP. LIMIT OF CUT



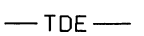
PROP. LIMIT OF FILL


PROP. RIGHT OF WAY

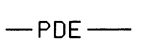
NATURAL GROUND



PROPERTY LINE

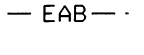


TEMP. DRAINAGE EASEMENT



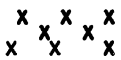
PERMANENT DRAINAGE EASEMENT

EXIST. ENDANGERED ANIMAL BOUNDARY



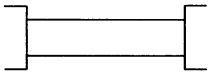
EXIST. ENDANGERED PLANT BOUNDARY

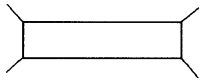
WATER SURFACE


LIVE STAKES


BOULDER

CORE FIBER ROLLS

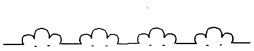

PROPOSED BRIDGE

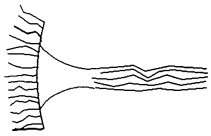

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)


SINGLE TREE


WOODS LINE

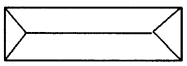

DRAINAGE INLET

ROOTWAD


RIP RAP

ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE


PREFORMED SCOUR HOLE (PSH)


LEVEL SPREADER (LS)

GRASS SWALE


BASE GRASS SWALE

NCDOT

DIVISION OF HIGHWAYS

ONSLOW COUNTY

PROJECTS: 33224.1.1 (B-3682)
& 35052.1.1 (W-3413)

REPLACEMENT OF BRIDGE NO.3
ON SR 1423 OVER LITTLE NE CREEK

SHEET 3 OF 12 **8 JUL 04**

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
5	John W. Banks, et. ux.	1075 Lullwater Circle McDonough, GA 30253
6	Thomas J. Marshall and Kathleen H. Marshall	207 Brentwood Ave. Jacksonville, NC 28540
7	Marijennie B. Warlick	1009 Country Club Drive Jacksonville, NC 28540
11	Marjorie Padgett	619 Old Thirty Road Jacksonville, NC 28546
15	Kathleen M. Leone	602 Old Thirty Road Jacksonville, NC 28546
16	John S. Martin	145 Harbord Drive Midway Park, NC 28544
22	Charles E. Franklin	237 Western Boulevard Jacksonville, NC 28546
23	Donald R. Croom	170 Croom Lane Jacksonville, NC 28546
24	Jeffery L. Lambert	816 Old Thirty Road Jacksonville, NC 28546
28	James V. Rose	828 Old Thirty Road Jacksonville, NC 28546
36	Joseph H. Henderson	1601 Pagan Road Raleigh, NC 27603

NCDOT

DIVISION OF HIGHWAYS

ONSLOW COUNTY

PROJECTS: 33224.1.1 (B-3682)
& 35052.1.1 (W-3413)

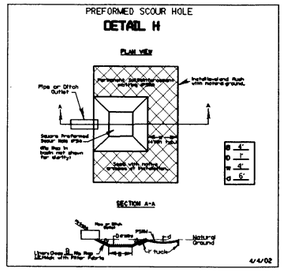
REPLACEMENT OF BRIDGE NO.3
ON SR 1423 OVER LITTLE NE CREEK

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

PREFORMED SCOUR HOLE
DETAIL H



PROP. PAINTED ISLAND.
SEE TRAFFIC CONTROL PLANS

PAVEMENT REMOVAL & OBLITERATION

NAD 83

NOTE: EXIST. BRIDGE TO BE REMOVED

NOTE: OLD ROADWAY EMBANKMENT WILL BE REMOVED DOWN TO NATURAL GROUND W/3H SLOPES. SEE CROSS SECTIONS. QUANTITY OF EXCAVATION 2500 C.Y.

4 ONSLOW COUNTY BOARD OF EDUCATION

6 THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL

THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL

WETLAND A
HAND CLEARING

WETLAND L
HAND CLEARING

WETLAND K
FILL IN WETLAND
&
MECHANIZED CLEARING

WETLAND B
HAND CLEARING

WETLAND D
FILL IN WETLAND
&
HAND CLEARING

UT #0
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

JOHN W. BANKS, et ux
5

MARJENNIE B. WARLICK
7

100' 50' 0 100'

F F F DENOTES FILL IN WETLAND

S S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

HC HC HC HC HC HC HC DENOTES HAND CLEARING

NOTE: SHOULDER BERM GUTTER
-L- STA 26+54.25 TO 26+73 LT & RT
SHOULDER BERM GUTTER
-L- STA 28+97 TO 29+15.75 LT & RT

MATCHLINE -L- 31+00.00 SEE SHEET 6

MATCHLINE -L- 19+00.00 SEE SHEET 4

REVISIONS 8/17/99

12-OCT-2004 09:13
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aperman

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	5A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PREFORMED SCOUR HOLE
DETAIL H

PLAN VIEW

SECTION A-A

PROP. PAINTED ISLAND.
SEE TRAFFIC CONTROL PLANS

PAVEMENT REMOVAL & OBLITERATION

NAD 83

REVISIONS

8/17/04

NOTE: EXIST. BRIDGE TO BE REMOVED

NOTE: OLD ROADWAY EMBANKMENT WILL BE REMOVED DOWN TO NATURAL GROUND W/3H SLOPES, SEE CROSS SECTIONS. QUANTITY OF EXCAVATION 2500 C.Y.

4 ONSLOW COUNTY BOARD OF EDUCATION

6 THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL

THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL

PLAY AREA

PAVED PARKING

72" CMP

LITTLE NORTHEAST CREEK

BRIDGE

SEAT ELEV. 14.38

SPECIAL CUT DITCH

SPECIAL LATERAL "V" DITCH

SPECIAL CUT DITCH TIES BACK TO NATURAL GROUND

FALSE SUMP

REMOVE 18" RCP

REMOVE 24" RCP

MAILBOX

SIGN

WOODS

HDWL

PDE

CL. B RIPRAP
7 TONS
FF 130sf

VARIABLE BASE DITCH
DDE 50cy
FF 600sf
CLASS B RIP RAP
30 tons

PREFORMED SCOUR HOLE

MATCHLINE -L- 19+00.00 SEE SHEET 4

MATCHLINE -L- 31+00.00 SEE SHEET 6

UT #0
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

WETLAND A
HAND CLEARING

WETLAND L
HAND CLEARING

WETLAND K
FILL IN WETLAND
&
MECHANIZED CLEARING

WETLAND B
HAND CLEARING

WETLAND D
FILL IN WETLAND
&
HAND CLEARING

JOHN W. BANKS, ET UX

5

MARLENNE B. WARLICK

7

100' 50' 0 100'

F F F DENOTES FILL IN WETLAND

S S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

HC HC HC HC HC HC DENOTES HAND CLEARING

NOTE: SHOULDER BERM GUTTER
-L- STA 26+54.25 TO 26+73 LT & RT
SHOULDER BERM GUTTER
-L- STA 28+97 TO 29+15.75 LT & RT

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dzerman

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT REMOVAL & OBLITERATION

100' 50' 0 100'

NAD 83

REVISIONS 8/17/99

MATCHLINE -L- 31+00.00 SEE SHEET 5

MATCHLINE -L- 44+00.00 SEE SHEET 7

THOMAS J. MARSHALL

ROBIN L. BURLESON (9)

UNKNOWN (8)

MARJORIE PADGETT (11)

MARIJENNIE B. WARLICK (7)

ANDREW ZHAR, ET UX (10)

WILLIAM BALLANTINE (12)

(13)

SR 1427 (GRAVES CREEK ROAD)

200' BST SR 1423 (OLD 30 RD)

EXISTING R/W

SPECIAL CUT DITCH

REMOVE

PLUG

18" RCP

15" RCP

24" RCP

CL B RIPRAP

FALSE SUMP

BERM DITCH

PIPE

RETAIN

REMOVE 10' OF 15" RCP

WOODS

2SBD

HTR

G

200 GAL FUEL TANK WITH PUMP (ABAND.)

WETLAND G
(Ruled Not a Wetland
After Corps Field Review)
NO IMPACTS

See sheet 12, 13 for -L- Profile

08-JUL-2004 15:38
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Lovingood AT H187134

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	6 A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

100' 50' 0 100'

PAVEMENT REMOVAL & OBLITERATION

NAD 83

REVISIONS

8/17/99

THOMAS J. MARSHALL

ROBIN L. BURLESON (9)

UNKNOWN (8)

MARJORIE PADGETT (11)

MARLENNE B. WARLICK (7)

ANDREW ZHAR, ET UX (10)

WILLIAM BALLANTINE (12)

(13)

MATCHLINE –L– 31+00.00 SEE SHEET 5

MATCHLINE –L– 44+00.00 SEE SHEET 7

SPECIAL CUT DITCH

REMOVE

FALSE SUMP

BERM DITCH

CL. B RIPRAP

RETAIN

WOODS

HTR

2SBD

200 GAL FUEL TANK WITH PUMP (ABAND.)

WETLAND G
(Ruled Not a Wetland
After Corps Field Review)
NO IMPACTS

See sheet 12, 13 for –L– Profile

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jlovingood

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

RESURFACE AND WIDEN
FROM STA. 56+50 TO STA. 84+50
(SEE TYPICAL SECTION #5)

NAD 83

REVISIONS 8/17/99

MATCHLINE -L- 44+00.00 SEE SHEET 6

-L- 58+00.00

45 50 55

CEMETERY

UT #1
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

NO IMPACTS TO CHANNEL OR WETLANDS

MARJORIE PADGETT (11)

JOHN S. MARTIN (16)

KATHLEEN M. LEONE (15)

JOHN A. SANTONI (13)

RANDY L. WEAVER (14)

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL D

TIE PROPOSED DITCH TO EXISTING DITCH

TIE TO NATURAL GROUND STA 54+50 TO 56+00

FALSE SUMP SEE DETAIL

REMOVE 15" RCP

REMOVE 18" RCP

REMOVE 24" CPP

REMOVE BR. COLUMN

REMOVE 30" RCP

REMOVE 36" RCP

8' RIPRAP

12' GRAVEL

WATER SPICKET

ELECT. PLUGS

ISFD

HTR

WOODS

100' 50' 0 100'

S S S DENOTES FILL IN SURFACE WATER

See sheet 13 for -L- Profile

29-SEP-2004 15:07
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plotinspect AT

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	7A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RESURFACE AND WIDEN
FROM STA. 56+50 TO STA. 84+50
(SEE TYPICAL SECTION #5)

NAD 83

REVISIONS

06/17/99

MATCHLINE –L– 44+00.00 SEE SHEET 6

–L– 58+00.00

UT #1
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

NO IMPACTS TO CHANNEL OR WETLANDS

UT #1
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

TIE PROPOSED DITCH TO EXISTING DITCH

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL D

FALSE SUMP SEE DETAIL

CL B RIPRAP

REMOVE

TIE TO NATURAL GROUND STA 54+20 TO 56+00

MARJORIE PADGETT (11)

JOHN S. MARTIN (16)

KATHLEEN M. LEONE (15)

JOHN A. SANTONI (13)

RANDY L. WEAVER (14)

CEMETERY

ISFD

HTR

WOODS

WATER SPICKET

ELECT. PLIOS

BK COLUMN

100' 50' 0 100'

S S S DENOTES FILL IN SURFACE WATER

See sheet 13 for –L– Profile

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

8/17/99

REVISIONS

NAD 83

100

105

SADIE E. MORTON
21

WETLAND Q
EXCAVATION IN WETLAND
&
MECHANIZED CLEARING

DONALD R. CROOM
23

TAMMY CLARK MORTON
25

FLOYD R. BUFFINGTON
27

DONALD R. CROOM
23

SPECIAL LATERAL "V" DITCH
SPECIAL CUT DITCH
WOODS
REMOVE
15" RCP
TRIPRAP
TIE FILL SLOPE TO NATURAL GROUND AT EXISTING DITCH
4" CONC
4" WOOD
6" WD
EIP
REBAR
ISFD
2SFD
HTR
ISBD
RAILROAD TIES
CONC PAD

UT #5
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

JONATHAN D. RASMUSSEN
26

JEFFERY L. LAMBERT
24

CHARLES E. FRANKLIN
22

JAMES V. ROSE
28

MATCHLINE -L- STA. 96+00.00 SEE SHEET 8

MATCHLINE -L- STA. 109+00.00 SEE SHEET 10

UT #6
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

100' 50' 0 100'

E E E DENOTES EXCAVATION IN WETLAND

S S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

See sheet 15 for -L- Profile

29-SEP-2004 15:33
R:\Highways\Legal\Permits\b3682 permit s09.pph
pavlopoulos

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	9A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

8/17/99

REVISIONS

NAD 83

WETLAND Q
EXCAVATION IN WETLAND
&
MECHANIZED CLEARING

UT #5
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

UT #6
FILL IN SURFACE WATER
&
EXISTING CHANNEL IMPACTED

SADIE E. MORTON (21)

CHARLES E. FRANKLIN (22)

DONALD R. CROOM (23)

JEFFERY L. LAMBERT (24)

TAMMY CLARK MORTON (25)

JONATHAN D. RASMUSSEN (26)

FLOYD R. BUFFINGTON (27)

JAMES V. ROSE (28)

DONALD R. CROOM (23)

SPECIAL LATERAL "V" DITCH

SPECIAL CUT DITCH

REMOVE

15" RCP

18" RCP

TIE FILL SLOPE TO NATURAL GROUND AT EXISTING DITCH

RAILROAD

MATCHLINE -L- STA. 96+00.00 SEE SHEET 8

MATCHLINE -L- STA. 109+00.00 SEE SHEET 10

100' 50' 0 100'

E E E DENOTES EXCAVATION IN WETLAND

S S S DENOTES FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

See sheet 15 for -L- Profile

29-SEP-2004 15:33
S:\Hydraulics\Hydl\Permits\B3682 permit sheet.dgn
flowers

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

REVISIONS 8/17/99

100' 50' 0 100'

E E E DENOTES EXCAVATION IN WETLAND

NAD 83

110 115 120

CHRISTOPHER R. CROOM (30)

PHILLIP CROOM (31)

PHILLIP CROOM (31)

PHILLIP CROOM (31)

MATCHLINE -L- STA. 109+00.00 SEE SHEET 9

MATCHLINE -L- STA. 121+00.00 SEE SHEET 11

SPECIAL CUT DITCH

REMOVE 15" RCP

REMOVE 18" RCP

REMOVE 12" RCP

REMOVE CMP

REBAR

REMOVE CMP

TIE GRADE TO DRAIN

ISFD

ISBKD

ISGRAVEL

S 41°28'09"E

FALSE SUMP

SPECIAL LATERAL "V" DITCH

BASE DITCH

WOODS

PLASTIC

GATE

EIP

EIR

CL B RIPRAP

TIE

PDE

HTR DW

SEPTIC TANK

DRAIN FIELD

PLANTER

KLAUS G. FROEHLICH (29)

JOSEPH H. HENDERSON (33)

WILLIAM MCNAIR (35)

JOSEPH H. HENDERSON (36)

KATIE C. WINBERRY (39)

RICHARD MATHIS (40)

JOSEPH H. HENDERSON (41)

TIMOTHY E. HOWELL (32)

BERTHA D. CAMPBELL (34)

JOHN MICHAEL DAMONE (37)

TAMMY SUE SHULTZ (38)

WETLAND P
EXCAVATION IN WETLAND

See Sheet 15 for -L- Profile

08-JUL-2004 15:51
R:\Hydr-Data\Roads\Permits\b3682 permit s10.ph
flowingood at HYB71134

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	10 A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

100' 50' 0 100'

E E E DENOTES EXCAVATION IN WETLAND

NAD 83

REVISIONS

8/17/99

CHRISTOPHER R. CROOM 30

PHILLIP CROOM 31

PHILLIP CROOM 31

PHILLIP CROOM 31

SEE SHEET 9

SEE SHEET 11

MATCHLINE -L- STA. 109+00.00

MATCHLINE -L- STA. 121+00.00

SPECIAL CUT DITCH

TOE

GRADE TO BRAIN

2' GRAVEL

ISFD

REMOVE

REBAR

15" RCP

S 41°28'09" E

FALSE SUMP

PLASTIC

WOODS

GAZEBO

GL & PERGOLA

HTR DW

ISBKD

SEPTIC TANK

DRAIN FIELD

PLANTER

SPECIAL LATERAL "V" DITCH

BASE DITCH

PDE

KLAUS G. FROEHLICH 29

JOSEPH H. HENDERSON 33

WILLIAM MCNAIR 35

JOSEPH H. HENDERSON 36

KATIE C. WINBERRY 39

RICHARD MATHIS 40

JOSEPH H. HENDERSON 41

TIMOTHY E. HOWELL 32

BERTHA D. CAMPBELL 34

JOHN MICHAEL D'AMONE 37

38 TAMMY SUE SHULTZ

WETLAND P
EXCAVATION IN WETLAND

See Sheet 15 for -L- Profile

08-JUL-2004 15:50
R:\Hydraulics\Legal\Permits\b3682 permit s10.dgn
jlovingood AT HYD7134

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Hand Clearing (ac)	SURFACE WATER IMPACTS: Fill In SW (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
UT #0	-L- 19+00 Rt	2 @ 42in RCP						0.02		47	
WL A	-L- 27+70 Lt & Rt	Bridge					0.07				
WL B	-L- 28+60 Lt & Rt	Bridge					0.03				
WL D	-L- 29+50 Rt	Roadway Fill	0.05				0.02				
WL K	-L- 25+50 Rt	Roadway Fill	0.01			0.02					
WL L	-L- 27+20 Lt & Rt	Bridge					0.05				
WL G	-L- 32+00 Rt	Roadway Fill	**RULED NOT A WETLAND BY CORPS.**								
UT #1	-L- 51+00 Lt & Rt	1 @ 36in RCP						0.01		60	
WL Q	-L- 102+10 Lt	Roadway Fill & 48in RCP			0.02	0.03					
UT #5	-L- 102+30 Rt	Roadway Fill & 48in RCP						0.01		35	
UT #6	-L- 108+50 Lt & Rt	Roadway Fill & 48in RCP						0.01		66	
TOTALS, THIS SHEET:			0.06	0	0.02	0.05	0.16	0.05	0	208	0

ACOE has determined UT 1, 5, and 6, 0 are intermittent streams requiring no mitigation

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ONSLOW COUNTY
PROJECT 33224.1.1 (B-3682) &
PROJECT 35052.1.1 (W-3413)

Form Revised 3/22/01

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS			
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Hand Clearing (ac)	Fill In SW (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
WL P	-L- 116+15 Rt	Roadway Fill			0.02						
		& 24in RCP									
TOTALS, THIS SHEET:			0	0	0.02	0	0	0	0	0	0
PROJECT TOTALS:			0.06	0	0.04	0.05	0.16	0.05	0	208	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ONSLOW COUNTY
PROJECT 33224.1.1 (B-3682) &
PROJECT 35052.1.1 (W-3413)

SHEET 12 OF 12 9/29/04

Form Revised 3/22/01

09/08/99

TIP PROJECT: B-3682

WBS: 33224.1.1

TIP PROJECT: W-3413

WBS: 35052.1.1

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

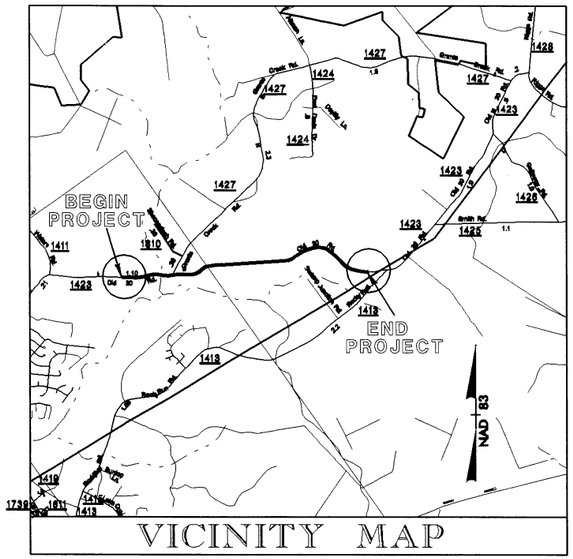
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

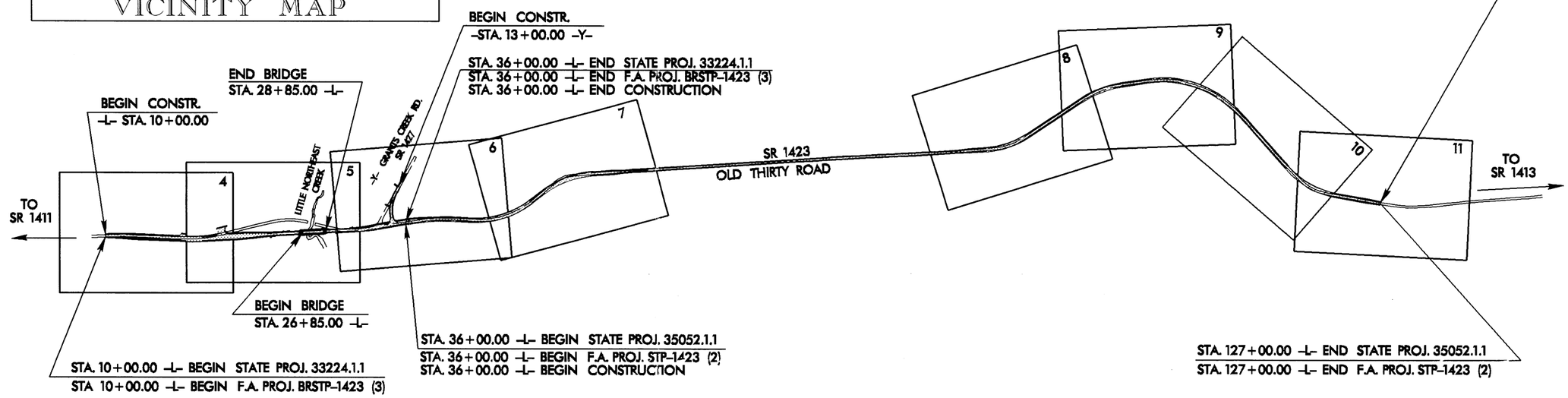
ONSLOW COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-3682 & W-3413	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33224.1.1	BRSTP-1423 (2)	P.E.
33224.1.1	BRSTP-1423 (3)	ROW
35052.1.1	STP-1423 (2)	P.E.

LOCATION: B-3682 – BRIDGE NO. 3 OVER LITTLE NORTHEAST CREEK ON SR 1423
W-3413 – SR 1423 FROM SR 1427 TO SR 1413
TYPE OF WORK: GRADING, PAVING, WIDENING, RESURFACING DRAINAGE, STRUCTURE AND STRUCTURE REMOVAL





THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2004	=	3,680
ADT 2024	=	6,080
DHV	=	9 %
D	=	55 %
T	=	3 % *
V	=	50 MPH

* TTST 1 % DUAL 2 %
FUNC CLASS = LOCAL

PROJECT LENGTH

B-3682

LENGTH ROADWAY F.A. PROJECT BRSTP-1423 (3)	=	0.454 mi
LENGTH STRUCTURE F.A. PROJECT BRSTP-1423 (3)	=	0.038 mi
TOTAL LENGTH STATE PROJECT 33224.1.1	=	0.492 mi

W-3413

LENGTH ROADWAY F.A. PROJECT STP-1423 (2)	=	1.723 mi
TOTAL LENGTH STATE PROJECT & 35052.1.1	=	1.723 mi

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., NC, 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: September 30, 2003

LETTING DATE: March 15, 2005

JIMMY S. GOODNIGHT
PROJECT ENGINEER

TIM GOINS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

06-AUG-2004 09:54
\\Ppo\ISG\Projects\B-3682\Design\B3682_RDY03024

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta 11+21.18
Δ = 4° 49' 10.6" (RT)
D = 2° 30' 00.0"
L = 192.78'
T = 96.45'
R = 2,291.83'
SE = EXIST.

-L-
PI Sta 17+58.18
Δ = 5° 26' 27.6" (LT)
D = 4° 00' 00.0"
L = 136.03'
T = 68.06'
R = 1,432.39'
SE = 0.06 ft/ft
RO = 150'

PROP. PAINTED ISLAND.
SEE TRAFFIC CONTROL PLANS

NAD 83

10

15

MACK M. WEATHERINGTON, et ux
DB 1109 PG 722

N 87° 34' 06" E
216.39'

EIP

CM

POT Sta. 10+00.00

N 07° 27' 09" W
232.00'

N 07° 28' 06" W
232.35'

1

PL
40.00
EXIST. R/W

+39.25 -L-
62.186
PL

+17.51 -L-
40.00

THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL
DB 703 PG 488
DB 1322 PG 500
MB 3 PG 11

SPECIAL CUT DITCH
SEE DETAIL B

3

4

ONSLOW COUNTY
BOARD OF EDUCATION
DB 351 PG 117

PCSta. 16+90.11

PTSta. 18+26.14

EXIST. R/W -L-
40.00

+90.11 -L-
40.00

SPECIAL CUT DITCH
SEE DETAIL I

SPECIAL CUT DITCH
SEE DETAIL J

+26.14 -L-
40.00

+72.00 -L-
53.00

PAVED PARKING

OLD POWER POLE

SEE SHEET 5

MATCHLINE -L- 19+00.00

15" RCP

6" PVC

18" STEEL

4" WW

GATE

REMOVE

N 87° 30' 07" E

S 87° 40' 42.3" E

S 88° 37' 04.8" E

222' TRANSITION RT.

STA 10+00.00 -L- BEGIN STATE PROJECT 33224.1.1

STA 10+00.00 -L- BEGIN F.A. PROJECT BRSTP-1423 (3) (B-3682)

BL-10
POT 5+00.00

+00.00 -L-
60.00, EXIST. R/W

+24.73 -L-
60.00

+50.00 -L-
70.00

+22.47 -L-
60.00

+17.51 -L-
60.00

TROY LEE BANKS
WILL BOOK 91-E-159

2

+90.11 -L-
60.00

+26.14 -L-
60.00

+50.00 -L-
81.00

+04.52 -L-
60.58 R/W

BL-3 PINC 11+91.43 =
-L- 16+89.535 (+24.65 RT)
NCDOT GPS MON. B3682-3
ELEV.= 21.81'

S00°44'08"W
434.35'

PCSta. 10+24.73

PTSta. 12+17.51

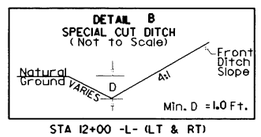
SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT DITCH
SEE DETAIL C

DATUM DESCRIPTION

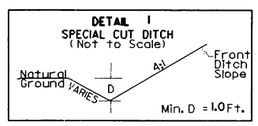
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3682-3" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 375074.1570(ift) EASTING: 2501482.8440(ift)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992.1278
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3682-3" TO -L- STA 10+00.00 IS
N 86° 28' 31.39" W DISTANCE 689.3727 FEET
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



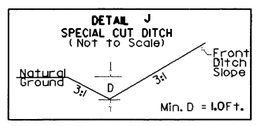
STA 12+00 -L- (LT & RT)
STA 15+50 TO 18+00 -L- (RT)

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)



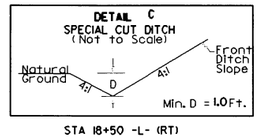
FROM STA 15+50 TO 18+00 (LT)

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



FROM STA 18+50 TO STA 19+00 -L- (LT)

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)



STA 18+50 -L- (RT)

See Sheet 12 for -L- Profile
See Sheet 16 for -Y- Profile

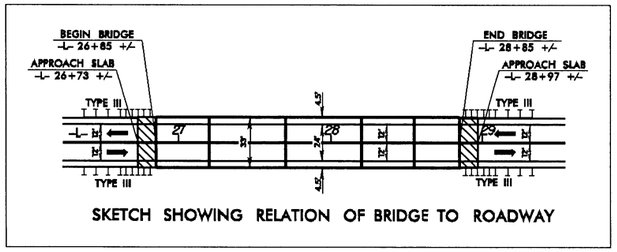
06-AUG-2004 09:54
H:\proj\36369_2004\36369sh.dgn
Users: ATT1 ROADWAY

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

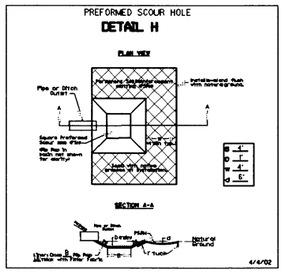
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99 CHANGES WERE MADE TO THE OWNER NAMES ON PARCELS 3 AND 5. PARCEL 6 WAS CHANGED TO PARCEL 3. THESE REQUESTS WERE MADE BY DIV ROW (7-28-04).
PJP 8-26-04



SKETCH SHOWING RELATION OF BRIDGE TO ROADWAY



NAD 83

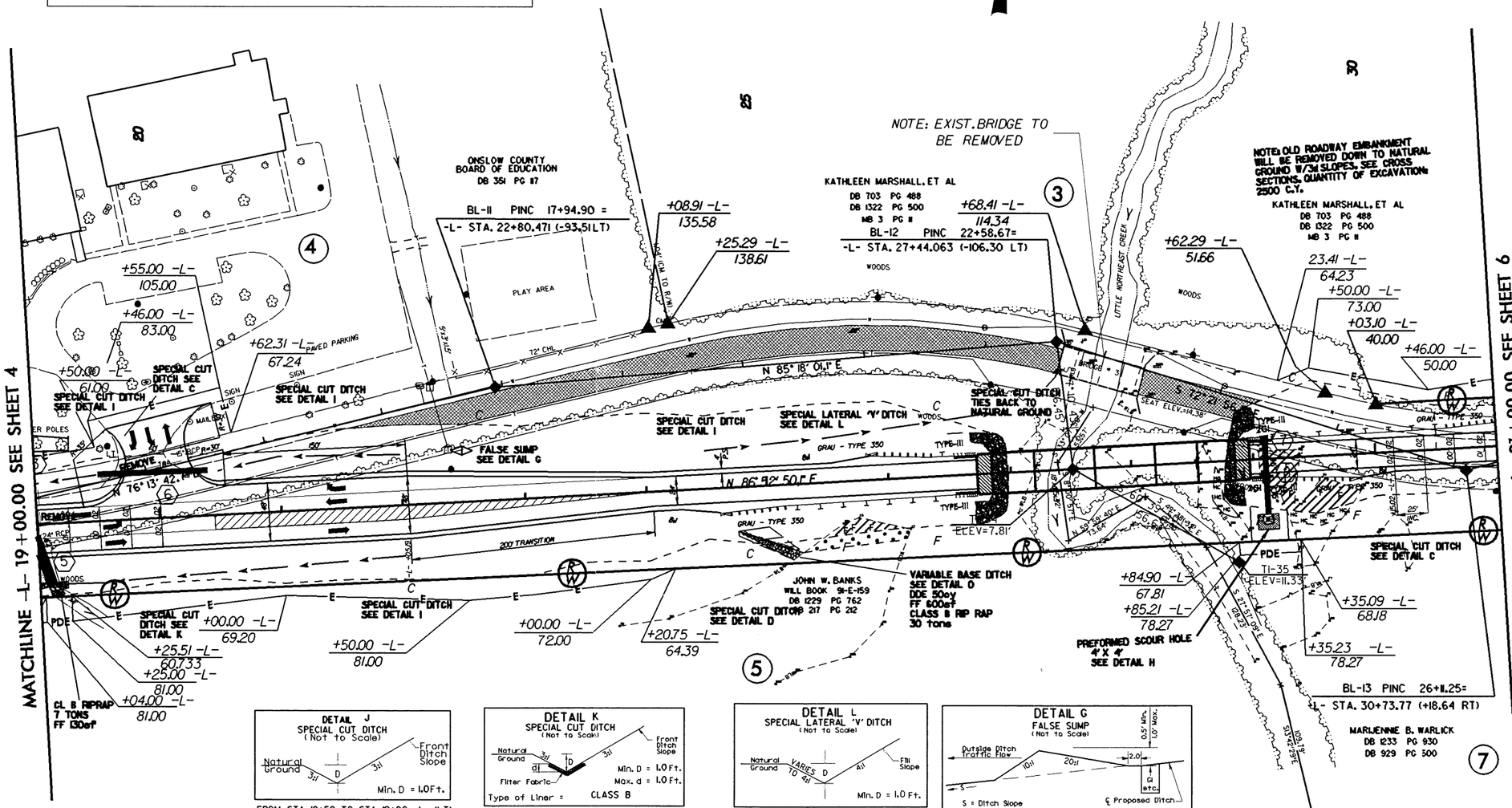
DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES HAND CLEARING

PROP. PAINTED ISLAND. SEE TRAFFIC CONTROL PLANS

PAVEMENT REMOVAL & OBLITERATION

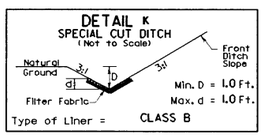


FROM STA 18+50 TO STA 19+00 -L- (LT)

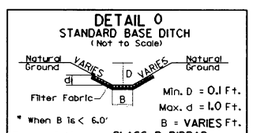
FROM STA 19+00 -L- TO STA 19+20 -L- (RT)

FROM STA 25+50 TO STA 27+00 -L- (LT)

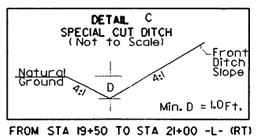
STA 22+50 (LT)



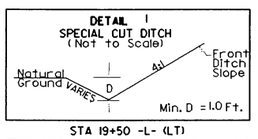
FROM STA 19+00 -L- TO STA 19+20 -L- (RT)



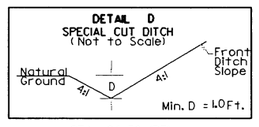
STA 25+00 -L- (RT)



FROM STA 19+50 TO STA 21+00 -L- (RT)
FROM STA 20+00 TO STA 20+50 -L- (LT)
STA 30+50 -L- (RT)



STA 19+50 -L- (LT)
FROM STA 21+00 TO STA 22+00 -L- (LT)
FROM STA 21+50 TO STA 22+00 -L- (RT)
FROM STA 24+50 TO STA 25+00 -L- (LT)



STA 24+50 (RT)

NOTE: SHOULDER BERM GUTTER
-L- STA 26+54.25 TO 26+73 LT & RT
SHOULDER BERM GUTTER
-L- STA 28+97 TO 29+15.75 LT & RT

28-SEP-2004 15:29
R:\proj\36823\05\dsh\
Dwains AT ROADWAY

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta 32+68.15
Δ = 6° 54' 30.9" (LT)
D = 4° 00' 00.0"
L = 172.71'
T = 86.46'
R = 1,432.39'
SE = SEE PLANS

-Y-
PI Sta 14+72.74
Δ = 39° 04' 40.0" (LT)
D = 11° 30' 00.0"
L = 223.30'
T = 116.19'
R = 327.40'
SE = SEE PLANS

-L-
PI Sta 38+39.63
Δ = 13° 11' 28.9" (RT)
D = 3° 00' 00.0"
L = 439.71'
T = 220.83'
R = 1,909.86'
SE = SEE PLANS

DETAIL P
BERM DITCH
(Not to Scale)
Min. D = 1.5 Ft.
FROM STA 43+00 TO STA 43+50 -L- (LT)

DETAIL M
FALSE CUT
(Not to Scale)
W = 3' Min.
STA 43+00 -L- (RT)

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.0 Ft.
STA 34+50 -L- (LT) & 38+50 -L- (LT)
STA 43+50 -L- (LT)

DETAIL G
FALSE SUMP
(Not to Scale)
STA 39+50 -L- (LT)

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.0 Ft.
FROM STA 35+50 TO STA 36+00 -L- (RT)
FROM STA 41+50 TO STA 42+50 -L- (RT)
STA 39+00 -L- (LT)

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Min. D = 1.0 Ft.
FROM STA 33+00 TO STA 34+50 -L- (RT)
STA 16+00 -Y- (LT & RT)

PAVEMENT REMOVAL & OBLITERATION

ADT 2004	1320	
ADT 2024	2920	
808		512
1848	-Y-	1072
3680	-L-	3384
6080		5304

NAD 83

POT Sta. 10+00.00
N 29° 04' E 1,255.43'
10
S 29° 02' 58" W 205.85' SR 1407 (GRANTS CREEK ROAD)
+00.00 -Y- EXIST. R/W
+00.00 -Y- 55.00
+52.00 -Y- 62.00
BY-15 POT 5+00.00= -Y- 14+08.84 (+19.35 RT)
PCSta. 13+56.95
+56.55 -Y- EXIST. R/W
+18.87 -Y- EXIST. R/W
+00.00 -Y- EXIST. R/W
BEGIN CONSTRUCTION -Y- STA 13+00.00
+00.00 -Y- 50.00
+56.55 -Y- EXIST. R/W
+50.00 -Y- 52.00
+48.00 -Y- 51.00
+41.92 -L- 30.00
+57.80 -Y- R/W
+74.42 -L- R/W
PTSta. 15+79.85
S 10° 01' 40.9" E
THOMAS J. MARSHALL & KATHLEEN H. MARSHALL DB 703 PG 488 DB 1522 PG 500 MB 3 PG 11
ROBIN L. BURLESON DB 1390 PG 20
N 26° 26' 54" W 15.15'
S 61° 09' 08" E 290.36'
PCSta. 31+81.59
PTSta. 33+54.40
N 60° 56' 45" W 147.96'
+81.69 -L- 40.00
EXIST. R/W -L- 40.00
+56.16 -L- EXIST. R/W UNKNOWN
BL-14 PINC 28+81.41= -L- STA 33+41.49 (-29.59 LT) 200' TRANSITION
BY-A14 PINC 7+74.96 -Y- STA 16+20.35 (+146.39 RT)
SPECIAL CUT DITCH SEE DETAIL C
-L- STA 34+88.13 = -Y- STA 16+50.00
+00.00 -L- 71.00
+81.69 -L- 70.00
MATCHLINE -L- 31+00.00 SEE SHEET 5
MARJORIE PADGETT DB 229 PG 332
STA 36+00.00 -L- END STATE PROJECT 33224.1.1
STA 36+00.00 -L- END F.A. PROJECT BRSTP-1423 (3) (B-3682)
STA 36+00.00 -L- BEGIN STATE PROJECT 35052.1.1
STA 36+00.00 -L- BEGIN F.A. PROJECT STP-1423 (2) (W-3413)
BL-16 PINC 34+78.60= -L- STA 39+36.84 (-11.32 LT)
+18.80 -L- 40.00 200' TRANSITION
+00.00 -L- 50.00
15 SPECIAL CUT DITCH SEE DETAIL F
+00.00 -L- 45.00
SPECIAL CUT DITCH SEE DETAIL D
FALSE SUMP SEE DETAIL G
+58.51 -L- 40.00
+76.65 -L- 40.00
+50.00 -L- 45.00
+15.00 -L- 60.00
+15.00 -L- 43.94
+50.00 -L- 63.00
+50.0
SPECIAL CUT DITCH SEE DETAIL E
BERM DITCH SEE DETAIL P
PCSta. 41+76.65
N 89° 35' 03" E
S 86° 50' 11" E
CL B RIPRAP
WILLIAM BALLANTINE DB 878 PG 896
+19.00 -L- 54.00
+50.00 -L- 50.00 40.00
+15.00 -L- 50.00 40.00
MATCHLINE -L- 44+00.00 SEE SHEET 7
+48.00 -L- 45.00
+00.00 -L- 45.00
+58.51 -L- 40.00
+18.80 -L- 46.00
+76.65 -L- 40.00
N 79° 58' 19.2" E
200 GAL FUEL TANK WITH PUMP (ABAND.)
PCSta. 36+18.80
PTSta. 40+58.51
ANDREW ZIHAR, ET UX DB 529 PG 893
S 86° 06' 16" W 81.58'
S 55° 55' 16" W 70.16'
S 6° 33' 55" E 306.38'
N 5° 38' 59" W 246.18'
See sheet 12, 13 for -L- Profile

06-AUG-2004 09:54
M:\proj\B-3682\B3682.dgn
TIP Proj. B-3682 & W-3413
Roadway Design Unit 2 (919) 733-3024

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-L-
PI Sta 44+62.75
Δ = 41° 03' 44.6" (LT)
D = 7° 30' 00.0"
L = 547.50'
T = 286.10'
R = 763.94'
SE = SEE PLANS

-L-
PI Sta 51+04.53
Δ = 34° 19' 40.3" (RT)
D = 7° 30' 00.0"
L = 457.70'
T = 235.95'
R = 763.94'
SE = SEE PLANS

NAD 83

RESURFACE AND WIDEN
FROM STA. 56+50 TO STA. 84+50
(SEE TYPICAL SECTION #5)

MATCHLINE -L- 44+00.00 SEE SHEET 6

-L- 58+00.00

See sheet 13 for -L- Profile

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground VARIES D 4:1 Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 48+00 TO STA 49+50 -L- (RT)
STA 55+50 -L- (LT)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground VARIES D 4:1 Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 51+50 TO STA 52+50 -L- (LT)
FROM STA 56+00 TO STA 57+00 -L- (LT)

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground 4:1 D 4:1 Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 49+50 TO 50+00 -L- (LT)
FROM STA 50+00 TO STA 50+50 -L- (RT)

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground VARIES D VARIES Front Ditch Slope
d1
Filter Fabric
Min. D = 1.0 Ft.
Max. d = 1.0 Ft.
Type of Liner = CLASS B
FROM STA 50+70 TO STA 51+00 -L- (LT)

DETAIL G
FALSE SUMP
(Not to Scale)
0.5' Min. 1.0' Max.
Outside Ditch Traffic Flow
10:1 20:1 2.0:1
d etc.
S = Ditch Slope
℄ Proposed Ditch
STA 49+18 -L- (LT)

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

-L-
PI Sta 84+88.84
Δ = 0° 43' 26.8" (LT)
D = 1° 00' 00.0"
L = 72.41'
T = 36.21'
R = 5729.58'
SE = N/C

-L-
PI Sta 89+51.33
Δ = 29° 20' 29.7" (LT)
D = 7° 30' 00.0"
L = 391.22'
T = 200.00'
R = 763.94'
SE = 0.08 FT/FT
RO = 200'

NAD 83

-L- STA. 84+00.00

-L- STA. 96+00.00 SEE SHEET 9

MATCHLINE -L- STA. 96+00.00

PCSta. 84+52.63

PTSta. 85+25.04

PCSta. 87+51.33

PTSta. 91+42.55

EDWARD TROTT
DB 265 PG 525

TROTT PROPERTIES, LLC.
DB 1513 PG 494
DB 265 PG 525
MB 26 PG 86

EDWARD TROTT, JR.
DB 697 PG 869

+00.00 -L-
58.00

+50.00 -L-
40.00
EXIST. R/W

+75.00 -L-
55.00

+25.04 -L-
40.00

+00.00 -L-
50.00

+50.00 -L-
50.00

+51.33 -L-
40.00

+25.04 -L-
40.00

+50.00 -L-
58.00

+51.33 -L-
40.00

+00.00 -L-
50.00

+16.00 -L-
59.00

+42.55 -L-
40.00

+52.00 -L-
50.00

+00.00 -L-
50.00

+99.00 -L-
50.00

+99.00 -L-
58.00

+42.55 -L-
40.00

+94.00 -L-
R/W
190.00

+36.00 -L-
R/W
185.00

+19.00 -L-
53.00

+94
190'

+36
185'

BL-24 PINC 82+60.93=
-L- STA 86+89.53 (-12.95 LT)

BL-25 PINC 87+46.26=
-L- STA 91+88.95 (-12.05 LT)

BASE DITCH
SEE DETAIL N
DDE 33oy

SPECIAL CUT DITCH
SEE DETAIL A

SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT DITCH
SEE DETAIL C

SPECIAL CUT DITCH
SEE DETAIL D

SPECIAL LATERAL 'V' DITCH
SEE DETAIL L

COLLAR & EXTEND

REMOVE

RIPRAP

NCDOT GPS MON. W3413-5
27.13' RT OF BL STA 82+60.93
ELEV.= 34.37'

N 86° 20' 25.4" E

S 85° 42' 17" E

S 86° 25' 43" E

N 71° 35' 50.8" E

N 56° 21' 41.4" E

N 57° 44' 36.6" E

S 15° 59' 22" E
208.17'

S 18° 27' 09" E
244.23'

N 73° 34' 38" E
154.18'

0.07' (GP TO R/W)

0.08' (R/W TO EP)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground — VARIES — D — 4:1 — Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 84+50 TO STA 87+00 -L- (RT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground — VARIES — D — 4:1 — Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 86+50 TO STA 88+00 -L- (LT)
FROM STA 92+00 TO STA 93+50 -L- (RT)
FROM STA 87+50 TO STA 89+00 -L- (RT)

DETAIL L
SPECIAL LATERAL 'V' DITCH
(Not To Scale)
Natural Ground — VARIES TO 4:1 — D — 4:1 — FN Slope
Min. D = 1.0 Ft.
FROM STA 91+00 TO 91+50 -L- (RT)

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground — 4:1 — D — 4:1 — Front Ditch Slope
Min. D = 1.0 Ft.
STA 90+50 -L- (RT)

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground — 4:1 — D — 4:1 — Front Ditch Slope
Min. D = 1.0 Ft.
FROM STA 93+00 TO 93+50 -L- (LT)
STA 94+00 -L- (RT)
STA 89+50 -L- (RT)

DETAIL N
STANDARD BASE DITCH
(Not to Scale)
Natural Ground — VARIES — D — B — VARIES — Natural Ground
Min. D = 1.0 Ft.
B = 3.0 Ft.
STA 85+00 -L- (RT)

See Sheet 14, 15 for -L- Profile

06-AUG-2004 09:55
R:\Group 1\3682\Roadway\Plans\3682_ph1.dgn
TDOT10.tbl
AT R0020024

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

NAD 83

-L-
PI Sta 98+91.32
Δ = 25° 21' 25.7" (RT)
D = 6° 45' 00.0"
L = 375.66'
T = 190.96'
R = 848.83'
SE= SEE PLANS

-L-
PI Sta 107+89.82
Δ = 56° 48' 37.6" (RT)
D = 6° 30' 00.0"
L = 874.01'
T = 476.71'
R = 881.47'
SE= SEE PLANS

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1, Front Ditch Slope
Min. D = 1.0 Ft.

FROM STA 100+00 TO 101+00 -L- (LT)
FROM STA 101+00 TO 102+00 -L- (RT)
FROM STA 103+50 TO 105+00 -L- (LT)

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1, Front Ditch Slope
Min. D = 1.0 Ft.

FROM STA 109+50 TO STA 110+50 -L- (LT)
STA 121+00 -L- (RT)

SADIE E. MORTON
DB 691 PG 263
MB 26 PG 86,198

DONALD R. CROOM
DB 954 PG 483
MB 26 PG 198

DONALD R. CROOM
DB 954 PG 483
MB 26 PG 198

TAMMY CLARK MORTON
DB 2001PG 908

FLOYD R. BUFFINGTON
DB 1505 PG 632
MB 26 PG 198

JONATHAN D. RASMUSSEN
DB 1513 PG 430
MB 32 PG 66

JEFFERY L. LAMBERT
DB 1302 PG 220
MB 33 PG 153

JAMES V. ROSE
DB 1220 PG 523
DB 1356 PG 681
MB 34 PG 165

CHARLES E. FRANKLIN
DB 863 PG 273

BL-26 PINC 94+45.21=
-L- STA 98+85.76 (-15.75 LT)

BL-27 PINC 100+40.62=
-L- STA 104+77.11 (-16.44 LT)

BL-28 PINC 104+00.26=
-L- STA 108+33.88 (-9.68 LT)

+54.00 -L- 55.00
+99.00 -L- 55.00
+76.02 -L- 40.00
+02.00 -L- 57.00
+47.00 -L- 58.00
+61.00 -L- 56.00
+13.11 -L- 40.00
+80.00 -L- 50.00
+52.60 -L- 57.00
+20 -L- 40.00 65.00
+50.00 -L- 40.00 81.00
+00.36 -L- 40.00
+52.00 -L- 56.00
+19.00 -L- R/W 58.00
+40.00 -L- R/W 58.00
+50.00 -L- 77.00
+00.00 -L- 58.00
+97.06 50.00
+50.00 -L- R/W 74.00
+80.00 -L- R/W 74.00
+46.00 -L- 50.00
+50.00 -L- 58.00
+00.36 -L- 40.00

PC Sta. 97+00.36
PT Sta. 100+76.02
PC Sta. 103+13.11

MATCHLINE -L- STA. 96+00.00 SEE SHEET 8

MATCHLINE -L- STA. 109+00.00 SEE SHEET 10

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 4:1, D, 4:1, Front Ditch Slope
Min. D = 1.0 Ft.

STA 99+50 -L- (RT)
STA 97+00 -L- (LT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, VARIES, 4:1, D, Front Ditch Slope
Min. D = 1.0 Ft.

FROM STA 100+00 TO 100+50 -L- (RT)

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, VARIES, 4:1, D, Front Ditch Slope
Min. D = 1.0 Ft.

FROM STA 102+29.5 TO 102+50 -L- (RT)
FROM STA 108+00 TO 108+60.4 -L- (RT)

DETAIL L
SPECIAL LATERAL 'V' DITCH
(Not To Scale)
Natural Ground, VARIES TO 4:1, D, 4:1, Fill Slope
Min. D = 1.0 Ft.

FROM STA 97+50 TO STA 99+50 -L- (LT)
STA 101+50 -L- (LT)
FROM STA 102+50 TO 103+00 -L- (LT)
FROM STA 107+00 TO 109+00 -L- (LT)

See sheet 15 for –L– Profile

06-AUG-2004 09:55
R:\Projects\3682\3682_sh
TDLeon N:\3682_SHT_RD\263024

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

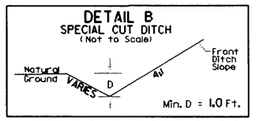
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

NAD 83

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM STA 115+50 TO 116+00 -L- (LT)
STA 112+00 -L- (LT)

-L-
PI Sta 107+89.82
Δ = 56° 48' 37.6" (RT)
D = 6° 30' 00.0"
L = 874.01'
T = 476.71'
R = 881.47'
SE = 0.08 FT/FT
RO = 200'

-L-
PI Sta 120+77.27
Δ = 38° 25' 59.7" (LT)
D = 7° 30' 00.0"
L = 512.44'
T = 266.28'
R = 763.94'
SE = 0.08 FT/FT
RO = 200'

MATCHLINE -L- STA. 109+00.00 SEE SHEET 9

MATCHLINE -L- STA. 121+00.00 SEE SHEET 11

CHRISTOPHER R. CROOM
DB 1288 PG 496
MB 33 PG 77

PHILLIP CROOM
DB 1288 PG 493
MB 33 PG 77

JOSEPH H. HENDERSON
DB 527 PG 674

KLAUS G. ERDEHLICH
DB 1363 PG 725
MB 34 PG 191

WILLIAM McNAIR
DB 1801 PG 1

JOSEPH H. HENDERSON
DB 527 PG 674

KATIE C. WINBERRY
DB 1640 PG 1027
MB 38 PG 163

JOSEPH H. HENDERSON
WILL FILE 89-E-129
DB 527 PG 674

TIMOTHY E. HOWELL
DB 1318 PG 603
MB 32 PG 68

BERTHA D. CAMPBELL
DB 1992 PG 546

JOHN MICHAEL DAMONE
DB 1635 PG 999
MB 39 PG 111

TAMMY SUE SHULTZ
DB 1638 PG 66

RICHARD MATHIS
DB 1683 PG 167

BL-29 PINC 109+96.76=
-L- STA 114+31.34 (-13.32 LT)

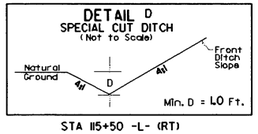
BL-30 PINC 116+44.10=
-L- STA 120+73.03 (+32.00 RT)

PC Sta 118+10.99

+06.00 -L- R/W 120.00
+02.00 -L- 55.00
+03.00 -L- 57.00
+81.00 -L- R/W 107.00
+80.6 -107.1'
+6.8 -120'
+87.11 -L- 40.00
+49.00 -L- 50.00
+94.00 -L- R/W 190.00
+36.00 -L- R/W 185.00
+42.00 -L- 53.00
+51.00 -L- 50.00
+87.11 -L- 40.00
+10.99 -L- 40.00
+00.00 -L- 50.00
+50.00 -L- 50.00
+00.00 -L- 58.00
+51.00 -L- 40.00
EXIST. R/W -L- 40.00
+75.56 -L- PDE
+73.00 -L- R/W 97.00

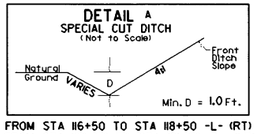
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL D
SPECIAL CUT DITCH SEE DETAIL A
SPECIAL CUT DITCH SEE DETAIL E
SPECIAL LATERAL "V" DITCH SEE DETAIL L
BASE DITCH SEE DETAIL N DDE 10+37
FALSE SUMP SEE DETAIL G
KALSE SUMP SEE DETAIL G
REMOVE
REBAR
ISFD
ISBKD
HTR DW
SEPTIC TANK
DRAIN FIELD
PLANTER
WOODS
PLASTIC
GRAVEL
S 41° 28' 09.2" E
S 41° 33' 43" E
S 41° 37' 09.5" E
N 50° 42' 22" E 601.54'
S 69° 03' 38" W 101.58'
N 75° 17' 17" W 24.66'
S 56° 29' 51" W 62.01'
S 71° 32' 51" W 42.02'
N 20° 15' 55" W 55.04'
N 41° 43' 18" E 443.48'
N 18° 47' 38" E 586.38'
S 60° 10' 28" E 6.69'

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



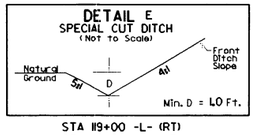
STA 115+50 -L- (RT)
STA 119+00 -L- (LT)
STA 109+50 -L- (RT)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)



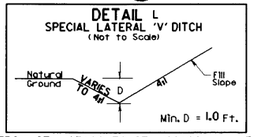
FROM STA 116+50 TO STA 118+50 -L- (RT)
FROM STA 120+50 TO STA 121+00 -L- (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



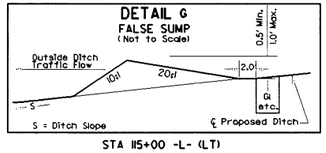
STA 119+00 -L- (RT)
STA 118+50 -L- (LT)

DETAIL L
SPECIAL LATERAL "V" DITCH
(Not to Scale)



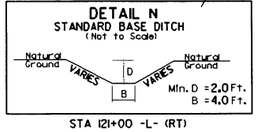
FROM STA 107+00 TO STA 109+00 -L- (LT)
FROM STA 117+00 TO STA 118+00 -L- (LT)
FROM STA 119+50 TO STA 120+00 -L- (RT)
FROM STA 121+50 TO STA 123+50 -L- (RT)

DETAIL G
FALSE SUMP
(Not to Scale)



STA 115+00 -L- (LT)
STA 119+23 -L- (LT)

DETAIL N
STANDARD BASE DITCH
(Not to Scale)



STA 121+00 -L- (RT)

See Sheet 15 for -L- Profile

06-AUG-2004 09:45
R:\proj\3682\roadway\sht\3682sht10.dgn
TDOT\chris_ar\rb03024

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta 120+77.27
Δ = 38° 25' 59.7" (LT)
D = 7° 30' 00.0"
L = 512.44'
T = 266.28'
R = 763.94'
SE = 0.08 FT/FT
RO = 200'

NAD 83

STA 127+00.00 -L- END STATE PROJECT 35052.1.1

STA 127+00.00 -L- END F.A. PROJECT STP-1423 (2) (W-3413)

MATCHLINE -L- STA. 121+00.00 SEE SHEET 10

PT Sta. 123+23.43

POT Sta. 126+97.59

POT Sta. 127+50.00

BL-31 PINC 122+42.19= -L- STA 126+65.27 (-12.75 LT)

BL-32 PINC 127+38.63

+23.43 -L- 40.00

+50.00 -L- 50.00

00.00 -L- 55.00

+23.57 -L- PDE

EXIST. R/W -L- 40.00

+10.00 -L- R/W 102.00

+74.00 -L- 50.00

+23.43 -L- 40.00

+50.00 -L- 45.00

+58.00 -L- 50.00

PL 40.00

PL EXIST. R/W

PHILLIP CROOM
DB 1288 PG 493
MB 33 PG 77

CHRISTOPHER R. CROOM
DB 1288 PG 496
MB 33 PG 77

B. BARDEN LANIER
DB 673 PG 739
MB 33 PG 77

TOMMY A. SHOMARI
DB 1417 PG 511
DB 1428 PG 947
MB 35 PG 192
MB 35 PG 222

GUY C. KING
DB 1327 PG 401
MB 34 PG 36

JOHN P SURATT
DB 1754 PG 392

HEATHER LYNN CARRIER
DB 1814 PG 134

SPECIAL CUT DITCH SEE DETAIL D

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL C

SPECIAL LATERAL 'V' DITCH SEE DETAIL L

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL LATERAL 'V' DITCH SEE DETAIL L

SCRUB

WOODS

HTR

S 79° 54' 08.9" E

S 80° 07' 47.3" E

S 84° 08' 14.1" E

N 84°

N 19° 21' 38" E 363.37'

N 37° 45' 00" W 358.04'

S 10° 00' 45" W 418.99'

S 45° 23' 04" W 100.57'

S 69° 48' 04" W 73.86'

S 62° 03' 04" W 44.89'

S 12° W

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 4:1 — D — 4:1 — Front Ditch Slope — Min. D = 1.0 Ft.

STA 121+00 -L- (RT)
FROM STA 123+50 TO STA 124+00 -L- (RT)

DETAIL L
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

Natural Ground — VARIES TO 4:1 — D — 4:1 — FW Slope — Min. D = 1.0 Ft.

FROM STA 121+50 TO STA 123+00 -L- (RT)

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 4:1 — D — 4:1 — Front Ditch Slope — Min. D = 1.0 Ft.

STA 125+50 -L- (RT)
FROM STA 124+00 TO STA 124+50 -L- (LT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — VARIES — D — 4:1 — Front Ditch Slope — Min. D = 1.0 Ft.

FROM STA 126+00 TO STA 126+50 -L- (RT)
FROM STA 125+50 TO STA 126+50 -L- (LT)

DETAIL A
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — VARIES — D — 4:1 — Front Ditch Slope — Min. D = 1.0 Ft.

FROM STA 120+50 TO STA 121+00 -L- (LT)

See Sheet 15, 16 for -L- Profile

REVISIONS

8/17/99

06-AUG-2004 09:56
R:\proj\3682\roadway\3682_sh11.dgn
TDBorden 01-R1203024

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	12
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DITCH GRADES

LEFT DITCH GRADE

RIGHT DITCH GRADE

PIPE HYDRAULIC DATA

DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 48.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 57.0	CFS
DESIGN HW ELEVATION	= 19.9	FT
100 YEAR DISCHARGE	= 90.0	CFS
100 YEAR HW ELEVATION	= 21.0	FT
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING DISCHARGE	= 60.0	CFS
OVERTOPPING ELEVATION	= 19.7	FT

BM #2 RAILROAD SPIKE IN 18" TWIN OAK
LT. OF -L- STA. 22+00 ELEV. 17.31'
N=375,298.8419 E=2,508,468.7692

-L-

BEGIN GRADE
-L- STA 12+50.00
EL = 27.36'
INCLUDES 2" RESURFACING

END SPECIAL DITCH GRADE LEFT
-L- STA 12+50 EL.= 24.72

BEGIN SPECIAL DITCH GRADE LEFT
-L- STA 11+50 EL.= 25.78

BEGIN SPECIAL DITCH GRADE RIGHT
-L- STA 11+50 EL.= 25.81

END SPECIAL DITCH GRADE RIGHT
-L- STA 12+50 EL.= 24.48

PI = 14+00.00
EL = 25.35'
VC = 150'
K = 211

BEGIN SPECIAL DITCH GRADE LEFT
-L- STA 15+00 EL.= 22.07

BEGIN SPECIAL DITCH GRADE RIGHT
-L- STA 15+00 EL.= 21.83

PI = 15+50.00
EL = 24.40'
VC = 150'
K = 563

PI = 16+00.000
EL = 18.77

PI = 16+50.000
EL = 18.23

PI = 17+00.000
EL = 17.98

PI = 17+00.00
EL = 23.05'
VC = 150'
K = 265

END SPECIAL DITCH GRADE RIGHT
-L- STA 18+00 EL.= 20.33

PI = 18+50.00
EL = 22.65'
VC = 100'
K = 125

PI = 18+85.000
EL = 17.32

PI = 18+50.000
EL = 17.43

PI = 19+00.000
EL = 17.89

PI = 19+00.000
EL = 17.03

PROP
2-42" RCP

PI = 19+50.000
EL = 16.40

PI = 19+99.00
EL = 23.25'
VC = 140'
K = 125

END DITCH GRADE LEFT
-L- STA 22+50 EL.= 18.74

BEGIN DITCH GRADE RIGHT
-L- STA 22+50 EL.= 18.74

See Sheet 4, 5 for Plan View

BEGIN BRIDGE
STA 26+85 +/-

END BRIDGE
STA 28+85 +/-

BEGIN DITCH GRADE LEFT
-L- STA 24+00 EL.= 17.769

PI = 25+00.00
EL = 20.00'
VC = 200'
K = 10750

PI = 24+50.000
EL = 17.62

PI = 25+50.000
EL = 14.82

END DITCH GRADE RIGHT
-L- STA 24+90 EL.= 17.00

BEGIN DITCH GRADE RIGHT
-L- STA 24+000 EL.= 17.369

END DITCH GRADE LEFT
-L- STA 27+00 EL.= 10.21

TIE TO NATURAL GROUND
-L- STA 27+46 EL.= 8.80

PI = 30+20.00
EL = 16.53'
VC = 350'
K = 99

END DITCH GRADE RIGHT
-L- STA 31+00 EL.= 16.50

BEGIN DITCH GRADE RIGHT
-L- STA 30+00 EL.= 13.60

PI = 33+90.00
EL = 27.20'
VC = 390'
K = 114

PI = 34+00.000
EL = 21.33

PI = 34+50.000
EL = 22.47

BEGIN DITCH GRADE RIGHT
-L- STA 32+50 EL.= 18.83

END DITCH GRADE RIGHT
-L- STA 34+85 EL.= 22.59

PI = 37+00.00
EL = 25.55'
VC = 200'
K = 479

END DITCH GRADE RIGHT
-L- STA 37+50 EL.= 21.77

BEGIN DITCH GRADE RIGHT
-L- STA 35+240 EL.= 23.09

See Sheet 5, 6 for Plan View

28-SEP-2004 15:41
TDOT\DGN\16582-801-203024

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

October 1, 2004

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-3682, Bridge 3 over Little Northeast Creek, Onslow County

W-3413, Widening and Realignment of SR 1423 from SR 1411 to SR 1427, Onslow County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide wetland and stream mitigation compensation for the subject project. Based on the information supplied by you in a letter dated September 13, 2004, the impacts are located in CU 3030001 of the White Oak River Basin in the Southern Outer Coastal Plain Eco-Region, and are as follows:

Riverine Wetland: 0.05 acre; Non-Riverine: 0.09 acre; Stream: 270 feet

As stated in your letter, the subject project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The ecosystem enhancement for the subject project will be provided in accordance with Section IX, EEP Transition Period, of this agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Dave Timpy, USACE-Wilmington
John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3682/W-3413

NC DENR Ecosystem Enhancement Program
1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219 \ Internet: h2o.enr.state.nc.us/wrp/

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Ecosystem Enhancement
Michael F. Easley, Governor William G. Ross Jr., Secretary

October 1, 2004

Mr. Dave Timpy
U. S. Army Corps of Engineers
Wilmington Regulatory Field Office
Post Office Box 1890
Wilmington, North Carolina 28403

Dear Mr. Timpy:

Subject: EEP Mitigation Acceptance Letter:

B-3682, Bridge 3 over Little Northeast Creek, Onslow County

W-3413, Widening and Realignment of SR 1423 from SR 1411 to SR 1427, Onslow County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) proposes to provide preservation to compensate for the unavoidable 0.05 acre of riverine wetland, 0.09 acre of non-riverine wetland, and 270 feet of stream impacts of the subject project in the following manner:

Wetland Preservation (10:1) in same eco-region (0.5 acre riverine and 0.9 acre non-riverine – 1.40 acres total)
Wallace Deer Club, Tracts 1-2, Pender County

Stream Preservation (10:1) in same eco-region (2,700 feet)
Wallace Deer Club, Tracts 3-5, Pender County

The subject TIP project is listed in Exhibit 2 of the Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The compensatory mitigation for the project will be provided in accordance with Section IX, EEP Transition Period, of the Agreement.

If you have any questions or need additional information, please contact Ms. Beth Harmon at (919) 715-1929.

Sincerely,

William D. Gilmore, P.E.
Transition Manager

cc: Phil Harris, Office of Natural Environment, NCDOT
John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-3682/W-3413

1652 Mail Service Center, Raleigh, North Carolina 27699-1652
Phone: 919-715-1413 \ FAX: 919-715-2219
An Equal Opportunity \ Affirmative Action Employer

Knapp

Michael F. Easley, Governor
William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources

Alan W. Klimek, P.E.,Director
Division of Water Quality
Coleen H. Sullins, Deputy Director
Division of Water Quality

April 27, 2004

Mr. M. Randall Turner, Environment Unit Head
NCDOT-PD&EA
1548 Mail Service Center
Raleigh, NC 27699-1548

Subject: **Permit No. SW8 030815**
B-3682 & W-3413
Other Stormwater Permit
Linear Public Road / Bridge Project
Onslow County

Dear Mr. Turner:

The Wilmington Regional Office received a complete Stormwater Management Permit Application for B-3682 & W-3413 widening SR 1423 and replacing Bridge No. 3 over the Little Northeast Creek on April 26, 2004. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H .1000. We are forwarding Permit No. SW8 030815 dated April 27 2004, for the construction of the subject project.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, P.O. Drawer 27447, Raleigh, NC 27611-7447. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact either Linda Lewis or me at (910) 395-3900.

Sincerely,

Rick Shiver

Rick Shiver
Water Quality Regional Supervisor

RSS/arl: S:\WQS\STORMWAT\PERMIT\030815.apr04
cc: Max Price, P.E., NCDOT Hydraulics Unit
Onslow County Building Inspections
Linda Lewis
Wilmington Regional Office
Central Files

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

OTHER PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

NCDOT PD&EA

B-3682 & W-3413

Onslow County

FOR THE

construction of a public road / bridge in compliance with the provisions of 15A NCAC 2H .1000 (hereafter referred to as the *"stormwater rules")* and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit.

The Permit shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations:

I. DESIGN STANDARDS

1. The runoff from the impervious surfaces has been directed away from surface waters as much as possible.

2. The amount of built-upon area has been minimized as much as possible.

3. Best Management Practices are employed which minimize water quality impacts.

4. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.

5. Vegetated roadside ditches are 3:1 slopes or flatter.

II. SCHEDULE OF COMPLIANCE

1. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.

2. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

4. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction for the following items:

   a. Major revisions to the approved plans, such as road realignment, deletion of any proposed BMP, changes to the drainage area or scope of the project, etc.
   b. Project name change.
   c. Redesign of, addition to, or deletion of the approved amount of built-upon area, regardless of size.
   d. Alteration of the proposed drainage.

5. The Director may determine that other revisions to the project should require a modification to the permit.

III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division of Water Quality, in accordance with North Carolina General Statutes 143-215.6A to 143-215.6C.

2. The permit issued shall continue in force and effect until revoked or terminated.

3. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination does not stay any permit condition.

4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et. al.

5. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved. The permittee is responsible for compliance with the terms and conditions of this permit until such time as the Director approves the transfer.

6. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

7. The permittee shall notify the Division of any name, ownership or mailing address changes within 30 days.

Permit issued this, the 27th day of April, 2004

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Dick Whisnant

for Alan W. Klimek, P.E., Director
Division of Water Quality
By Authority of the Environmental Management Commission

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

OTHER PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

NCDOT PD&EA

B-3682 & W-3413

Onslow County

FOR THE

construction of a public road / bridge in compliance with the provisions of 15A NCAC 2H .1000 (hereafter referred to as the *"stormwater rules")* and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit.

The Permit shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations:

I. DESIGN STANDARDS

1. The runoff from the impervious surfaces has been directed away from surface waters as much as possible.

2. The amount of built-upon area has been minimized as much as possible.

3. Best Management Practices are employed which minimize water quality impacts.

4. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.

5. Vegetated roadside ditches are 3:1 slopes or flatter.

II. SCHEDULE OF COMPLIANCE

1. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.

2. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

4. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction for the following items:

   a. Major revisions to the approved plans, such as road realignment, deletion of any proposed BMP, changes to the drainage area or scope of the project, etc.
   b. Project name change.
   c. Redesign of, addition to, or deletion of the approved amount of built-upon area, regardless of size.
   d. Alteration of the proposed drainage.

5. The Director may determine that other revisions to the project should require a modification to the permit.

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4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et. al.

5. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved. The permittee is responsible for compliance with the terms and conditions of this permit until such time as the Director approves the transfer.

6. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

7. The permittee shall notify the Division of any name, ownership or mailing address changes within 30 days.

Permit issued this, the 27th day of April, 2004

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Dick Klimek

for Alan W. Klimek, P.E., Director
Division of Water Quality
By Authority of the Environmental Management Commission

OFFICE USE ONLY		
Date Received	Fee Paid	Permit Number
4-26-2004	$480.00 / #1463725	SW8 030815

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LINEAR ROADWAY PROJECT
This form may be photocopied for use as an original.

DWQ Stormwater Management Plan Review:
A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

I. PROJECT INFORMATION

NCDOT Project Number: 8.2261201 County: ONSLOW

Project Name: B-3682

Project Location: WIDENING OF SR1423 & REPLACEMENT OF BRIDGE #3 ON SR1423 OVER LITTLE NORTHEAST CREEK

Contact Person: _____ Phone: _____ Fax: _____

Receiving Stream Name: LITTLE NORTHEAST CREEK River Basin: WHITE OAK Class: C, NSW, ANADROMOUS FISH

Proposed linear feet of project: 0.492 mi

Proposed Structural BMP and Road Station *(attach a list of station and BMP type if more room is needed)*:

SEE ATTACHMENT

Type of proposed project: *(check all that apply)*:

☐ New ☑ Widening ☑ 2 lane* ☐ 4 lane* ☐ Curb and Gutter ☑ Bridge Replacement

☐ Other *(Describe)* _____

**2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

II. REQUIRED ITEMS CHECKLIST

Initial in the space provided below to indicate the following design requirements have been met and supporting documentation is attached. Supporting documentation shall, at a minimum, consist of a brief narrative description including (1) the scope of the project, (2) how the items below are met, (3) how the proposed best management practices minimize water quality impacts, and (4) any significant constraints and/or justification for not meeting a, b, c and d to the maximum extent practicable.

Designer's Initials

AMH a. The amount of impervious surface has been minimized as much as possible.

AMH b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.

AMH c. Best Management Practices are employed which minimize water quality impacts.

AMH d. Vegetated roadside ditches are 3:1 slope or flatter.

III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

Maintenance Engineer's Initials

DLT a. BMP's shall be inspected and maintained in good working order.

DLT b. Eroded areas shall be repaired and reseeded as needed.

DLT c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: DAVID L. THOMAS, SR. P.E.

Title: DIVISION MAINTENANCE ENGINEER

IV. APPLICATION CERTIFICATION

I, *(print or type name)* M. RANDALL TURNER of PDEA Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: Environmental Unit Head

Address: 1548 Mail Service Center, Raleigh, NC 27699-1548

Signature: M. Randall Turner Date: 7-14-03

V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

Form SWU-102	Wet Detention Basin Supplement
Form SWU-103	Infiltration Basin Supplement
Form SWU-104	Low Density Supplement
Form SWU-105	Curb Outlet System Supplement
Form SWU-106	Off-Site System Supplement
Form SWU-107	Underground Infiltration Trench Supplement
Form SWU-108	Neuse River Basin Supplement
Form SWU-109	Innovative Best Management Practice Supplement
Form SWU-110	Extended Dry Detention Basin Supplement

Date Received	OFFICE USE ONLY Fee Paid	Permit Number
4-26-2004	$420.00 / #1463725	SWB 030815

DIVISION 3 AM 1

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LINEAR ROADWAY PROJECT

This form may be photocopied for use as an original.

DWQ Stormwater Management Plan Review:
A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

I. PROJECT INFORMATION

NCDOT Project Number: 8.7326024
Project Name: W-3413
County: ONSLOW
Project Location: WIDENING SR 1423 (OLD THIRTY RD) FR. SR 1411 TO SR 1413
Contact Person:
Phone:
Fax:
Receiving Stream Name: Little Northeast Creek
River Basin: WHITE OAK
Class: C, NSW, ANADROMOUS FISH PASSAGE
Proposed linear feet of project: 1.723 MILES
Proposed Structural BMP and Road Station *(attach a list of station and BMP type if more room is needed)*:
SEE ATTACHMENT

Type of proposed project: *(check all that apply)*:

☐ New ☑ Widening ☑ 2 lane* ☐ 4 lane* ☐ Curb and Gutter ☐ Bridge Replacement
☐ Other *(Describe)*

**2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

II. REQUIRED ITEMS CHECKLIST

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igner's Initials

HH a. The amount of impervious surface has been minimized as much as possible.
HH b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.
HH c. Best Management Practices are employed which minimize water quality impacts.
HH d. Vegetated roadside ditches are 3:1 slope or flatter.

/U-112 Rev 04.00

III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

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DT a. BMP's shall be inspected and maintained in good working order.

DT b. Eroded areas shall be repaired and reseeded as needed.

DT c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: DAVID L. THOMAS, SR. P.E.

Title: DIVISION MAINTENANCE ENGINEER

IV. APPLICATION CERTIFICATION

I, *(print or type name)* M. RANDALL TURNER of PDEA Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: Environmental Unit Head

Address:

Signature: M. Randall Turner Date: 7-14-09

V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

Form SWU-102	Wet Detention Basin Supplement
Form SWU-103	Infiltration Basin Supplement
Form SWU-104	Low Density Supplement
Form SWU-105	Curb Outlet System Supplement
Form SWU-106	Off-Site System Supplement
Form SWU-107	Underground Infiltration Trench Supplement
Form SWU-108	Neuse River Basin Supplement
Form SWU-109	Innovative Best Management Practice Supplement
Form SWU-110	Extended Dry Detention Basin Supplement

Replace Bridge No. 3
Over Little Northeast Creek,
SR 1423 (Old Thirty Road)
Onslow County,
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201
TIP No. B-3682

ADMINISTRATIVE ACTION

CATEGORICAL EXCLUSION

U. S. Department of Transportation
Federal Highway Administration

and

N. C. Department of Transportation
Division of Highways

APPROVED:

2-18-02 Lalia V. Prescott
Date William D. Gilmore, P. E., Manager
Project Development and Environmental Analysis Branch, NCDOT

2-19-02 for Ronald G Thomas
Date Nicholas L. Graf, P. E.
Division Administrator, FHWA

Replace Bridge No. 3
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CATEGORICAL EXCLUSION

February 2002

Document Prepared in Project Development and
Environmental Analysis Branch By:

Jackie Obediente 02/18/02
Jackie Obediente
Project Development Engineer

Eric Midkiff 2/18/02
Eric Midkiff, P.E.
Project Development Unit Head

Lubin V. Prevatt 2-18-02
Lubin V. Prevatt, P. E., Assistant Manager
Project Development and Environmental Analysis Branch

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Over Little Northeast Creek,
SR 1423 (Old Thirty Road)
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Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201
TIP No. B-3682

SUMMARY

1. Description of Action

The North Carolina Department of Transportation, Division of Highways proposes to replace Bridge No. 3 over Little Northeast Creek, along with the widening and realignment of SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to SR 1427 (Grants Creek Loop) in Onslow County.

The 0.47 mile (0.76km) project is included in the 2002-2008 Transportation Improvement Program (TIP) with right of way acquisition scheduled for August 2002 and construction scheduled for January 2004.

The estimated cost is $1,375,000 including $25,000 for right of way acquisition and $1,350,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $1,460,000. including $25,000 for right of way, $1,350,000 for construction, and $85,000 spent in prior years.

2. Summary of Environmental Impacts

Widening and realigning SR 1423 (Old Thirty Road), and replacing Bridge No. 3 will have a positive impact on the Jacksonville area by increasing the level of safety associated with the facility. Based on preliminary designs, no relocations of businesses or residents are anticipated as a result of this project. No recreational facilities or sites listed on the National Register of Historic Places will be involved. No publicly owned parks, recreational facilities or wildlife or waterfowl refuges of national, state, or local significance are in the vicinity of the project. The proposed project will impact 0.09 acres (0.036 hectares) of wetlands.

3. Summary of Environmental Commitments

PROJECT COMMITMENTS
Replace Bridge No. 3
Over Little Northeast Creek,
SR 1423 (Old Thirty Road)
Onslow County,
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201
TIP No. B-3682

Commitments Developed Through Project Development and Design

Project Development and Environmental Analysis Branch
Due to the possibility of anadramous fish in Little Northeast Creek, bridge demolition is classified as Case 2, which allows no work at all in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas. This moratorium period will last from February 15 to September 30.

Construction Unit
In accordance with any CAMA permit, NCDOT is aware that removal of the existing bridge shall be performed so as not to allow debris to fall into the water. The contractor shall remove the bridge and submit plans for demolition in accordance with Article 402-2 of the Standard Specifications.

4. Coordination

The following federal, state, and local officials were consulted regarding this project:

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Services
U.S. Federal Highway Administration
* National Marine Fisheries
North Carolina Division of Coastal Management
North Carolina Wildlife Resources Commission
North Carolina Division of Water Quality
* State Historic Preservation Office

A citizen's informational workshop was held on November 30, 1999 to obtain public comment on the project (See Appendix C). Comments on the project that were received from the agencies are noted by an asterisk (*). Those comments are included in Appendix A.

5. Additional Information

Additional information concerning the proposal and assessment can be obtained by contacting the following:

W.D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 733-3141

Nicholas L. Graf, P.E., Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue, Suite 410
Raleigh, NC 27601-1442
(919) 856-4346

Replace Bridge No. 3
Over Little Northeast Creek,
SR 1423 (Old Thirty Road)
Onslow County,
Federal Aid Project No. BRSTP-1423(3)
State Project 82261201
TIP No. B-3682

I. DESCRIPTION OF PROPOSED ACTION

The North Carolina Department of Transportation (NCDOT), Division of Highways, proposes to replace Bridge Number 3, in Onslow County. Bridge Number 3 carries Highway SR 1423 (Old Thirty Road) over Little Northeast Creek. NCDOT and FHWA classify this action as a Categorical Exclusion, due to the fact that no adverse environmental impacts are likely to occur as a result of project construction.

The project involves horizontal alignment improvements of SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to the intersection of SR 1423 and SR 1427 (Grants Creek Loop). Bridge No. 3 over Little Northeast Creek will be removed and replaced at a new location in conjunction with the proposed alignment.

The estimated cost is $1,375,000 including $25,000 for right of way acquisition and $1,350,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $1,460,000, including $25,000 for right of way, $1,350,000 for construction, and $85,000 spent in prior years.

The proposed project is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program, and is in the Federal-Aid Bridge Replacement Program. The project location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

II. PURPOSE OF PROJECT

A. Need for the Improvements

The purpose of the proposed project is to improve the overall safety of the facility and to address the structural inadequacies.

1. Accident Analysis

There were 20 total accidents reported along the project section between July 1, 1995 and June 30, 1998. The overall accident rate during this period was 1,769.9 accidents per 100 million vehicle miles (acc/100MVM) compared to the statewide average of 262.91acc/100MVM for urban two-lane secondary routes. Further review of the accident data reveals that 65% of the total accidents were ran-off-the-road accidents. Also, 55% of the total accidents occurred at night. Because the accident rates along this facility are high, the proposed improvements will straighten these curves, therefore reducing the accident potential.

2. Bridge Sufficiency Rating

According to NCDOT Bridge Maintenance records, the bridge's sufficiency rating is 19.9 out of a possible 100.0. This sufficiency rating classifies Bridge No. 3 as a structurally deficient bridge. Because of this low sufficiency rating, and because of the bridge's location between reverse curves, it is proposed to replace Bridge No. 3 and relocate it approximately 80ft (24.4m) south of the existing bridge.

B. Existing Conditions

1. Length of Project

The length of the studied section is approximately 0.47 miles (0.76km).

2. Route Classification

NCDOT classifies SR 1423 as a Rural Minor Collector in the Statewide Functional Classification System.

3. Existing Cross Section

a. Roadway

Near Bridge No. 3, SR 1423 is a two-lane paved facility, with pavement width varying from 18ft (5.5m) to 21ft (6.4m). The existing roadway is characterized by tangent sections with abrupt transitions to sharp curvature and "broken back" type curves. The existing horizontal and vertical alignments are poor.

b. Bridge

Bridge No. 3 is 70ft (21.3m) long, with a 24ft (7.3m) roadway width. Two lanes of traffic are carried, and the load limit is posted at 17 tons for single vehicles (SV) and 25 tons for Truck-tractor Semi-trailers (TTST) (See Figure 3 for details on Bridge No. 3).

4. Existing Right of Way

The existing right-of-way (ROW) is approximately 60ft (18.3m).

5. Utilities

Overhead and underground utilities are present along both sides of SR 1423 throughout the project limits. There is an overhead power line on the north side (upstream) of the existing bridge. There is also an overhead telephone line on the south side (downstream) of the existing bridge. Both of these overhead utilities are in close proximity of the existing bridge. There are no utilities attached to the bridge.

There is a 10in (1.5m) C.I. county water line located on the north side of SR 1423 throughout the project length. It also turns and goes up SR 1427 on the west side.

6. Access Control

There is no control of access along SR 1423 (Old Thirty Road).

7. Speed Limits

The posted speed limit is 45mph (72.4km/hr) for the first 0.3 miles (0.48km) and thence becomes 55mph (88.5km/hr).

8. Bridges and Drainage Structures

Bridge No. 3 was built in 1964. The bridge consists of four spans, and has a reinforced concrete floor and timber joists on timber caps and piles. The deck of Bridge No. 3 is 12ft (3.7m) above the streambed of Little Northeast Creek. The creek is approximately 5ft (1.5m) deep at the bridge vicinity. According to NCDOT Bridge Maintenance records, the bridge's sufficiency rating is 19.9 out of a possible 100.0.

9. Horizontal and Vertical Curvature

A slight downgrade exists at the approach of the bridge over Little Northeast Creek from the west side, and a slight upgrade exists leaving the bridge on the east side. The bridge is located between reverse curves with a 7 degree +/- on the west side and an 11 degree +/- on the east side.

10. Intersecting Roads

All intersections along SR 1423 (Old Thirty Road) are at grade. There are two stop-signed controlled intersections along the project, located at the intersections of SR 1411 (Waters Road) / SR 1423, and SR 1427 (Grants Creek Loop) / SR 1423.

11. Project Terminals

The western project terminal is located at the intersection of SR 1423 (Old Thirty Road) and SR 1411 (Waters Road). This intersection is stop-signed controlled. The eastern project terminal is located at the intersection of SR 1423 and SR 1427 (Grants Creek Loop). This intersection is stop-signed controlled.

12. Degree of Roadside Interference

The degree of roadside interference is low along SR 1423 (Old Thirty Road). The roadway is located in a rural area just north of the Jacksonville City Limits, and the development primarily consists of single family residential properties, widely spaced apart, with one school, Morton Elementary School, located approximately 800ft (243.8m) west of Bridge No. 3

13. Schools / School Bus Data

Morton Elementary School is located at the western end of the project limits, on the north side of SR 1423 (Old Thirty Road) approximately 800ft (243.8m) west of Bridge No. 3. The Transportation Director of the Onslow County School Bus Garage estimates that 40 buses per day travel on SR 1423.

14. Railroads

No railroads exist near or along this project.

15. Bicycle and Pedestrian Accommodations

Bicycle and pedestrian accommodations do not exist along the roadway section. However, the project section of SR 1423 is a designated bicycle route in Onslow County, the "Jacksonville City to the Sea" bicycle route.

16. Traffic Volumes

Traffic volumes for the section from SR 1411 to SR 1427 in the year 2000 are estimated to be 3,200 vehicles per day. The projected traffic volumes for the same section in the year 2025 are estimated to be 6,200 vehicles per day. Projected traffic volumes, major turning movements, truck data and design hour data are shown in Figure 4.

C. Other Proposed Highway Improvements in the Project Area

One roadway improvement project, included in the 2002-2008 Transportation Improvement Program, is located adjacent to the proposed project (see Figure 1). A brief description of this project, along with its current schedule, is listed below:

TIP Project W-3413 –
This project proposes to improve the horizontal curvature of SR 1423 (Old Thirty Road) from SR 1427 (Grants Creek Loop) to SR 1413 (Rocky Run Road) in Onslow County. The 2.0 mile (3.3 km) project is included in the 2002-2008 Transportation Improvement Program (TIP) with right of way acquisition scheduled for December 2002 and construction scheduled for December 2003.

III. PROPOSED IMPROVEMENTS

A. Length of Project

The length of the proposed project is approximately 0.47 miles (0.76km).

B. Bridge Replacement

The proposed bridge will be replaced on new location approximately 80ft (24.4m) south of the existing bridge, and the roadway will be realigned to eliminate the reverse curves and poor horizontal alignment. The existing bridge will be used to maintain traffic during construction, therefore no temporary bridge will be needed.

C. Roadway Realignment

The alignment for the project will be designed to improve the overall safety of the facility, and minimize impacts to wetlands, streams, and adjoining properties.

D. Cross Section

1. Bridge

The proposed bridge will be 200ft (61m) long and 34ft (10.4m) wide with 24ft (7.3m) of travelway, and will carry 2 lanes of traffic.

2. Roadway

The realigned roadway will be upgraded to AASHTO standards. The realigned roadway typical section will have a 24ft (7.3m) travelway, with 4ft (1.2m) paved shoulders and 4ft (1.2m) grassed shoulders along each side. Where guardrail is required, shoulders will be increased by a minimum of 3ft (0.9m) on each side. The new roadway will be at approximately the same elevation as the existing structure.

E. Design Speed

The recommended design speed is 50mph (80.5km/hr). The posted speed limit is expected to be 45mph (72.4km/hr).

F. Right of Way

The proposed right of way is approximately 80ft (24.4m) symmetrically along the roadway, and approximately 100ft (30.5m) to the south in the vicinity of the bridge.

G. Access Control

No control of access is proposed.

H. Intersection Treatment

The intersections of SR 1423 at SR 1411 and SR 1427 are currently stop sign controlled. They will remain stop sign controlled after the project's construction.

I. Bicycle and Pedestrian Accommodations

The project section of SR 1423 is a designated bicycle route in Onslow County, "Jacksonville City to the Sea" bicycle route. Therefore, 4ft (1.2m) paved shoulders have been implemented into the design. These paved shoulders will extend along both sides of the road.

J. Estimated Costs

The estimated cost is $1,375,000 including $25,000 for right of way acquisition and $1,350,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $1,460,000, including $25,000 for right of way, $1,350,000 for construction, and $85,000 spent in prior years.

IV. ALTERNATIVES TO PROPOSED ACTION

A. No Build

This alternative would avoid the environmental impacts that are anticipated as a result of the project; however, this alternative does not meet the purpose of the project, which is to improve the level of safety associated with the facility, and to address the structural deficiency of Bridge No. 3. Therefore, Bridge No. 3 would ultimately fail, and there would be no positive effect on the safety of the highway. This alternative is not recommended, however, it does serve as a basis for comparison of other alternatives.

Because the no-build alternative would provide no positive effect on the safety of the highway, it was eliminated from further study.

V. SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFECTS

A. Land Use Planning

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from construction of the project. No adverse effect on families or communities is anticipated.

B. Relocation Impacts

No relocatees are anticipated as a result of this project (see Relocation Report in Appendix B).

C. Historic and Cultural Resources

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that for federally funded, licensed, or permitted projects having an effect on properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

1. Historic Architecture

Maps and files were reviewed by the State Historic Preservation Office (SHPO) to locate any potential structures within the Area of Potential Effect (APE). In a concurrence form dated 11/21/99, the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic places within the APE. A copy of the concurrence form is included in Appendix A.

2. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated April 19, 1999, recommended that "no archaeological investigation be conducted in connection with this project." A copy of the SHPO memorandum is included in Appendix A.

D. Natural Systems

Research of the project study area was conducted prior to field investigations. Information sources used in the pre-field investigation include: U.S. Geological Survey (USGS) quadrangle map (Kellum, NC), NCDOT aerial photomosaics of the project study area (1:200) and Soil Survey of Onslow County (USDA, 1992). Water resource information was obtained from publications of the North Carolina Department of Environment and Natural Resources (NCDENR). Information concerning the occurrence of federal and state protected species in the study area was gathered from U.S. Fish and Wildlife Service (USFWS) list of Endangered, Threatened, and Candidate Species, and Federal Species of Concern in North Carolina (16 June

2000), and from the North Carolina Natural Heritage Program (NHP) database of Rare Species and Unique Habitats.

General field surveys were conducted along the bridge site by NCDOT biologists Chris Murray, Matt Haney and Jill Holmes, on 15 June 2000, 6 and 28 July 2000, and 16 August 2000; by Chris Murray, Jared Gray, and Jill Holmes on 17 July 2000; by Jared Gray, Matt Haney, and Jill Holmes on 22 August 2000, and 12 September 2000; and by Shannon Simpson, Matt Haney, and Jill Holmes on 7 September 2000. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observational techniques: active searching and capture, visual observations (binoculars), identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Jurisdictional wetland determinations were performed utilizing delineation criteria prescribed in the "Corps of Engineers Wetland Delineation Manual" (Environmental Laboratory, 1987).

a. Qualifications of Investigators

Investigator:	**Christopher A. Murray**
Education:	M.S. Coastal Ecology, Univ. North Carolina at Wilmington, North Carolina
	B.S. Zoology, St. Cloud State University, St. Cloud, Minnesota
Certification:	Professional Wetland Scientist No. 1130
Experience:	N.C. Dept. of Transportation, 1995 – present
	Environmental Investigations, P.A., 1992-1994
	Environmental Services, Inc., 1991-1992
Expertise:	Wetland Delineation, NEPA Investigations, and Protected Species Surveys

Investigator:	**Matthew M. Haney**
Education:	B.S. Natural Resources-Ecosystem Assessment, North Carolina State University, Raleigh, North Carolina
Experience:	N.C. Dept. of Transportation, Oct. 1999 - present
	N.C. Forest Service, May 1998-Aug. 1998
	U.S. Forest Service, Center for Forested Wetlands Research, May 1997-Aug. 1997

Investigator:	**Jill J. Holmes**
Education:	B.S. Wildlife Management, Minor in Biology, Texas Tech University, Lubbock, Texas
Experience:	N.C. Dept. of Transportation, Mar. 2000 - present
	Noble Foundation Agriculture Div. Ardmore, OK, May 1998- Aug. 1998
	Virginia Tech Dept. Fisheries and Wildlife Sciences, May 1997- Aug. 1997

1. Physical Characteristics

Soil and water resources, which occur in the project study area, are discussed below. Soil types and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

Onslow County lies in the Lower Coastal Plain Physiographic Province. Land in the project study area is characterized as relatively flat. The project is located outside Jacksonville surrounded by agricultural fields, woods, a school, and residential property. The project study area is located approximately between 10ft (3.8m) and 25ft (7.6m) above mean sea level.

a. Soils

The project study area is located within the Norfolk-Goldsboro-Onslow Association and the Muckalee-Dorovan Association. The Norfolk-Goldsboro-Onslow Association is characterized by gently sloping upland soils that are moderately-well to somewhat-poorly drained, and have a loamy subsoil. The Muckalee-Dorovan Association is characterized as nearly level floodplain soils that are poorly drained and are loamy throughout.

The project study area is located along three different soil series and four mapped soil units. Two series occur in upland areas and include the Norfolk series and the Marvyn Series. The Muckalee series is located in the floodplain.

The Norfolk series includes two mapped soil units: Norfolk loamy fine sand, 0-2% slopes; and Norfolk loamy fine sand 2-6% slopes. These soils are moderately-well to well drained, brownish, and have moderate infiltration and slow to medium surface runoff, increasing as slope increases.

The Marvyn series includes the mapped soil unit: Marvyn loamy fine sand, 6-15% slopes. These soils are moderately-well to well drained, brownish, and have moderate infiltration and slow to medium surface runoff, increasing as slope increases. Marvyn loamy fine sand is a non-hydric soil that may have hydric inclusions of Muckalee soil.

The Muckalee series includes the mapped soil unit: Muckalee loam. This soil is coarsely textured, poorly drained, grayish brown, has moderate infiltration and very slow surface runoff. This soil is hydric and is frequently flooded for brief periods from November to April and in wider flood plain areas water may pond for long periods during winter.

b. Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses the resources' relationship to major water systems, its physical aspects, best usage classification, and water quality of the resources. Probable impacts to these water bodies are also discussed, as are means to minimize impacts.

1. Characteristics of Water Resources

Water resources located within the project study area lie in the White Oak River Basin. The proposed project crosses Little Northeast Creek, located in the New River and Tributaries Subbasin 03-05-02 and the United States Department of the Interior Hydrologic Unit 03030001. Little Northeast Creek is listed as an Anadramous Fish Spawning Area 1.5mi (2.43km) downstream from Bridge No. 3. Anadramous fish are those which spend most of their life in the ocean but return to their natal freshwater streams to spawn. Little Northeast Creek converges into Northeast Creek 3.8mi (6.2 km) south and downstream from the bridge. Approximately 1.2mi (1.9km) downstream from this point, Northeast Creek becomes a Fish Nursery Area.

Water resources include Little Northeast Creek and a non-jurisdictional upland cut ditch. Roadside ditches are prevalent throughout the project study area.

Little Northeast Creek's headwaters are approximately 2.9mi (4.6km) northeast from Bridge No. 3. Approximately 0.14mi (0.23km) south of the SR 1423, Horse Swamp converges with Little Northeast Creek. From where SR 1423 crosses Little Northeast Creek, it continues southwest for approximately 3.7mi (5.9km). Little Northeast Creek at the project site is approximately 8ft (2.4m) wide and 1ft (0.3m) deep. The flow rate was low during the site visit. The substrate is comprised of cobble, gravel, sand, and silt.

The upland cut ditch is located west of Bridge No.3 across the street from Morton Elementary School. Water flowing in roadside ditches parallel with SR 1423 is piped under the road forming the upland cut ditch perpendicular to SR 1423. The ditch was dry with water pooled in isolated spots. There were no signs of aquatic fauna observed during the site visit.

2. Best Usage Classification

Streams have been assigned a best usage classification by the Division of Water Quality (DWQ). According to the DWQ, the best usage classification of Little Northeast Creek (DWQ Index No. 19-46-2, 8/1/91) is C NSW. Class C waters are suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The supplemental classification NSW (Nutrient Sensitive Water) are waters which require limitations on nutrient inputs. No water resources classified as High Quality Waters (HQW's), Water Supplies (WS-I or WS-II), or Outstanding Resource Waters (ORW's) are located within 1.0mi (1.6km) of the project study area.

3. Water Quality

The DWQ has initiated a basinwide approach to water quality management for the 17 river basins within the state. This was accomplished with the Ambient

Monitoring System (AMS) which is a network of stream, lake, and estuarine water quality monitoring stations. The program assesses water quality by collecting physical and chemical water quality data at fixed monitoring sites every five years. AMS station P-3100000 (O209317585) is located on Little Northeast Creek at SR 1406 near Jacksonville, NC below its confluence with Horse Swamp. The station is approximately 2.3mi (3.7km) downstream from the proposed bridge in the project study area and was last sampled in 1994. The station at Little Northeast Creek was the only station in subbasin 03-05-02 at that time to exceed the water quality criterion for three specific water quality parameters. The pH and dissolved oxygen fell below the criterion and the results for the fecal coliforms was above the criterion. The swamp-like conditions along the shore of Little Northeast Creek may account for its inability to meet certain water quality standards (NCDEHNR 1997).

Likewise, the Benthic Macroinvertebrate Ambient Network (BMAN) is managed by the DWQ and is part of an ongoing ambient water quality monitoring program which addresses long term trends in water quality. The program assesses water quality by sampling for selected benthic macroinvertebrate organisms at fixed monitoring sites. Macroinvertebrates are sensitive to very subtle changes in water quality; thus, the species richness and overall biomass of these organisms are reflections of water quality. There are no BMAN sampling stations within the project study vicinity.

Point source pollution refers to discharges that enter surface water through a pipe, ditch, or other defined points of discharge. Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. Any discharger is required to register for a permit. Morton Elementary School (Permit No. NC 0043711, Date 3/22/93) is a permitted point source discharger to Little Northeast Creek, located approximately 0.16mi (0.25km) north and upstream from the bridge site in the project study area. Horse Creek Farms Utilities Corporation (Permit No. NC 0062359, Date 10/22/92 is also a permitted point source discharger to Little Northeast Creek, located approximately 0.13mi (0.21km) south of the bridge site in the project study area.

Non-point source pollution refers to runoff that enters surface waters through stormwater flow or a non-defined point of discharge. There are many types of land use activities that can serve as sources of non-point source pollution in the White Oak River Basin including land development, construction, crop production, landfills, roads, and parking lots. Water quality may be influenced by agricultural runoff. Land clearing can cause soil erosion, which leads to stream sedimentation, and animal waste can cause nutrient loading in streams. Oxygen-consuming waste is also likely to be a primary source of water quality degradation in the project vicinity.

4. Summary of Anticipated Impacts to Water Resources

Potential impacts to water resources in the project study area are dependent upon final construction limits. Roadway construction in and adjacent to Little Northeast Creek may result in water quality impacts. Clearing and grubbing activities near the creek will result in soil erosion leading to increased sedimentation and turbidity. These effects may extend downstream for considerable distance with decreasing intensity.

Removal of streamside vegetation will have a negative effect on water quality. The vegetation typically shades the water's surface from sunlight, thus moderating water temperature. The removal of streamside canopy during construction will result in more extreme fluctuating water temperatures. During warmer portions of the year, the water temperature will increase, resulting in a decrease in dissolved oxygen because warmer water holds less oxygen. Streambank vegetation also stabilizes streambanks and reduces sedimentation by trapping soil particles.

Construction activities adjacent to water resources increase the potential for toxic compounds (gas, oil, and highway spills) to be carried into nearby water resources via precipitation, sheet flow, and subsurface drainage. Increased amounts of toxic materials can adversely alter the water quality of any water resource, thus impacting its biological and chemical functions. Indirect impacts to surface waters may extend both upstream and downstream of the project study area. Indirect impacts may include changes in flooding regime, discharge, erosion and sedimentation patterns.

Removal of Bridge No. 3 should not cause any impacts to Little Northeast Creek or its adjacent wetlands, however, a worst-case scenario analysis was performed in the event that the deck over the water were to contribute to the temporary fill resulting from bridge demolition. The maximum amount of temporary fill that could impact water resources is approximately 14 cubic yards. Because of this possibility, conditions in the stream will raise sediment concern, and therefore a turbidity curtain is recommended.

In order to minimize impacts to water resources in the entire impact area, NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters should be strictly enforced during the entire life of the project. The NCDOT, in cooperation with the DWQ, has developed a sedimentation control program for highway projects which adopts formal BMPs for the protection of surface waters. Because Bridge No. 3 is being removed, NCDOT's BMPs for Bridge Demolition and Removal shall be used as well. These practices were developed in coordination with the United States Army Corps of Engineers (COE), Wildlife Resource Commission (WRC), and the National Marine Fisheries Service in order to establish a consistent, environmentally sound

approach to the demolition and removal of bridges on North Carolina's public road system.

Erosion and sedimentation will be most pronounced as a result of disturbance of the stream banks and substrate. Sedimentation from these activities may be high during construction, but should diminish rapidly following project completion if exposed soils are revegetated and streambanks stabilized.

2. Biotic Resources

Biotic resources include terrestrial, aquatic, and wetland ecosystems. This section describes those ecosystems encountered in the study area, as well as the relationships between fauna and flora within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences and past and present land uses. Descriptions of the terrestrial systems are presented in the context of plant community classifications.

Dominant flora and fauna likely to occur in each community are described and discussed. Fauna observed during field investigations are denoted with an asterisk (*). Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Subsequent references to the same organism will include the common name only.

Plant community descriptions are based on a classification system utilized by the North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968) when possible. Habitats used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Martof *et al.* 1980; Webster *et al.* 1985; Rohde *et al.* 1994; Potter *et al.* 1980).

a. Terrestrial Communities

Two terrestrial communities are identifiable in the project study area: disturbed community and mixed pine hardwood forest.

1. Disturbed Community

This community encompasses several types of habitats that have recently been or are currently impacted by human disturbance: roadside shoulder, maintained yard, and agricultural fields. These irregularly maintained habitats are kept in a low-growing, early successional state. Herbs, grasses and vines located in the roadside shoulder and maintained yard include fescue (*Festuca* sp.), beadgrass (*Paspallum* sp.), broom sedge (*Andropogon virginicus*), common plantain (*Plantago major*), English plantain (*P. lanceolata*), goldenrod (*Solidago* sp.), geranium (*Geranium* sp.),

pennywort (*Hydrocotyle* sp.), dog fennel (*Eupatorium capillifolium*), crabgrass (*Digitaria* sp.), white clover (*Trifolium repens*), trumpet creeper (*Campsis radicans*), dandelion (*Taraxicum officinale*), daisy fleabane (*Erigeron annuus*), bushclover (*Lespedeza* sp.), poison ivy (*Toxicodendron radicans*), saw greenbrier (*Smilax bona-nox*), vervain (*Verbena* sp.), and bermuda grass (*Cynodon dactylon*). Plants located in the roadside ditches include *Carex crinita, Cyperus* sp., *Rhynchospora* sp. and a rush (*Juncus* sp.).

2. Mixed Pine Hardwood Forest

There are varying degrees of succession in this community. Dominant species located in the canopy and subcanopy include green ash (*Fraxinus pennsylvanica*), red maple (*Acer rubrum*), sweetgum (*Liquidambar styraciflua*), black gum (*Nyssa sylvatica*), wax myrtle (*Myrica cerifera*), sourwood (*Oxydendrum arboreum*), flowering dogwood (*Cornus florida*), tulip poplar (*Liriodendron tulipifera*), horse sugar (*Symplocus tinctoria*), American elm (*Ulmus americana*), blackjack oak (*Quercus marilandica*), southern red oak (*Q. falcata*), post oak (*Q. stellata*), water oak (*Q. nigra*), white oak (*Q. alba*), privet (*Ligustrum sinense*), pepperbush (*Clethra* sp.), red chokeberry (*Aronia arbutifolia*), American beautybush (*Callicarpa americana*), bitter gallberry (*Ilex glabra*), titi (*Cyrilla racemiflora*), American holly (*Ilex opaca*), sweetbay magnolia (*Magnolia virginiana*), red bay (*Persea bobonia*), and loblolly pine (*Pinus taeda*). Species located in the herb and vine layer include trumpet creeper, winged sumac (*Rhus copallina*), poison ivy, strawberry (*Fragaria* sp.), giant cane (*Arundinaria gigantea*), muscadine grape (*Vitis rotundifolia*), common greenbrier (*Smilax rotundifolia*), blackberry (*Rubus argutus*), Japanese honeysuckle (*Lonicera japonica*), Virginia creeper (*Parthenocissus quinquefolia*), partridge berry (*Mitchella repens*), and a heart leaf (*Hexastylis* sp.).

Portions of the mixed pine hardwood forest are located in the floodplain of Little Northeast Creek. These lower areas may be flooded during heavy rain events due to overbank flooding of Little Northeast Creek.

Nine wetland communities were identified within the mixed pine hardwood forest of the project study area. The wetlands are thoroughly described on page 22 under section b. Jurisdictional Wetlands.

b. Faunal Component

Many species prefer open, disturbed habitat to feed and nest in. The least shrew (*Cryptotis parva*) inhabits relatively open areas dominated by herbaceous vegetation. The Eastern harvest mouse (*Reithrodontomys humulis*) and the hispid cotton rat (*Sigmodon hispidus*) prefer old fields and roadsides where they feed on seeds, shoots, and leaves. In disturbed areas that are exposed to sunlight near edge habitat, the Carolina anole (*Anolis carolinensis*) is found. Birds such as the mourning dove (*Zenaida macroura*)*, the fish crow (*Corvus ossifragus*)* and the brown headed cowbird (*Molothrus ater*)* forage for seeds and insects in open, disturbed areas. Soaring over open areas searching for carrion, the turkey vulture (*Cathartes aura*)* can be observed.

Many species are highly adaptive and may utilize the edges of forests and clearings. The Eastern cottontail (*Sylvilagus floridanus*) prefers a mix of herbaceous and woody vegetation in disturbed open areas such as old fields and edges of forests. White-tailed deer (*Odocoileus virginianus*)* will utilize the forested areas as well as the open agricultural areas. The gray squirrel (*Sciurus carolinensis*)* can be seen in residential yards as well as wooded areas. The black rat snake (*Elaphe obsoleta*)* will come out of forested habitat to forage in open areas. The northern mockingbird (*Mimus polyglottos*)* can be observed perched in edge habitat, singing.

Many species prefer to forage and nest primarily in forested communities. The opossum (*Didelphis viginiana*)* prefers woodlands but can be found in open areas as well and is observed as roadkill in the area. The marsh rabbit (*S. palustris*) may be found in wet wooded and floodplains near the wetlands located in the project study area. The spring peeper (*Hyla crucifer*) can be found under forest litter and in the undergrowth and will breed in wetter areas such as roadside ditches and wetlands. The Eastern box turtle (*Terrapene carolina*) is a terrestrial turtle but will be found near water in hot, dry weather. The five-lined skink (*Eumeces fasciatus*) and the copperhead (*Agkistrodon contortrix*) may also be found in forested communities. Birds such as the Northern cardinal (*Thryothorus ludovicianus*)*, tufted titmouse (*Parus bicolor*)*, Carolina chickadee (*Parus carolinensis*), red bellied woodpecker (*Melanerpes erythrocephalus*)*, red eyed vireo (*Vireo olivaceus*)*, and the wood thrush (*Hylocichla mustelina*)* will forage and nest within the forested community.

c. Aquatic Communities

One aquatic community type, coastal plain perennial stream, is located in the project study area. Perennial streams support an assemblage of fauna that require a constant source of flowing water, as compared to intermittent or standing water. Physical characteristics of the water body and condition of the water influence floral and faunal composition of the aquatic communities. Terrestrial communities adjacent to a water resource also greatly affect aquatic communities.

Beaver (*Castor canadensis*)* activity was observed along the banks of Little Northeast Creek. A double crested cormorant (*Phalacrocorax carbo*)* was observed diving in the water searching for fish. There are many amphibians and reptiles that may be observed in and adjacent to moderately sized, slow flowing, perennial streams such as Little Northeast Creek. The marbled salamander (*Ambystoma opacum*) and the southern dusky salamander (*Desmognathus auriculatus*) can be found under logs, rocks, and leaf litter in moist areas along streams. The little grass frog (*Limnaodus ocularis*) frequents forests streams with swampy conditions in the coastal plain. The green frog (*Rana clamitans*) and the snapping turtle (*Chelydra seroentina*) are also found along streams. According to Fish (1968), Little Northeast Creek has an ecological classification of Redfin Pickerel-Warmouth. Fish species that may be located here include the swamp darter (*Etheostoma fusiforme*), the bluegill (*Lepomis macrochirusi*), the creek chubsucker (*Erimyzon oblongus*), the eastern mosquitofish (*Gambusia holbrooki*), the pirate perch (*Aphredoderus sayanus*), the eastern silvery minnow (*Hybognathus regius*),the flier

(*Centrarchus macropterus*), the redfin pickerel (*Esox americanus*), the warmouth (*Lepomis gulosus*), and various sunfishes (*Lepomis* spp.). Possible anadramous fish include the alewife (*Alosa pseudoharengus*) and the blueback herring (*A. aestivalis*). Invertebrates observed in Little Northeast Creek include freshwater mussels (*Eliptio* sp.)*, whirlygig beetles (Family Gyrinidae)*, water striders (Family Gerridae)*, dragonflies (Order Odonata)*, and damselflies (Order Odonata)*.

d. Anticipated Impacts to Biotic Resources

Construction of the proposed project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies impacts to the natural resources in terms of the ecosystems affected.

1. Terrestrial Impacts

Calculated impacts to terrestrial communities reflect the relative abundance of each community (Table 1). Project construction will result in the clearing and degradation of portions of these communities. Estimated impacts are derived using the corridor limits of the project study area. Usually, project construction will not require the entire corridor width; therefore, actual impacts may be considerably less.

Table 1. Anticipated Impacts to Terrestrial Communities.

Community	Impact Area
Disturbed Community	4.10ac/1.66ha
Mixed Pine Hardwood Forest	6.09ac/2.47ha
Total	**10.19ac/4.13ha**

The biotic communities found within the project area will be altered as a result of project construction. Terrestrial communities serve as nesting, foraging, and shelter habitat for fauna. During construction, species that utilize the open disturbed habitat will temporarily be displaced. Eventually, altered areas will revegetate and a disturbed community will be re-established. Because the species that inhabit disturbed communities are adapted to living in highly altered habitats, the area should be repopulated by species for which suitable habitat is provided following project completion.

The forested habitats located in the project study area in unfragmented. Following construction completion and revegetation, edge species will still have adequate habitat and the impacts from the loss of habitat should be minimal. The forested habitat loss can potentially impact fauna not located in the project study area as well. Interior species may be impacted from the reduced forested habitat available. If forested tracts become too small in area, interior species will not repopulate.

2. Aquatic and Wetland Impacts

Construction activities will impact the water resources located in the project area as well as those downstream. Impacts to the aquatic community of Little Northeast Creek will result from the removal of Bridge No. 3 and the building of the new bridge on a new alignment. Impacts are likely to result from the physical disturbance of aquatic habitats (i.e. substrate and water quality). Disturbance of aquatic habitats has a detrimental effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Physical alterations to aquatic habitats can result in the following impacts to aquatic communities:

- Inhibition of plant growth.
- Algae blooms resulting from increased nutrient concentrations.
- Loss of benthic macroinvertebrates through scouring resulting from an increased sediment load.

Road construction impacts can affect the functions that wetlands perform in an ecosystem as well. Wetlands influence regional water flow regimes by intercepting and storing storm runoff which ultimately reduces the danger of flooding in surrounding and downstream areas. Loss of wetland communities will result in loss of this water storage area. Wetlands have been documented to remove organic and inorganic nutrients, and toxic materials from water that flows across them as well as decrease the sediment load. In this respect, impacting wetlands can directly affect the water quality, and therefore the aquatic organisms, of Little Northeast Creek.

Impacts to aquatic communities can be minimized by strict adherence to BMPs for Protection of Surface Waters and BMPs for Bridge Demolition and Removal. Strict erosion and sedimentation controls will be maintained during the entire life of the project. Anadramous Fish Guidelines should be adhered to avoid potential impacts to these fish.

3. Jurisdictional Issues

This section provides descriptions, inventories and impact analysis pertinent to two important issues--Waters of the United States and Protected and Rare Species.

a. Waters of the United States

Surface waters and jurisdictional wetlands fall under the broad category of "waters of the United States," as defined under 33 of the Code of Federal Register (CFR) §328.3 (a). Wetlands, defined in 33 CFR §328.3 (b), are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Surface waters are waters used in interstate or foreign commerce, waters subject to ebb and flow of tides, all interstate waters including interstate wetlands, and all other waters such as intrastate lakes, rivers, and streams. Any action that proposes

to place fill material into these areas falls under the jurisdiction of the COE under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344).

1. Characteristics of Wetlands and Surface Waters

   a. Jurisdictional Streams

   Little Northeast Creek is considered a jurisdictional water located in the project study area. This water resource is described thoroughly on page 14 under section 1. Characteristics of Water Resources.

   b. Jurisdictional Wetlands

   Potential wetland communities were evaluated using criteria specified in the 1987 "Corps of Engineers Wetland Delineation Manual". For an area to be considered a "wetland", the following specifications must be met; 1) presence of hydric soils (low soil chroma values), 2) presence of hydrophytic vegetation, and 3) evidence of hydrology, including; saturated soils, stained leaf litter, oxidized rhizospheres, matted vegetation, high water marks on trees, buttressed tree bases, and surface roots.

   The Cowardin classification system (Cowardin et al. 1979) is a uniform approach in describing concepts and terms used in classifying ecological taxa located in a wetland system. The DWQ rating scale gauges wetland quality using a numerical rating system (1-100 with 100 being the highest value). See Table 2.

   Nine wetland communities identified within the mixed pine hardwood forest natural community are considered jurisdictional wetlands.

Wetland A

Wetland A is located adjacent to the east side Little Northeast Creek at Bridge No. 3 on SR 1423. Wetland A is located on a freshwater perennial stream and is a bottomland hardwood forest wetland that is seasonally flooded or inundated. Vegetation located in wetland A includes red maple, green ash, a smartweed (*Polygonum* sp.), an aster (*Aster* sp.), saw greenbrier, false nettle (*Boehmeria cylindrica*), sweetgum, a sedge (*Carex* sp.), muscadine grape, and jewelweed (*Impatiens* sp.) Drift lines, sediment deposits, and low chroma soil colors were observed. The Cowardin classification for wetland A is PFO1EM1 (Palustrine: Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 59. This wetland is a riverine system.

Wetland B

Wetland B is located approximately 50ft (15m) south of SR 1423, 80ft (24m) east of Little Northeast Creek. It is an isolated, ephemeral wetland that is seasonally

flooded or inundated. Vegetation located in wetland B includes common greenbrier, giant cane, water oak, a sedge, an aster, Japanese honeysuckle, blackberry, trumpet creeper, sweetgum, saw greenbrier, soft rush (*Juncus effusus*), Virginia creeper, and St. Johnswort (*Triadenum* sp.). Oxidized root channels and low chroma soil colors were observed. The Cowardin classification for wetland B is PFO1EM1 (Palustrine: Forested Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 29. This wetland is a non-riverine system.

Wetland D

Wetland D is located southeast of Bridge No. 3, approximately 30ft (9m) south of SR 1423 and 130ft (40m) east of Little Northeast Creek. It is an isolated, ephemeral wetland that is seasonally flooded or inundated. Vegetation located in wetland D includes common greenbrier, a sedge, green ash, red maple, giant cane, trumpet creeper, and woolgrass bulrush (*Scirpus cyperinus*). This wetland was inundated at the time of the site visit. Water marks, sediment deposits, water-stained leaves, and low chroma soilk colors were observed. The Cowardin classification for wetland D is PFO1EM1 (Palustrine: Forested-broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 33. This wetland is a non-riverine system.

Wetland E

Wetland E is located southeast of Bridge No. 3, approximately 65ft (20m) south of SR 1423 and 150ft (45m) east of Little Northeast Creek. It is an isolated, ephemeral wetland that will temporarily have surface water. Vegetation located in wetland E includes netted chainfern (*Woodwardia areolata*), ironwood, common greenbrier, pawpaw (*Asimina* sp.), willow oak (*Quercus phellos*), swamp chestnut oak (*Q. michauxii*), Japanese honeysuckle, royal fern (*Osmunda regalis*), cinnamon fern (*O. cinnamomea*), trumpet creeper, soft rush, blueberry (*Vaccinium* sp.), tulip poplar, and Virginia creeper. The soil was saturated in the upper 12 inches, and oxidized root channels and low chroma soil colors were observed. The Cowardin classification for wetland E is PFO1EM2E (Palustrine: Forested- broad-leaved deciduous, Emergent- nonpersistent, Seasonally saturated), and the DWQ rating is 33. This wetland is a non-riverine system.

Wetland F

Wetland F is located southeast of Bridge No. 3, south of wetland D. It is approximately 130ft (40m) south of SR 1423 and adjacent to Little Northeast Creek. Wetland F is a bottomland hardwood forest wetland located on a freshwater perennial stream. It is seasonally flooded or inundated. Vegetation located in wetland F includes netted chain fern, soft rush, red maple, giant cane, ironwood, a sedge, Japanese honeysuckle, and blackberry. Drainage patterns and low chroma colors were observed in this wetland. The Cowardin classification is

PEM2E (Palustrine: Emergent- nonpersistent, Seasonally saturated), and the DWQ rating is 24. This wetland is a riverine system.

Wetland H

Wetland H is located approximately 190ft (58m) south of SR 1423 at the intersection of SR 1427. Wetland H is a headwater forest wetland located on an intermittent freshwater stream and is seasonally flooded or inundated. Vegetation located in wetland H includes royal fern, blackberry, loblolly pine, tulip poplar, cinnamon fern, and red maple. Oxidized root channels and low chroma soil colors were observed. The Cowardin classification is PFO1EM2B (Palustrine: Forested- broad-leaved deciduous, Emergent- non persistent, Saturated), and the DWQ rating is 42. This wetland is a non-riverine system.

Wetland K

Wetland K is located approximately 150ft (45m) south of SR 1423 and 200ft (60m) west of Little Northeast Creek. Wetland K is a headwater forest wetland located on an intermittent stream and is seasonally flooded or inundated. Vegetation located in wetland K includes netted chain fern, cinnamon fern, a sedge, redbay, red maple, ironwood, and blackberry. The soil was saturated in the upper 12 inches, and drainage patterns and low chroma soil colors were observed. The Cowardin classification is PFO1EM2B (Palustrine: Forested- broad-leaved, Emergent- non persistent, Saturated), and the DWQ rating is 42. This wetland is a non-riverine system.

Wetland L

Wetland L is located adjacent to the west side of Little Northeast Creek at Bridge No. 3 on SR 1423. Wetland L is located on a freshwater perennial stream and is a bottomland hardwood forest wetland that is seasonally flooded or inundated. Vegetation located in wetland L includes tear-thumb (*Polygonum sagittatum*), an aster, a sedge, red maple, green ash, American elm, a violet (*Viola* sp.), and trumpet creeper. Drift lines, sediment deposits, drainage patterns, water-stained leaves, oxidized root channels, saturation in the upper 12 inches of soil, and low chroma soil colors were observed. There is also beaver activity at this wetland site. The Cowardin classification is PFO1EM1B (Palustrine: Forested- broad-leaved, Emergent- persistent, Saturated), and the DWQ rating is 59. This wetland is a riverine system.

2. Summary of Anticipated Impacts

Eight separate wetland systems are located within the corridor limits of the project. The wetlands are individually described on page 21 under b. Jurisdictional Wetlands, and Table 2.

Table 2. Classification of Wetlands Within the Project Study Area

Water Resource	Cowardin Class[1]	DWQ rating[2]
Wetland A	PFO1EM1	59
Wetland B	PFO1EM1	29
Wetland D	PFO1EM1	33
Wetland E	PFO1EM2	33
Wetland F	PEM2E	24
Wetland H	PFO1EM2B	42
Wetland K	PFO1EM2B	42
Wetland L	PFO1EM1B	59
Total		

[1]Cowardin classifications for each wetland are defined on page 22 under section b. Jurisdictional Wetlands.

[2] The DWQ rating scale gauges wetland quality using a numerical rating system (1-100 with 100 being the highest value).

Approximately 431ft (131m) of Little Northeast Creek are located within the corridor limits of the project study area, of which approximately 67ft (20m) are located within the 60ft (18.3m) proposed ROW limits where the proposed bridge and realignment of SR 1423 will be placed. Five of the eight wetlands within the corridor are fully or partially located within the proposed ROW. The approximate impacts to wetlands within the proposed ROW is 0.1325ac (0.054ha). The approximate impacts to wetlands located under the proposed bridge is 0.0586ac (0.0237ha). Placement of the proposed ROW is approximate. Actual impacts to the surface waters and wetlands may be less than reported because the entire ROW width and easements are often not impacted by construction projects. The amount of surface water impacts may be modified by any changes in roadway design.

Table 3. Jurisdictional Impacts Within the Proposed Corridor and Proposed ROW

Water Resource	Study Corridor[1] (Potential Impacts)	Actual Impacts from Proposed ROW Limits[2]	Impacts Under Bridge from Proposed ROW Limits[2]
UT 0	----------	25ft (7.6m)	None
Little Northeast Creek	431ft (131m)	None	None
Wetland A	0.09ac (0.04ha)	None	0.034 ac (0.014 ha)
Wetland B	0.03ac (0.01ha)	None	0.01 ac (0.004 ha)
Wetland D	0.08ac (0.03ha)	0.06ac (0.024ha)	None
Wetland E	0.02ac (0.01ha)	None	None
Wetland F	0.05ac (0.02ha)	None	None
Wetland H	0.11ac (0.04ha)	None	None
Wetland K	0.10ac (0.04ha)	0.03ac (0.012ha)	None
Wetland L	0.09ac (0.04ha)	None	0.0146ac(0.006ha)
Total Stream Impacts	**431ft (131m)**	**25ft (7.6m)**	----------
Total Wetland Impacts	**0.57ac (0.23ha)**	**0.09ac (0.036ha)**	**0.0586ac (0.0237ha)**

[1]Based on the 230 ft corridor limits of the entire project study area
[2]Based on a 60 ft ROW limit where the proposed bridge and realignment of SR 1423 will be placed. Those wetlands with no impacts fall outside the proposed ROW limits.

Removal of Bridge No. 3 should not cause any impacts to Little Northeast Creek or its adjacent wetlands, however, a worst-case scenario analysis was performed in the event that the deck over the water were to contribute to the temporary fill resulting from bridge demolition. The maximum amount of temporary fill that could impact water resources is approximately 14 cubic yards. Because of this possibility, conditions in the stream **will** raise sediment concern, and therefore a turbidity curtain **is** recommended. Possible bridge removal techniques are described on page 27 under a. Bridge Removal Techniques.

Due to the possibility of anadramous fish in Little Northeast Creek, bridge demolition is classified as a **Case 2**, which allows no work at all in the water during moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas. This moratorium period begins February 15 and lasts until September 30.

3. Permits

Impacts to surface waters are anticipated from project construction. In accordance with provisions of Section 404 of the Clean Water Act, a permit will be required from the COE for discharge of dredge or fill material into "waters of the United States." Due to surface water impacts, a Section 404 Nationwide 14 Permit (NWP 14) will likely be necessary for this project. Due to removal and construction

of Bridge No. 3, a Section 404 General Permit 31 will likely be necessary for this project as well. Final decision concerning applicable permits rests with the COE. *A NWP 14 authorizes activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, and airport runways and taxiways) in waters of the United States, including wetlands. A NWP 14 may be used for public linear transportation projects in non-tidal waters, excluding non-tidal wetlands adjacent to tidal waters, provided the discharge does not cause the loss of greater than 1/2 acre of waters of the United States. This permit requires that the District Engineer be notified if: the discharge causes a loss of greater than 1/10 acre of waters of the United States; and if there is a discharge in a special aquatic site, including wetlands.*

A Section 404 General Permit 31 authorizes the discharge of dredged or fill material in waters if the United States, including wetlands, associated with the construction, maintenance and repair of bridges spanning navigable waters and waters of the United States, including cofferdams, abutements, foundational seals, piers, approach fills, detour fills, box culverts installation and temporary construction and access fills, as part of work conducted by the NCDOT or other state, federal or local governmental entity, in the state of North Carolina. This permit requires written confirmation from the District Engineer prior to the commencement of any work.

This project will require a 401 Water Quality Certification from the DWQ prior to the issuance of the Nationwide/General Permits. Section 401 of the CWA requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to Waters of the United States. The issuance of a 401 permit from the DWQ is a prerequisite to issuance of a Section 404 permit.

The subject project is located within a county that is under the jurisdiction of Coastal Area Management Act (CAMA). CAMA is administered by the N. C. Division of Coastal Management (NCDCM). The NCDCM is the lead permitting agency for projects located within its jurisdiction.

CAMA directs the Coastal Resources Commission (CRC) to identify and designate Areas of Environmental Concern (AEC) in which uncontrolled develop might cause irreversible damage to property, public health and natural environment. A CAMA permit from the NCDCM is required if the project meets all of the following conditions:

a) Located in one of the twenty counties covered by CAMA;
b) Located in or affects an AEC designated by the CRC;
c) Considered to be "development" under CAMA; and,
d) Not qualify for an exemption as identified by CAMA or the CRC.

An NCDCM representative determined that this project necessitates a CAMA permit. Because a CAMA permit is required, a CAMA Major Development permit will also be required.

The CAMA Major Development permit application will also serve as an application for other state permits and for permits from the U. S. Army Corps of Engineers (USACE) as required by Section 10 the Rivers and Harbors Act and Section 404 of the Clean Water Act. It is likely that the USACE would authorize the project under a Section 404 General Permit 291. The state permits include:

a) Authorization to excavate and/or fill;
b) Authorization into lands covered by water; and, Authorization under 401 Water Quality Certification.

a. Bridge Removal Techniques

In accordance with any CAMA permit, NCDOT is aware that removal of the existing bridge shall be performed so as not to allow debris to fall into the water. The contractor shall remove the bridge and submit plans for demolition in accordance with Article 402-2 of the Standard Specifications. Possible methods for bridge removal involve the contractor lifting out each span with a crane, or saw cutting the bridge in sections, and then lifting these sections out. The piles would either be pulled, or cut off at the mud line.

4. Avoidance, Minimization, Mitigation

The COE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept 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 wetlands has been defined by the CEQ to include: Avoiding impacts (to wetlands), minimizing impacts, and rectifying impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practical possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and COE, in determining "appropriate and practical" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practical in terms of costs, existing technology and logistics in light of overall project purposes. Wetlands were located with GPS and it is anticipated that some wetlands may be avoided during design where practicable.

Minimization includes the examination of appropriate and practical 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.

Practical means to minimize impacts to surface waters and wetlands impacted by the proposed project include:

- Decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes and/or road shoulder widths.
- Installation of temporary silt fences, earth berms, and temporary ground cover during construction.
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters and wetlands.
- Reduction of clearing and grubbing activity in and adjacent to water bodies.

The project was designed to avoid impacts to wetlands in the area. The project alignment was chosen to cross the narrowest band of wetlands at the bridge approaches. Additionally, a 200ft (60.96m) long bridge is proposed which will span and avoid filling most of the wetlands in the area. As a result, impacts were avoided to wetlands A, B, E, F, H and L. Impacts to wetlands D and K were unavoidable due to the bridge approach fill. NCDOT also coordinated with the USACE to avoid filling the highest quality wetlands A and L. Impacts to wetlands D and K were minimized by decreasing the project footprint in wetlands by the use of 3:1 side slopes and crossing wetlands perpendicularly. Additionally, measures to control erosion during construction will be incorporated as well as strict enforcement of Best Management 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. Such actions should be undertaken in areas adjacent to or contiguous to the discharge site.

b. Protected and Rare Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law (under the provisions 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. Other species may receive additional protection under separate state laws.

1. Federally-protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the ESA. As of 16 June 2000, there are 11 federally protected species listed for Onslow County (Table 4). Following are brief

descriptions of the characteristics and habitat requirements for each listed species. The biological conclusion for each species will resolve the potential impacts due to the proposed project.

Table 4. Federally Protected Species of Onslow County.

Scientific Name	Common Name	Status
Alligator mississippiensis	American alligator	T(S/A)
Caretta caretta	Loggerhead sea turtle	T
Charadrius melodus	Piping plover	T
Chelonia mydas	Green sea turtle	T
Dermochelys coriacea	Leatherback sea turtle	E
Felis concolor cougar	Eastern cougar	E*
Picoides borealis	Red-cockaded woodpecker	E
Amaranthus pumilus	Seabeach amaranth	T
Carex lutea	Golden sedge	PE
Lysimachia asperulaefolia	Rough-leaved loosestrife	E
Thalictrum cooleyi	Cooley's meadowrue	E

[1] **Endangered (E)** species are a taxon which is in danger of extinction throughout all or a significant portion of its range.
Threatened (T) species are a taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Threatened by Similarity of Appearance T(S/A) species are a taxon which is threatened by similarity of appearance with other species and is listed for its protection.
Proposed Endangered (PE) species are a taxon proposed for official listing as endangered.
* indicates an obscure and incidental record.

Alligator mississippiensis (American alligator) T(S/A)

Animal Family: Alligatoridae
Date Listed: 4 June 1987

The alligator is a large aquatic reptile, measuring 1.8-5.8 meters in length, with a broadly rounded snout, heavy body, laterally compressed tail, and a dark gray or blackish color. Young are black with conspicuous yellow crossbands; the banding may occasionally persist on adults, although very faintly. Unlike the American crocodile, the fourth tooth on the lower jaw of the alligator fits in a notch in the upper jaw and is not exposed when the jaws are closed.

The alligator is found in rivers, streams, canals, lakes, swamps, bayous, and coastal marshes. Adult animals are highly tolerant of salt water, but the young are apparently more sensitive, with salinities greater than 5 parts per thousand considered harmful. The diet consists of anything of suitable size, including mammals, reptiles, amphibians, birds, fish, and crustaceans.

Nesting takes place in late spring and early summer, with the female building a mound of grass and other vegetation that may be two feet high and six feet across. The nest is usually constructed near the water, in a shaded location. The clutch of 30-60 (average 35) eggs is laid in a cavity near the top of the mound, and is incubated by the heat from the decaying vegetation. The female usually remains near the nest until the eggs hatch. Hatching takes place in about nine weeks, at which time the young begin calling to alert the female to excavate the nest.

This species is listed as Threatened Due to Similarity of Appearance, and is therefore not protected under Section 7 of the Endangered Species Act. However, in order to control the illegal trade of other protected crocodilians such as the American crocodile, federal regulations (such as hide tagging) are maintained on the commercial trade of alligators. No survey is required for this species

***Caretta caretta* (Loggerhead turtle) Threatened**
Animal Family: Cheloniidae
Date Listed: 28 July 1978

The loggerhead sea turtle is a large marine reptile, weighing 170-500 kg. The loggerhead has a large head and blunt, powerful jaws. The carapace and flippers are reddish-brown and the plastron is yellow. There are five pairs of pleural scutes on the carapace, with the first touching the nuchal scute. Three scutes on each side connect the carapace and the plastron.

The loggerhead sea turtle is found in a wide variety of habitats, including the open ocean, bays, lagoons, salt marshes, creeks, ship channels, and large river mouths. Hatchlings are often seen in association with floating sargassum seaweed. The diet includes sponges, jellyfish, mollusks, crustaceans, and fish. Loggerheads often forage in coral reefs, rocky areas, and shipwrecks.

On the east coast of the U.S., the nesting season begins in about May and lasts until November. Females crawl onto the beach at night and excavate a chamber in the sand, using their hind flippers. They lay 64-341 eggs, the average being about 115. These hatch in about two months, usually emerging at night. The hatchlings crawl toward the ocean, possibly using illumination off the water and slope of the beach as cues to find the water. Little is known about where the young go once they enter the ocean, but evidence suggests that 12-30 years are required to reach sexual maturity. Females only nest every 2-3 years, but may lay 2-6 clutches during a reproductive year.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the loggerhead sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the loggerhead sea turtle within 1.6 km (1.0 mi) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Charadrius melodus* (Piping plover) Threatened**
Animal Family: Charadriidae
Date Listed: 11 December 1985

The piping plover is a small shorebird resembling a sandpiper, weighing 42-56 g, with a length of 15-20 cm. Their plumage is white below and brownish gray above, with a black band across the forehead and a black ring around the neck. The black marking may be indistinct during the winter. The legs are yellow, and the bill is yellow in summer and dark in the winter. Chicks are precocial and covered with a sandy-colored down. This plover's call is a clear "peep-lo". This bird's movement pattern during foraging is like that of most plovers, running in short starts and stops.

Piping plovers prefer habitat that consists of large sandflats or mudflats for foraging in close proximity to a sandy beach for roosting and nesting. They nest on sandy or gravelly beaches in sparsely vegetated areas that are slightly higher in elevation than the surrounding beach. The nest is a shallow scrape in the sand, often with shell fragments in it, and a clutch usually consists of four eggs. The eggs hatch in May and the young fledge about a month later. Parents will often try to distract predators from the nest by feigning a broken wing. Migration to the wintering grounds occurs in early September.

Piping plovers eat a wide variety of worms, fly larvae, beetles, crustaceans, molluscs, and other invertebrates (Bent 1928). The foraging behavior consists of quick darting movement across the sand or mudflat, with sudden stops to probe the sand for food items.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the piping plover is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the piping plover within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Chelonia mydas* (Green sea turtle) Threatened**
Animal Family: Cheloniidae
Date Listed: 28 July 1978

The green sea turtle is a large marine reptile, weighing 100-295 kg. The smooth, keelless carapace is light to dark brown with darker mottling and the plastron is light yellow. The head is fairly small with a serrated lower jaw, and there is a single claw on each front flipper. There are four pairs of pleural scutes on the carapace, with none touching the nuchal scute, and a single pair of elongated scales between the eyes. Hatchlings generally have a black carapace, white plastron, and white markings on the edge of the carapace and flippers.
Adult green sea turtles are generally found in shallow water, especially in lagoons and shoals inside reefs, bays, and inlets where marine grasses and algae are abundant. Hatchlings are often seen offshore, in association with floating sargassum seaweed. The

diet consists mainly of marine grasses and algae, although mollusks, sponges, crustaceans, and jellyfish may also be taken.

On the east coast of the U.S., the nesting season begins in about June and lasts until September. Females crawl onto the beach at night and excavate a chamber in the sand, using their hind flippers, in which a clutch of 75-200 eggs is deposited. Incubation takes 48-70 days, and the hatchlings usually emerge at night. The hatchlings crawl toward the ocean, possibly using illumination off the water and slope of the beach as cues to find the water. Little is known about where the young go once they enter the ocean, but evidence suggests that 25-50 years are required to reach sexual maturity. Females only nest every 2-4 years, but may lay seven clutches during a reproductive year, with 9-13 days between clutches.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the green sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the green sea turtle within 1.6 km (1.0 mi) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Dermochelys coriacea* (Leatherback sea turtle) Endangered**
Animal Family: Dermochelydae
Date Listed: 2 June 1972

The leatherback sea turtle is the largest of the turtles, weighing 295-680 kg with a length of 1.2-1.8 m. This turtle is unique in that its carapace is not composed of hard scutes, but is rubbery with small bones embedded in it. The carapace has seven longitudinal keels, and is dark brown or black. The plastron has five longitudinal keels. There is not a well-defined angle between the carapace and plastron, making the animal somewhat barrel-shaped. The head and flippers are brown or black with whitish spots, and the flippers have no claws. The beak is somewhat hooked, with a tooth-like cusp on either side of the upper jaw. Hatchlings are dark brown or black, with white or yellowish carapace keels, and their skin has small scales that are lost as the animal grows.

The leatherback sea turtle is a strong swimmer and mainly pelagic, often seen near the edge of the continental shelf. Preferred nesting beaches are usually isolated, with close proximity to deep water, bordered by vegetation, and steep enough so that dry sand is not too far from the water. The diet consists mainly of jellyfish, along with some sea urchins, crustaceans, squid, tunicates, fish, and seaweed.

Nesting in North Carolina takes place in June through September. Clutch size is approximately 80-100 eggs, of which a third may be yolkless. Females may nest several times in a single season, but probably do not nest every year. Incubation takes 55-74 days, and the hatchlings emerge at night. They immediately head for the ocean, possibly using light cues to find the water.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the leatherback sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the leatherback sea turtle within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

Felis concolor cougar* (Eastern cougar) Endangered
Animal Family: Felidae
Date Listed: 4 June 1973

The eastern cougar is a large, unspotted, long-tailed cat weighing between 68 and 91 kg. Males are 30-40 percent larger than females. The cougar's body and legs are a uniform tawny color, although the belly is a pale reddish color, and the backs of the ears, tip of the tail, and sides of the muzzle are black. Kittens are spotted with black and have ringed tails until they are about 6 months old.

Historically, the eastern cougar occurred from eastern Canada south to Tennessee and South Carolina. Its distribution has contracted to a few scattered locations in Minnesota, Michigan, and the Great Smoky Mountains National Park. Additional sightings have also been reported in several counties of western and southeastern North Carolina. No populations of this species are well documented. Habitat requirements consist primarily of large tracts of wilderness and adequate prey, and this species can live in coastal swamps as well as mountainous regions. Cougars feed mainly on white-tailed deer (*Odocoileus virginianus*), although they may also eat small mammals, wild turkeys, and occasionally domestic livestock. It is estimated that a female cougar can have a range of 5-20 square miles, and a male can have a range upwards of 25 square miles.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for the Eastern cougar is not located within the project study area. The project vicinity is relatively fragmented by cultivated land, residential areas, and a school, not allowing for the large tracts of wilderness required by the Eastern cougar. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the eastern cougar within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Picoides borealis* (red-cockaded woodpecker) Endangered**
Animal Family: Picidae
Date Listed: 13 October 1970

The adult red-cockaded woodpecker (RCW) has a plumage that is entirely black and white except for small red streaks on the sides of the nape in the male. The back of the RCW is black and white with horizontal stripes. The breast and underside of this woodpecker are white with streaked flanks. The RCW has a large white cheek patch surrounded by the black cap, nape, and throat.
The RCW uses open old growth stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting habitat. A forested stand must contain at least 50% pine, lack a thick understory, and be contiguous with other stands to be appropriate habitat for the RCW. These birds nest exclusively in trees that are $\geq$ 60 years old and are

contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 500 acres (200.0 hectares). This acreage must be contiguous with suitable nesting sites. These woodpeckers nest exclusively in living pine trees and usually in trees that are infected with the fungus that causes red-heart disease. Cavities are located in colonies from 12-100 ft (3.6-30.3 m) above the ground and average 30-50 ft (9.1- 15.7 m) high. They can be identified by a large incrustation of running sap that surrounds the tree. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 38 days later.

BIOLOGICAL CONCLUSION: ***** NO EFFECT*****

***Note: A survey for red-cockaded woodpeckers in the potential habitat areas at the project site was conducted on December 13, 2000 by NCDOT Biologists Hal Bain, Jared Gray, Jill Holmes, and Matt Haney. No red-cockaded woodpeckers were observed, nor were nesting cavities, or any other evidence that they may be using the project study area. A review of the North Carolina Heritage Program Database of Rare Species and Unique Habitats revealed no known occurrences of the red-cockaded wookpecker within 1.6 miles of the project study area. Therefore it can be concluded that the construction of this project will not impact this species.

Amaranthus pumilus **(seabeach amaranth) Threatened**
Plant Family: Amaranthaceae
Flowers Present: June to frost

Seabeach amaranth is an annual legume that grows in clumps containing 5 to 20 branches and are often over a foot across. The trailing stems are fleshy and reddish-pink or reddish in color. Seabeach amaranth has thick, fleshy leaves that are small, ovate-spatulate, emarginate and rounded. The leaves are usually spinach green in color, cluster towards the end of a stem, and have winged petioles. Flowers grow in axillary fascicles and the legume has smooth, indehsicent fruits. Seeds are glossy black. Both fruits and flowers are relatively inconspicuous and born along the stem.

Seabeach amaranth is endemic to the Atlantic Coastal Plain beaches. Habitat for seabeach amaranth is found on barrier island beaches functioning in a relatively dynamic and natural manner. Seabeach amaranth grows well in overwash flats at the accreting ends of islands and the lower foredunes and upper strands of noneroding beaches. Temporary populations often form in blowouts, sound-side beaches, dredge spoil, and beach replenishment. This species is very intolerant to competition and is not usually found in association with other species. Threats to seabeach amaranth include beach stabilization projects, all terrain vehicles (ATV's), herbivory by insects and animals, beach grooming, and beach erosion.

BIOLOGICAL CONCLUSION: **NO EFFECT**

Suitable habitat for seabeach amaranth does not occur within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the seabeach amaranth within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

Carex Lutea **(Golden Sedge) Proposed Endangered**
Plant Family: Cyperaceae
Flowers Present: mid April to mid June

Golden sedge is a perennial sedge whose culm (stem) may reach three feet (1m) or more in height. The yellowish green leaves are grasslike, with those of the culm mostly basal and up to 10in (28cm) long, while those of the vegetative shoots reach a length of 25in (65cm). The inflated perigynia (sac which encloses the ovary) are bright yellow at flowering and about .16 to .20 in (4 to 5 mm) long, and the perigynia beaks are out-curved and spreading. Golden sedge is most readily identified from mid-April to mid-June during flowering and fruiting. It is distinguished from other Carex species that occur in the same habitat by its bright yellow color, by its height and slenderness, and especially by the out-curved beaks of the crowded perigynia (LeBlond et al. 1994).

Carex lutea grows in sandy soils overlying coquina limestone deposits, where the soil pH is unusually high for this region, typically between 5.5 and 7.2 (Glover 1994). Soils supporting the species are very wet to periodically shallowly inundated. The species prefers the ecotone between the pine savanna and adjacent wet hardwood or hardwood/conifer forest (LeBlond 1996; Schafale and Weakley 1990). Most plants occur in the partially shaded savanna/swamp where occasional to frequent fires favor an herbaceous ground layer and suppress shrub dominance. The species appears to be a very rare, narrowly restricted endemic to an area within a 2-mile radius of the Onslow/Pender County line in southeastern North Carolina (LeBlond 1996).

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge is not located within the project study area. There are no pine savanna areas in the project study area and all wetland areas are dominated by shrubs and trees and therefore do not favor an open herbaceous ground layer. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of golden sedge within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

Lysimachia asperulaefolia **(rough-leaved loosestrife) Endangered**

Plant Family: Primulaceae
Federally Listed: 12 June 1987
Flowers Present: June

Rough-leaved loosestrife is a perennial herb having slender stems and whorled leaves. This herb has showy yellow flowers which usually occur in threes or fours. Fruits are present from July through October.

Rough-leaved loosestrife is endemic to the coastal plain and sandhills of North and South Carolina. This species occurs in the ecotones or edges between longleaf pine uplands and pond pine pocosins (areas of dense shrub and vine growth usually on a wet, peat, poorly drained soil), on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found to occur on deep peat in the low shrub community of large Carolina bays (shallow, elliptical, poorly drained depressions of unknown origins). The areas it occurs in are fire maintained. Rough-leaved loosestrife rarely occurs in association with hardwood stands and prefers acidic soils.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for rough-leaved loosestrife is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of rough-leaved loosestrife within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Thalictrum cooleyi* (Cooley's meadowrue) Endangered**

Plant Family: Ranunculaceae
Federally Listed: 7 February 1989
Flowers Present: late June-July (best mid July)

Cooley's meadowrue is a tall herb growing to 1 m or more when in flower. Its slender stems are erect in sunny locations and lax or sprawling when shaded. The leaves are ternately divided and the leaflets are about 2 cm long, narrow with entire margins or rarely with two or three lobes near the tip. The entire plant is glabrous with no hairs or glands. Male and female flowers occur on separate plants in loose few-flower clusters at the top of the plant. The flowers lack petals and the sepals fall off early. The male flowers have numerous pale lavender stamens. The female flowers have several separate spindle-shaped carpels which develop into narrowly ellipsoid, ribbed, one-seeded fruits 6 mm long, each tipped with a persistent linear style.

Cooley's meadowrue occurs in wet pine savannas, grass-sedge bogs and savanna like areas, often at the border of intermittent drainages or swamp forests. This species is usually found in areas that contain some type of disturbance such as clearings, burned savanna edges, maintained roadsides and power line rights-of-ways. It is found on fine sandy loam, circumneutral soils that are seasonally (winter) moist or saturated and only slightly acidic (pH 5.8-6.6).

BIOLOGICAL CONCLUSION **NO EFFECT**

Suitable habitat for Cooley's meadowrue is not located within the project study area. There are no wet boggy areas in the disturbed and open habitat found in the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of Cooley's meadowrue within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

2. Federal Species of Concern

Federal Species of Concern (FSC) are those plant and animal species which may or may not be listed in the future. There are 22 FSC listed for Onslow County as of 16 June 2000. FSC are not afforded federal protection 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. Organisms which are listed as Endangered, Threatened or Special Concern by the NHP list of Rare Plant and Animal Species 1993 are afforded state protection or are monitored under the State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979. However, the level of protection given to the state listed species does not apply to

NCDOT activities. Table 5 provides the FSC listed in Onslow County and indicates the species state status, and whether or not there is adequate habitat for each species in the project area.

Table 5. Federal Candidate/NC Protected Species in Onslow County.

Scientific Name	Common Name	State Status[1]	Habitat
Aimophila aestivlis	Bachman's Sparrow	SC	No
Ammodramus henslowii	Henslow's sparrow	SR	No
Heterodon simus	Southern hognose snake	SR	No
Laterallus jamaicensis	Black rail	SR	No
Ophisaurus mimicus	Mimic glass lizard	SC	No
Passerina ciris ciris	Eastern painted bunting	SR	No
Rana capito capito	Carolina gopher frog	SC	No
Procambarus plumumanus	Croatan crayfish	W3	Yes
Asplenium heteroresiliens	Carolina spleenwort	E	No
Carex chapmanii	Chapman's sedge	W1	Yes
Dionea muscipula	Venus flytrap	C/SC	No
Litsea aestivalis	Pondspice	C	No
Lobelia boykinii	Boykin's lobelia	C	No
Myriophyllum laxum	Loose watermilfoil	T	No
Oxypolis ternata	Savanna Cowbane	W1	No
Panicum hirstii	Hirsts panic grass	E	No
Parnassia caroliniana	Carolina grass-of-parnassus	E	No
Rhexia aristosa	Awned meadowbeauty	T	No
Rhynchospora thornei	Thorne's beaksedge	C/PE	No
Solidago pulchra	Carolina goldenrod	E	No
Solidago verna	Spring-flowering goldenrod	E/PT	No
Tofieldia glabra	Carolina asphodel	C	No

[1]**Endangered (E)** species are a taxon whose continued existence as a viable component of the state's flora/fauna is determined to be in jeopardy.
Threatened (T) species are a taxon which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Special Concern (SC) species are a taxon in North Carolina which requires monitoring.
Significantly Rare (SR) species are a taxon not listed by the NC WRC but which exists in small numbers and has been determined by the NHP to need monitoring.
Candidate (C) species are a taxon that is very rare in North Carolina, generally with 1-20 populations in the state.
Watch List (W) species are any other species believed to be rare and of conservation concern in the state but not warranting active monitoring at this time (**W1**: rare but relatively secure, **W3**: rare but uncertain documentation).
Proposed Threatened/Endangered (PT/PE) species are a taxon which has been formally proposed for listing as Threatened/Endangered, but has not yet completed the legally mandated listing process.

A review of the NHP database of Rare Species and Unique Habitats on 12 April 2000 revealed findings of *Peltandra saggittifolia*, Hooker's milkwort (*Polygala hookeri*), short-bristled beaksedge (*Rhynchospora breviseta*), and graceful goldenrod

(*Solidago gracillima*) within 1.0mi (1.6km) of the project area. Surveys for these species and the FSC were not conducted during the site visit, nor were the species observed during the site visit.

c. Essential Fish Habitat

Essential Fish Habitat (EFH) assessments, required by the National Marine Fisheries (NMF), ask that impacts from NCDOT construction to listed managed aquatic species be evaluated. Assessments should be made both on a spatial and temporal scale, evaluating the immediate impact area and downstream, and the effects of the construction over time.

Onslow County is listed as a county that contains waterbodies in which EFH species are found. None of the waterbodies listed are located immediately within the project study area or vicinity, however Little Northeast Creek flows into Northeast Creek which converges with the New River, a listed waterbody. The New River is approximately 8.9mi (5.5km) downstream from the project site. Ron Sechler, of NMF, commented that an Essential Fish Habitat study "would not be necessary because the (project study) area was far enough away from the waters of primary concern." He also agreed that due to the presence of freshwater mussels in Little Northeast Creek, it is not likely that EFH species would be found in the project study area. EFH species are usually found in waters of higher salinity content than freshwater mussels can live in.

E. Geology and Hazardous Materials Evaluation

A field reconnaissance survey was conducted in the vicinity of the project. In addition to a field survey, a file search of appropriate environmental agencies was conducted to identify any known problem sites along the proposed project alignment. Based on the field reconnaissance and records search, two potential UST sites were found within the project area. Both of these former gas stations are located at the SR 1423 (Old 30 Road) and SR 1411 (Waters Road) intersection. The first is located in the northwest quadrant, while the second is located in the northeast quadrant. NCDOT has indicated that construction for the current design will begin west of this intersection and will not impact these sites. If this changes and improvements are to be made to this specific intersection, the NCDOT Geotechnical Unit shall be contacted to re-evaluate these sites. No regulated or unregulated landfills or dumpsites occur within the project limits. No potential RCRA or CERCLA sites were identified within the project limits. However, unregulated UST's and unregulated landfills may be encountered by right of way during their initial contacts with the impacted properties. The NCDOT Geotechnical Unit should be notified of their presence prior to acquisition so that the actual condition of the site can be examined. If a site with unregulated UST's, dumpsites, or landfill is identified by Right of Way, a further investigation should be performed prior to right of way. This assessment will also be used by the Department to estimate the associated clean up cost and make right-of-way recommendations.

F. Highway Traffic Noise Analysis and Air Quality Analysis

This project is located in Onslow County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR part 51 and 93 is 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. The project will not increase traffic volumes; therefore, the project's impact on noise and air quality will not be significant.

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 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise if Title 23 of the Code of Federal Regulations, Part 772, and for air quality of the 1990 Clean Air Act Amendments and the NEPA process, and no additional reports are necessary.

G. Floodplain Involvement and Hydraulic Concerns

The drainage area of Little Northeast Creek at the proposed crossing is 9.3 square miles (24.1 square kilometers). Onslow County is currently participating in the National Flood Insurance Regular Program. This crossing of Little Northeast Creek is located in a designated flood hazard zone. No detailed flood studies have been done at the subject crossing. The crossing of Little Northeast Creek is located below headwaters. It is not anticipated that the proposed project should have any adverse impacts on the existing floodplain. Figure 6 is a copy of the Flood Insurance Rate Map for Onslow County on which the 100-year flood fringes are shown. There are no buildings located on the upstream or downstream floodplain, which is primarily wooded.

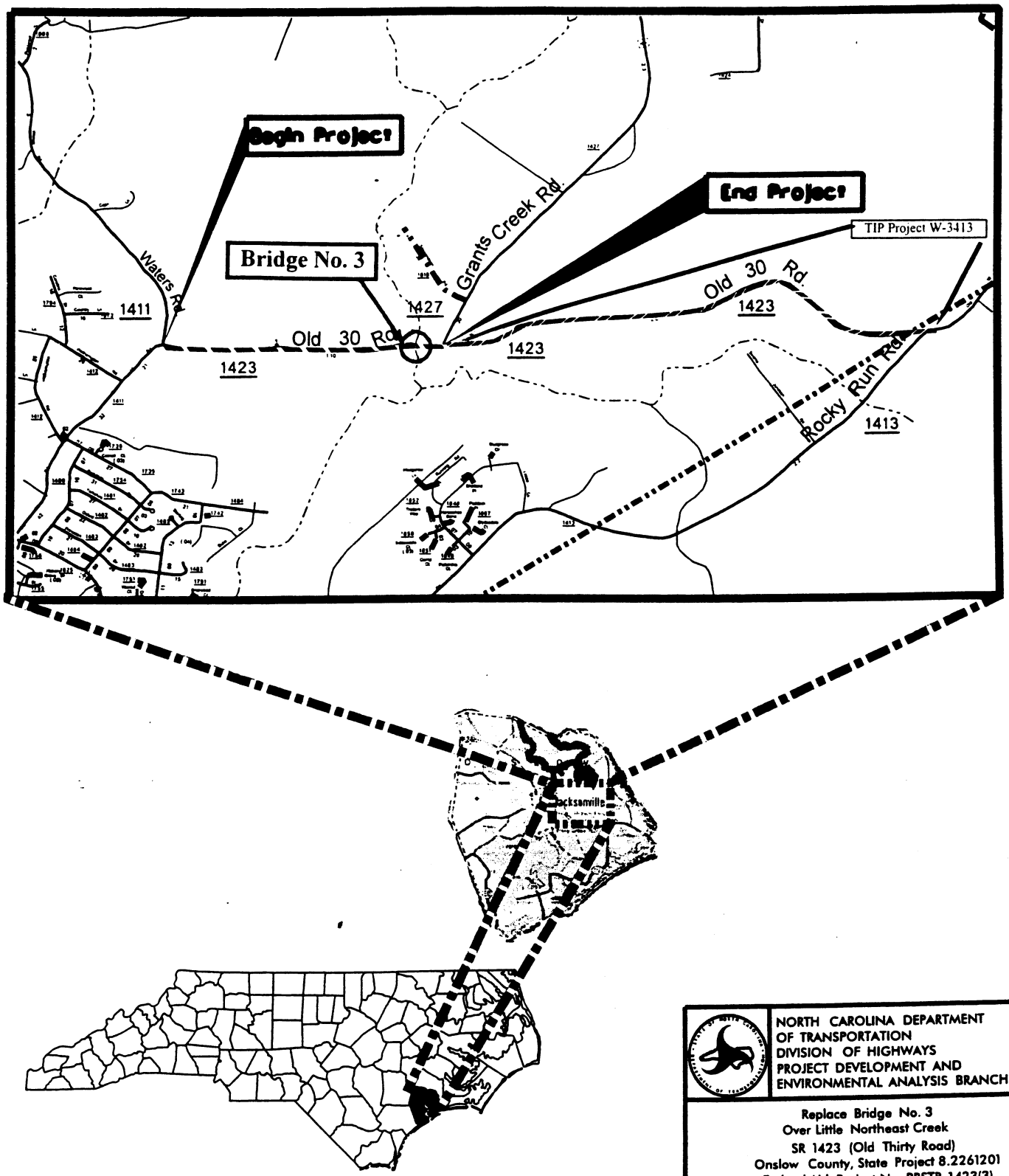
H. Section 4(f) Resources

No Section 4(f) properties will be involved with this project.

VI. COMMENTS, COORDINATION, AND PUBLIC INVOLVEMENT

On November 30, 1999, a citizen's informational workshop was held in Onlsow County at Morton Elementary School (see Appendix C for a copy of the Notice of a Citizens Informational Workshop and the Workshop Handout). This workshop was held in order to obtain comments and suggestions about the project from the public. Additionally, the proposed improvements were presented to the resource agencies on November 8, 2001 in order to address agency concerns and to determine if any changes were recommended. Agencies in attendance included the US Environmental Protection Agency, US Fish and Wildlife Resources Commission, Federal Highway Administration, Division of Coastal Management, North Carolina Wildlife Resources Commission, and the North Carolina Division of Water Quality. Minutes of the meeting are included in Appendix A.

FIGURES



NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

Replace Bridge No. 3
Over Little Northeast Creek
SR 1423 (Old Thirty Road)
Onslow County, State Project 8.2261201
Federal Aid Project No. BRSTP-1423(3)
TIP Project No. B-3682

FIGURE

N.C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
BRIDGE MAINTENANCE UNIT

ATTENTION: _____

BRIDGE INSPECTION REPORT

TYPE OF INSPECTION Routine

COUNTY Onslow BRIDGE NUMBER 3 INSPECTION CYCLE 2 Yrs.

ROUTE SR-1423 ACROSS Little Northeast Creek MP _____

LOCATION 1.0 Mi. E. Jct. SR-1412

DESCRIPTION 4-Spans R.C Deck & Tim. Joist (BMD-10)
On Tim. Caps & Piles

PRESENT CONDITION Poor

INVENTORY RATING HS10

INSPECTION DATE 8-3-98

OPERATING RATING HS 15

PRESENT POSTING SV-17 TTST-25

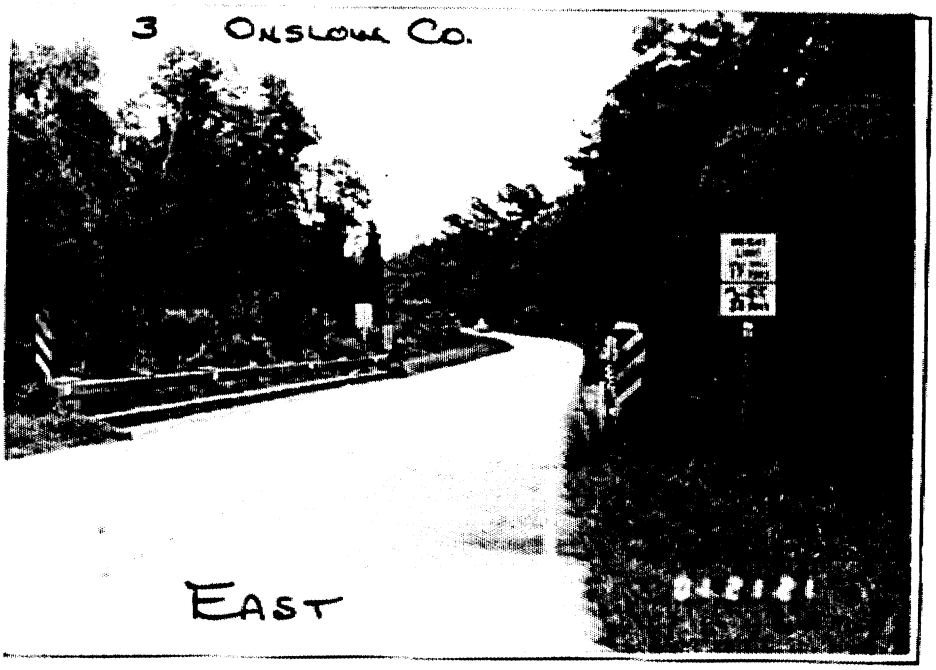
PROPOSED POSTING Retain-S.V. 17 Tons & TTST 25 Tons

COMPUTER UPDATE 10-16-98

ANALYSIS DATE 9/16/98

POSTING LETTER DATE _____

OTHER SIGNS PRESENT 4-Delineators



SPECIAL PERMIT C-2

SIGN NOTICE ISSUED FOR	NUMBER REQUIRED
____ WEIGHT LIMIT	
____ SPECIAL PERMIT	
____ DELINEATORS	
____ NARROW BRIDGE	
____ ONE LANE BRIDGE	
____ LOW CLEARANCE	

Revised 1-10-96

Figure 3

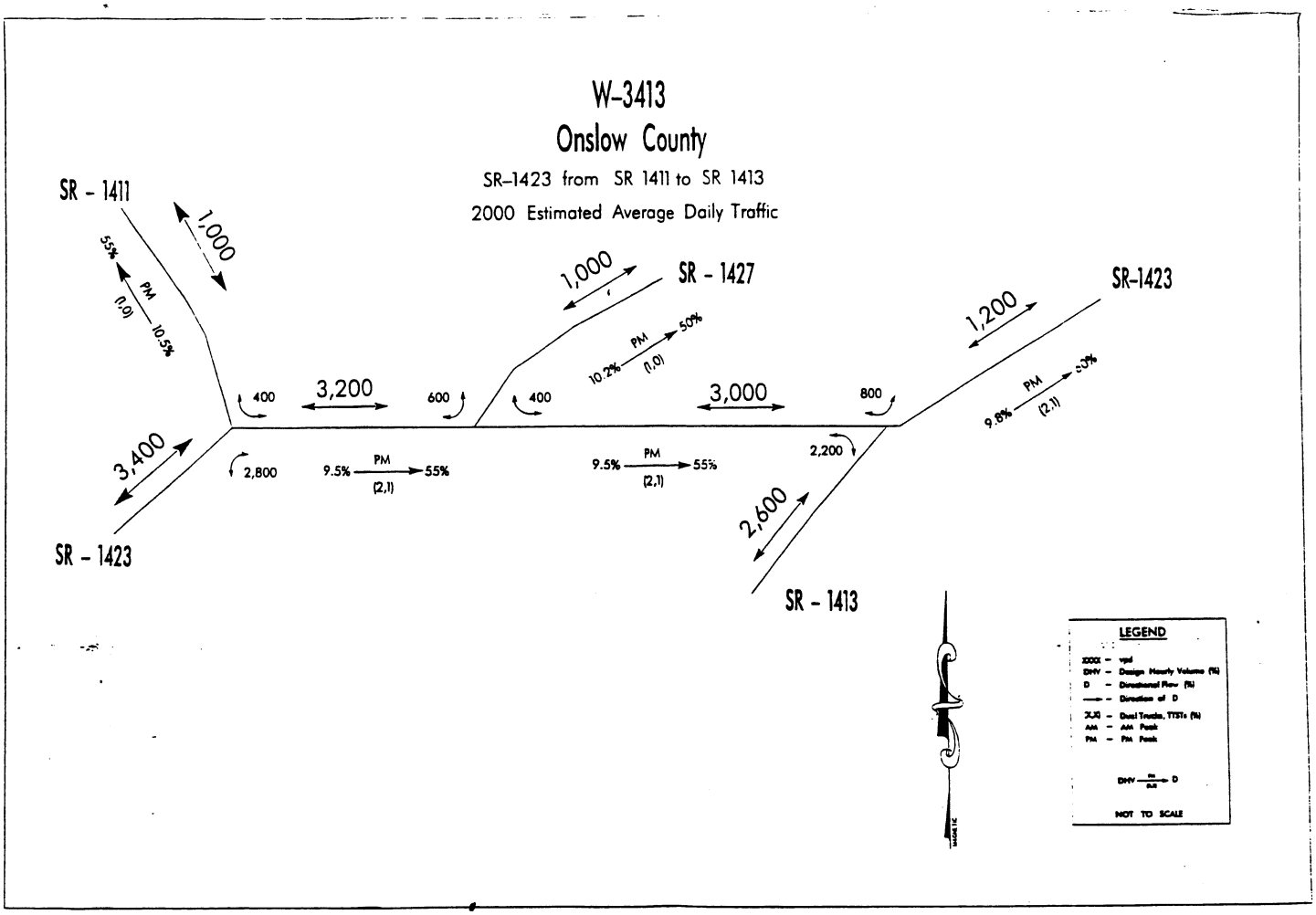
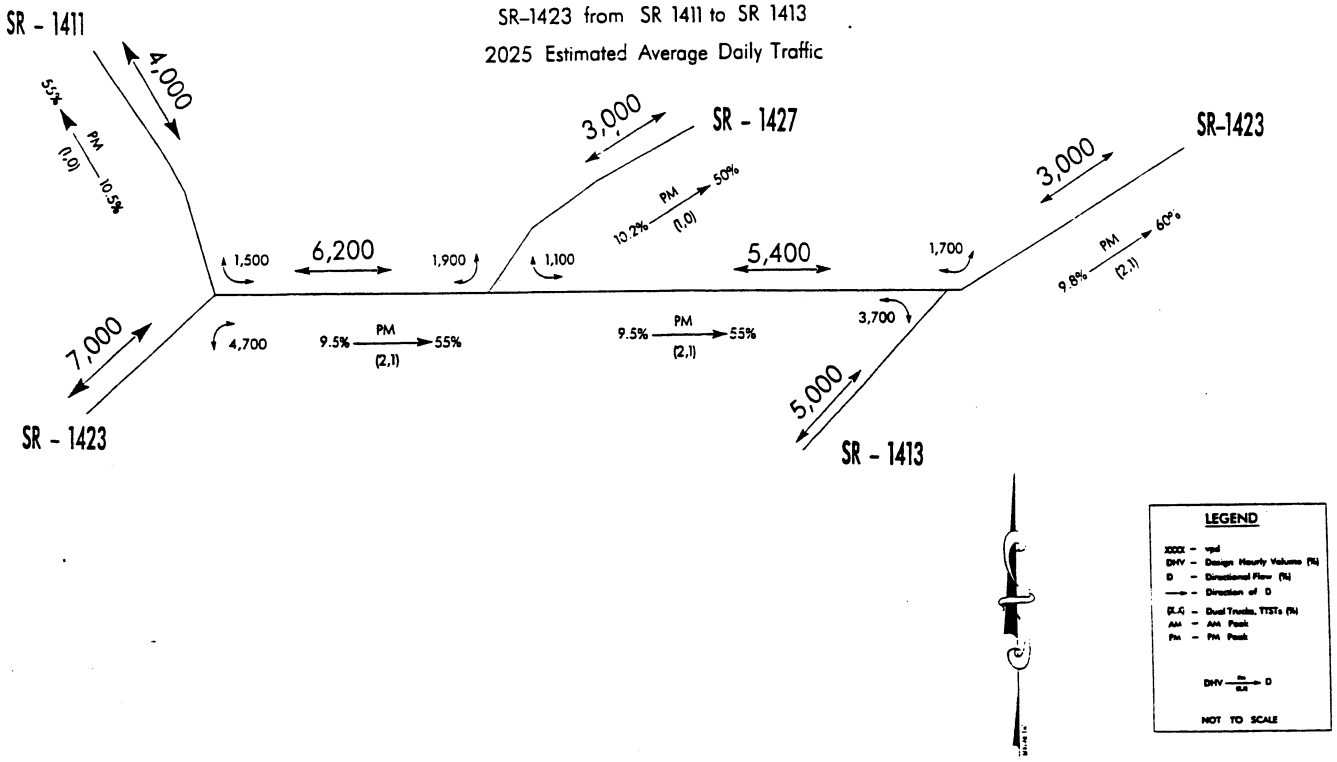

W-3413
Onslow County
SR–1423 from SR 1411 to SR 1413
2000 Estimated Average Daily Traffic
SR - 1411
1,000
55%
PM
(1.0)
10.5%
1,000
SR - 1427
PM
10.2%
50%
(1.0)
SR-1423
1,200
PM
9.8%
50%
(2.1)
400
3,200
600
400
3,000
800
3,400
2,800
9.5%
PM
55%
(2,1)
9.5%
PM
55%
(2,1)
2,200
2,600
SR - 1423
SR - 1413
LEGEND
2000 – vpd
DHV – Design Hourly Volume (%)
D – Directional Flow (%)
– Direction of D
T – Dual Trucks, TTSTs (%)
AM – AM Peak
PM – PM Peak
DHV → D
NOT TO SCALE

Figure 4

W-3413
Onslow County
SR-1423 from SR 1411 to SR 1413
2025 Estimated Average Daily Traffic



PROPOSED TWO-LANE SHOULDER SECTION

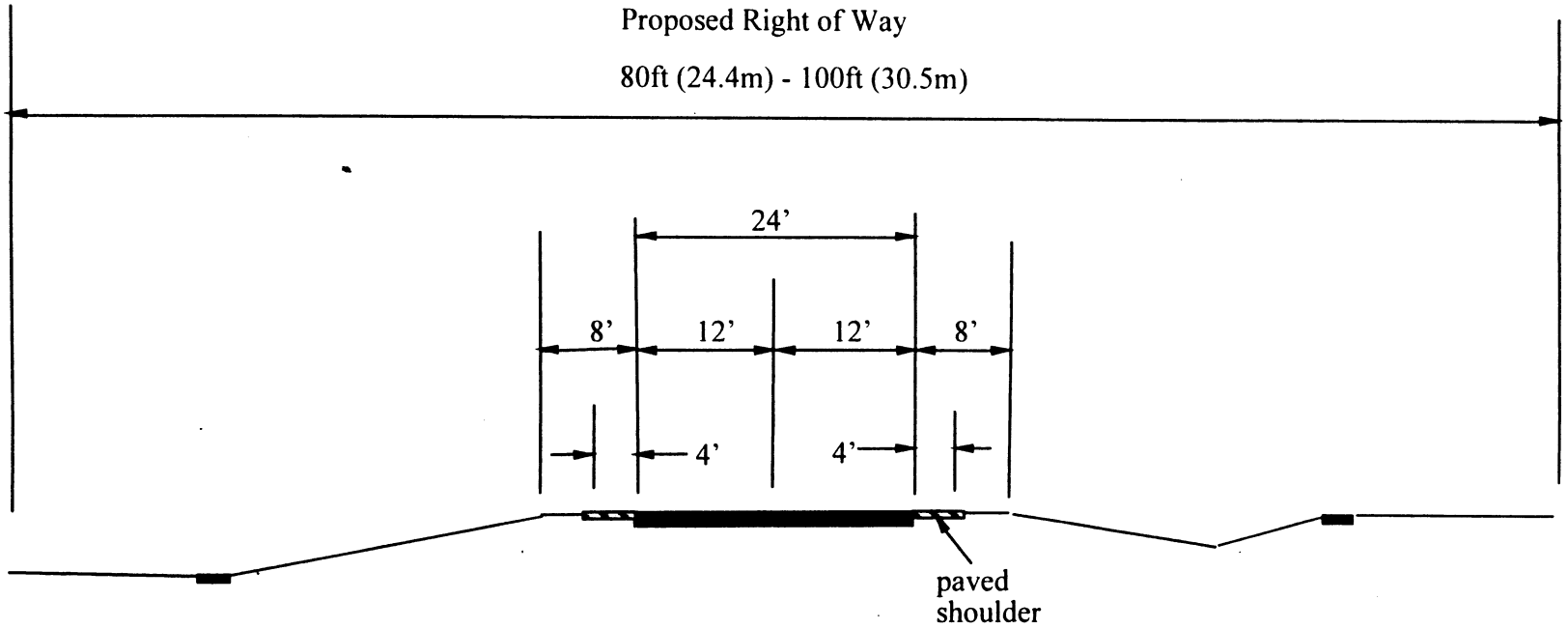


FIGURE 5

APPENDIX A

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

November 16, 2001

Mr. Bill Gilmore, Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Attention: Jackie Obediente

Dear Mr. Gilmore:

This responds to your October 23, 2001, request for National Marine Fisheries Service (NMFS) comments on Project number B-3683/W-3413, Improvement of SR 1423 from SR 1411 to SR 1413, including replacement of Bridge No.3 on new location, in Onslow County, North Carolina. The purpose of the project is to increase safety levels and to replace Bridge No. 3 over Little Northeast Creek. The new bridge would be located approximately 80 feet south of the existing bridge location and the old bridge would be removed once work on the new bridge is completed.

Our initial review of the project indicates that reasonable efforts have been made to avoid and minimize impacts to wetlands and aquatic resources. We note that unavoidable wetland losses and adverse impacts are anticipated in connection with relocation of 322 linear feet of stream and planned filling of 0.12 acre of wetlands. These impacts need to be offset and we recommend that this occur in advance of, the Department of the Army (DA) permit application process. Ideally, the DA public notice for the project should describe the mitigation to be provided, and we should be able to concur without providing further comments and recommendations. You may wish to consult further with us in connection with these mitigation needs.

Little Northeast Creek, is a tributary of the New River and it provides habitat for anadromous fishery resources for which the NMFS has stewardship and management responsibilities. Plans, as stated in your letter, to adhere to the North Carolina Department of Transportation's (NCDOT) Anadromous Fish Guidelines are commendable and should be strictly adhered to. This would seasonally restrict or limit work in waters and wetlands during periods of anadromous fish spawning. Planned incorporation of the NCDOT's Guidelines and Best Management Practices for Bridge Demolition is also desirable and alleviates the need for detailed comments and recommendations concerning this aspect of the project.

Thank you for the opportunity to provide these comments. If you have questions or additional needs, please contact me at the letterhead address, or at (252) 728-5090.

Sincerely,

Ron Sechler

Ronald S. Sechler
Fishery Biologist

— Peters

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

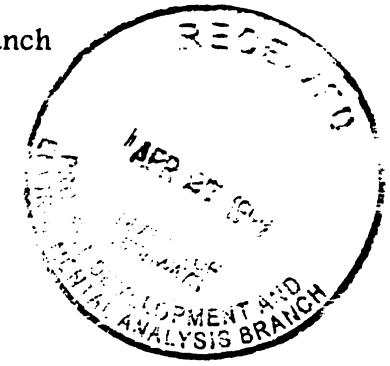
April 19, 1999

MEMORANDUM

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

FROM: David Brook
Deputy State Historic Preservation Officer

SUBJECT: SR 1423 from SR 1411 to SR 1413, Onslow County, Federal Aid Project STP-1423(2) and BRSTP-1423(3), State Project 8.7326024 and 8.2261201, TIP W-3413 and B-3682, ER 99-8343



Thank you for your memorandum of February 18, 1999, concerning the above project.

We have checked our maps and files and have located the following historic structures within the project area:

ON 267, House

ON 386, Erasmus Morton House

Both are located on the north side of the road and shown on the attached map. A North Carolina Department of Transportation architectural historian should evaluate these properties.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

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.

E Peters

BRSTP-1423(3) B-3682
Federal Aid #STP-1423(2) *TIP* #W-3413 *County*: Onslow

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

Project Description: Improvements to SR 1423 from SR 1411 to SR 1413, including replacement of Bridge No. 3

On October 21, 1999, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (SHPO)

Reviewed the subject project at

- [ ] a scoping meeting
- [x] photograph review session/consultation
- [ ] other

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [x] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Properties 1-7 are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 10.21.99
Representative, NCDOT — Date

Ray C Shelton — 10/25/99
FHWA, for the Division Administrator, or other Federal Agency — Date

J. T. Mat — 10/21/99
Representative, SHPO — Date

David Brook, Deputy SHPO — 11/2/99
State Historic Preservation Officer — Date

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 14, 2001

TO: Meeting Attendees

FROM: Jackie Obediente
Project Development Engineer
Project Development and Environmental Analysis Branch

SUBJECT: B-3682/W-3413 Agency Meeting Minutes

An agency meeting was held on November 8, 2001 at 1:00 p.m., in the Photogrammetry Conference Room in the Century Center. The following were in attendance:

Jackie Obediente	Project Development and Environmental Analysis Branch (PD&EA)
Eric Midkiff	PD&EA
Jill Holmes	PD&EA
Ron Lucas	Federal Highway Administration
Bill Arrington	Division of Coastal Management
Cathy Brittingham	Division of Coastal Management
David Cox	North Carolina Wildlife Resources Commission
Beth Barnes	Division of Water Quality
Cynthia Perry	Roadway Design
Tim Goins	Roadway Design
Tom McCartney	US Fish and Wildlife Service – Raleigh
Chris Militshcer	USEPA – Raleigh
Mason Herndon	Division 3 - DEO
Joe Blair	Division 3 – DCE

This project is not going through the merger process, however, the purpose of this agency meeting was to present and review the preliminary designs to determine whether any changes need to be made, or whether any permitting problems are anticipated.

Below is a summary of the topics that were discussed:

- **The current project schedules are as follows –**
  B-3682: Categorical Exclusion – December 2001
  RW – August 2002

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

LET – January 2004

W-3413: Categorical Exclusion – January 2002
RW – January 2003
LET – January 2004

- **CAMA** – This project will require a CAMA Major Permit. This permit must be applied for 3-4 months before LET date. Utility relocations will be addressed and included in the CAMA permit. Conditions of the permit will be coordinated during the permitting process.

- **Anadramous Fish Moratorium and T&E Species**– Because this project lies within an anadramous fish spawning area, Anadramous Fish Guidelines will be followed. There is a possibility that this moratorium period may be the longest period, which lasts from February 15 to September 30. We will look into coordinating the LET date around this moratorium period. T&E Species survey report will be included in the Categorical Exclusion (CE).

- **Bridge Demolition and Construction** – For purposes of the environmental document, PD&EA is required to calculate a worst-case scenario concerning amounts of bridge demolition debris that have the potential to fall into the water. It is assumed that the worst-case scenario would involve the entire concrete deck falling into the water during removal. In accordance with any CAMA permit, NCDOT is aware that no debris will be allowed to fall into the water during the removal of the bridge. Bridge removal methods will be discussed in the CE.

- **Avoidance and Minimization of Wetlands** – descriptions concerning avoidance and minimization measures taken will be included in the Categorical Exclusion. These minimization measures include the implementation of 2:1 slopes at the bridge approaches, and avoidance and minimization of impacts to wetlands at curves and along the roadway. Descriptions will include justification of why the curves and the roadway could not be designed differently to avoid wetland impacts, and how 2:1 slopes at the bridge approaches were implemented into the design.

If you have any questions concerning the meeting, or the meeting minutes, please call me at 919-733-7844 extension 228, or email me at jyobediente@dot.state.nc.us.

cc: David Timpy, USACE
Allen Pope, Division 3 Engineer
John Hennesy, DWQ
Ron Sechler, National Marine Fisheries, HCD
Jimmy Gooodnight, Roadway Design

APPENDIX B

RELOCATION REPORT

North Carolina Department of Transportation

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.2261201	COUNTY	Onslow	Alternate	of Alternate
I.D. NO.:	B-3682	F.A. PROJECT	BRSTP-1423(3)		
DESCRIPTION OF PROJECT:	Replacement of Bridge No. 3 over Little Northeast Creek, SR 1423 (Old Thirty Road)				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	0	0	0	0
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP

VALUE OF DWELLING / DSS DWELLING AVAILABLE

Owners		Tenants		For Sale		For Rent	
0-20M		$ 0-150		0-20M		$ 0-150	
20-40M		150-250		20-40M		150-250	
40-70M		250-400		40-70M		250-400	
70-100M		400-600		70-100M		400-600	
100 UP		600 UP		100 UP		600 UP	
TOTAL							

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
		1. Will special relocation services be necessary?
		2. Will schools or churches be affect by Displacement?
		3. Will business services still be available after Project?
		4. Will any business be displaced? If so, Indicate size, type, estimated number of Employees, minorities, etc.
		5. Will relocation cause a housing shortage?
		6. Source for available housing (list).
		7. Will additional housing programs be needed?
		8. Should Last Resort Housing be considered?
		9. Are there large, disabled, elderly, etc. Families?
		10. Will public housing be needed for project?
		11. Is public housing available?
		12. Is it felt there will be adequate DSS housing Housing available during relocation period?
		13. Will there be a problem of housing within Financial means?
		14. Are suitable business sites available (list Source).
		15. Number months estimated to complete RELOCATION?

REMARKS (Respond by Number)

This is a negative EIS Study.

S R Straughan	2/4/02	Ann Simpson	2-7-02
Right of Way Agent	Date	Approved by	Date

Form 15.4 Revised 10/00

Original & 1 Copy: State Relocation Agent
2 Copy Division Right of Way Office

APPENDIX C

**NOTICE OF A CITIZENS INFORMATIONAL WORKSHOP
FOR PROPOSED IMPROVEMENTS
ON SR 1423 (OLD THIRTY ROAD)
FROM SR 1411 TO SR 1413**

Projects 8.7326024/8.2261201 W-3413/B-3682 Onslow County

The North Carolina Department of Transportation (NCDOT) will hold a Citizens Informational Workshop on November 30, 1999, between the hours of 4:00 PM and 7:00 PM in the Cafeteria of Morton Elementary School, 485 Old 30 Road, Jacksonville.

Project W-3413 will improve SR 1423 from north of SR 1411 to SR 1413, and Project B-3682 will replace Bridge #3 over Little Northeast Creek. Comments from the public will be used in the preparation of the environmental document being developed for this project.

NCDOT representatives will be available at the workshop to answer questions and receive comments relative to the proposed projects. Information at the workshop will be general in nature. No detailed designs are available. Interested individuals may attend at their convenience during the above-stated hours. Anyone desiring additional information may contact Mr. Edwin A. Peters, Project Development Engineer, at P. O. Box 25201, Raleigh, NC 27611, or call 919-733-7844, ext. 228.

In order to comply with the Americans with Disabilities Act, NCDOT will provide auxiliary aids and services for disabled persons who wish to attend the workshop. To receive special services, please contact Mr. Peters at the above address or fax 919-733-9794 prior to the date of the workshop.

North Carolina Department of Transportation
Planning and Environmental Branch

SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD) TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY TIP PROJECT NO. W-3413 AND B-3682

NOVEMBER 30, 1999

Citizens Informational Workshop

CITIZENS INFORMATIONAL WORKSHOP

SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD)
TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY
TIP PROJECT NO. W-3413 AND B-3682

Purpose of the Citizens Informational Workshop

The purpose of the Citizens Informational Workshop is to involve the public in the project planning process. If you have comments or suggestions about the proposed improvements described in this handout, please let a representative of the North Carolina Department of Transportation know. A comment sheet is provided for you to write down your questions or concerns so that we can keep a record of and fully consider your ideas, comments, and suggestions.

The North Carolina Department of Transportation realizes individuals living close to a proposed project want to be informed of the possible effects of the project on their homes and businesses. However, exact information is not available at this stage of the planning process. Additional design work is necessary before the actual right of way limits can be established. More detailed information will be available at a later date.

A comment sheet is included in this handout. Written comments on this project may be left with North Carolina Department of Transportation representatives at the Citizens Informational Workshop or submitted through the mail. If additional information is needed or you would like to submit comments after the Citizens Informational Workshop, please address your requests and comments to:

Mr. William D. Gilmore, P.E., Manager
Program Development and Environmental Analysis Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611

Description of the Project

The North Carolina Department of Transportation's 2000-2006 Transportation Improvement Program (TIP) proposes to improve the horizontal curvature of SR 1423(Old Thirty Road) and replace Bridge No. 3 over Little Northeast Creek.

Project Schedules

The proposed project is scheduled for right of way acquisition in fiscal year (FY) 2001 and for construction in FY 2002. The current cost estimate is $2,240,000, which includes $2,150,000 for construction and $90,000 (TIP) for right of way acquisition.

Current Status

Currently, planning and environmental studies are in progress. A Categorical Exclusion is scheduled to be completed in September 2000. A public hearing will be scheduled following the completion of the Categorical Exclusion. At this public hearing, the public will have an opportunity to review a map showing the proposed design. Factors that may affect the design of this project include engineering criteria and environmental factors such as relocation of homes or businesses, wetlands, historic sites, etc. A form is

available from NCDOT representatives if you feel you have or know of a structure which has historical significance. The improvements currently under investigation are described in the next paragraphs.

Proposed Improvements

The proposed project includes providing additional pavement and improving the horizontal curvature of the roadway at select locations along SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to SR 1413 (Rocky Run Road) where the design speed of the curves is inconsistent with the design speed of the overall facility. Additionally, Bridge No. 3 over Little Northeast Creek will be replaced on new location in conjunction with these horizontal alignment improvements.

Anticipated Right of Way Impacts

The existing right of way on SR 1423 is approximately 60 feet. It is anticipated that minimal additional right of way will be needed to accommodate the proposed improvements.

NCDOT will use the result of the environmental and engineering studies within the study corridor to develop an alignment which is safe and cost effective and which minimizes impacts to existing development and historic and natural resources.

No final decisions have been made regarding this project. Therefore, the above information and schedule are preliminary and subject to change. As planning for the project continues, we will include all comments and suggestions to the extent possible.

COMMENT SHEET

SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD)
TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY
TIP PROJECT NO. W-3413 AND B-3682

(You do not have to answer all the questions on these sheets, but please take the time to give us your comments and concerns regarding this project. Please continue any responses on the back of this sheet.)

NAME: _____
(Please print)

ADDRESS: _____
(Please print)

COMMENTS, CONCERNS AND/OR QUESTIONS REGARDING PROJECT W-3413 and B-3682:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(If you need additional space, please continue on the back.)

WE WOULD APPRECIATE YOUR RESPONSES TO THE FOLLOWING QUESTIONS.

WAS THE PROJECT ADEQUATELY EXPLAINED TO YOU? _____ WERE NCDOT REPRESENTATIVES UNDERSTANDABLE AND CLEAR IN THEIR EXPLANATIONS? _____ PLEASE EXPLAIN. _____

_____

_____

WERE DISPLAY MAPS EASY TO READ AND UNDERSTAND? _____ PLEASE EXPLAIN. _____

_____

_____

WERE NCDOT REPRESENTATIVES COURTEOUS AND HELPFUL? _____ PLEASE EXPLAIN. _____

_____

_____

HOW MIGHT WE BETTER PRESENT PROPOSED PROJECTS AND ADDRESS CITIZEN'S CONCERNS IN FUTURE INFORMATIONAL WORKSHOPS?

_____

_____

_____

HOW DID YOU HEAR ABOUT THIS MEETING TODAY? _____

_____

_____

DO YOU FEEL THE MEETING WAS ADEQUATELY PUBLICIZED? _____ PLEASE EXPLAIN. _____

_____

Additional comments can be sent to Mr. William D. Gilmore, P.E., Manager of the Project Development and Environmental Analysis Branch, North Carolina Department of Transportation, P.O. Box 25201, Raleigh, North Carolina 27611.

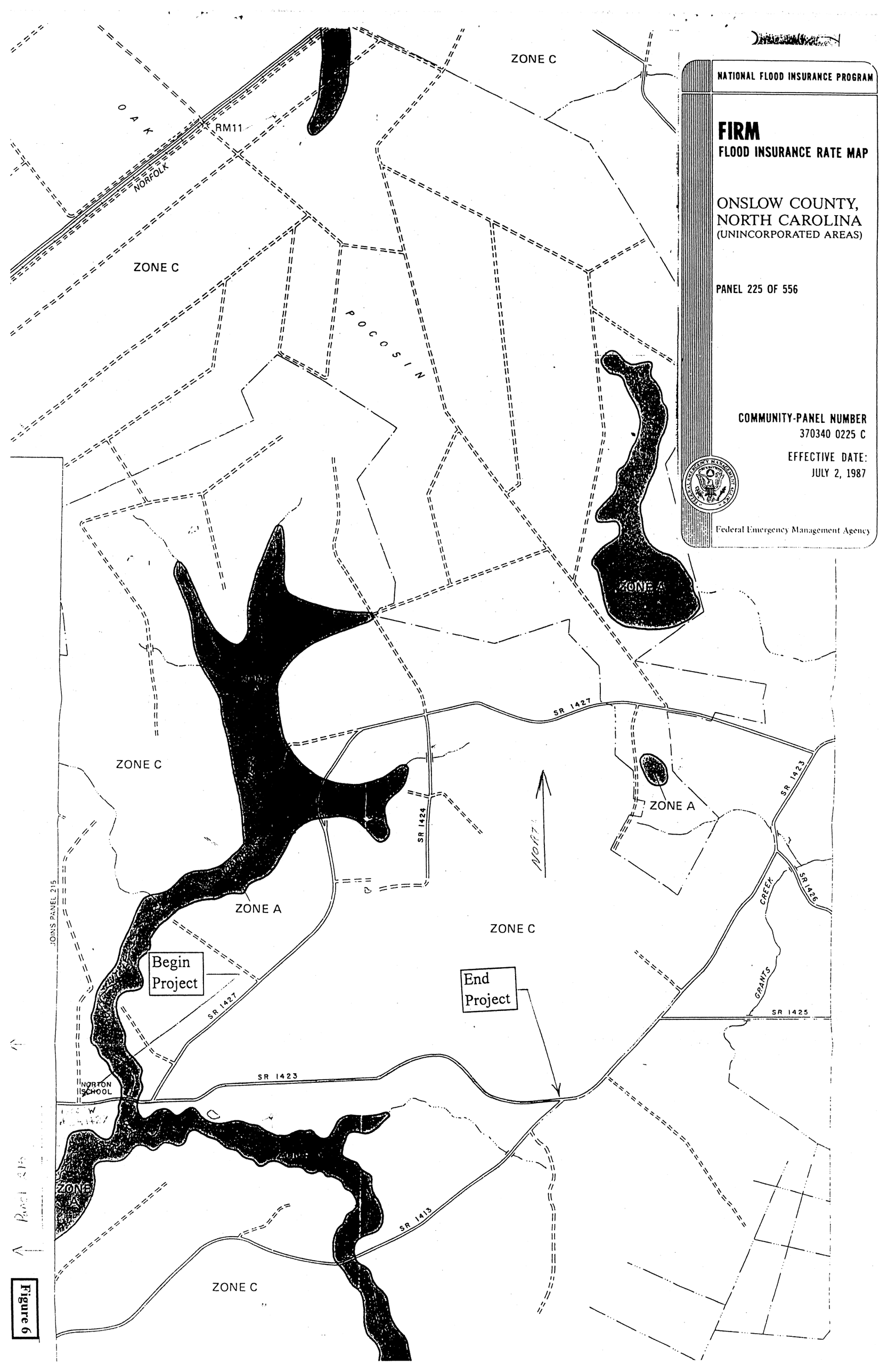

NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
ONSLOW COUNTY, NORTH CAROLINA
(UNINCORPORATED AREAS)
PANEL 225 OF 556
COMMUNITY-PANEL NUMBER
370340 0225 C
EFFECTIVE DATE:
JULY 2, 1987
Federal Emergency Management Agency
ZONE C
ZONE A
ZONE C
ZONE A
ZONE C
ZONE A
ZONE C
ZONE A
ZONE C
RM11
NORFOLK
OAK
POCOSIN
SR 1427
SR 1424
SR 1423
SR 1426
SR 1425
SR 1413
CREEK
GRANTS
NORTH
Begin Project
End Project
NORTON SCHOOL
JOINS PANEL 215

Figure 6

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta 11+21.18
Δ = 4° 49' 10.6" (RT)
D = 2° 30' 00.0'
L = 192.78'
T = 96.45'
R = 2,291.83'

-L-
PI Sta 17+58.18
Δ = 5° 26' 27.6" (LT)
D = 4° 00' 00.0'
L = 136.03'
T = 68.06'
R = 1,432.39'
SE = 0.06 ft/ft
RO = 150'

NAD 83

10

15

POT Sta. 10+00.00

PCSta. 10+24.73

PTSta. 12+17.51

PCSta. 16+90.11

PTSta. 18+26.14

MATCHLINE -L- 19+00.00 SEE SHEET 5

15" RCP

6" PVC

18" STEEL

GATE

PAVED PARKING

OLD P

N 87° 30' 07.1" E

S 87° 40' 02.3" E

S 88° 37' 04.8" E

22s TRANSITION

STA 10+00.00 -L- BEGIN STATE PROJECT 8.2261201
STA 10+00.00 -L- BEGIN F.A. PROJECT BRSTP-1423 (2)

BL-10
POT 5+00.00

BL-3
PINC 11+91.43
NCDOT GPS MON. B3682-3
ELEV.= 21.81'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B3682-3" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 375074.15701(1) EASTING: 2507482.84401(1) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999921278 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B3682-3" TO -L- STA 10+00.00 IS N 86° 28' 31.39" W DISTANCE 689.3727 FEET ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

Replace Bridge No. 3
Over Little Northeast Creek
SR 1423 (Old Thirty Road), Onslow County
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201, TIP No. B-3682

FIGURE 2

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

BRIDGE No. 3

25

30

20

ONSLOW COUNTY
BOARD OF EDUCATION
DB 351 PG 117

PLAY AREA

PAVED PARKING

SIGN

MAILBOX

POWER POLES

LT

15" RCP

24" RCP

R=35'

R=30'

5'+4'+5'

72' CHL

LOA (CM TO R/W)

CHL

WOODS

N 86° 52' 50" E

200' TRANSITION

THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL
DB 703 PG 488
DB 1322 PG 500
MB 3 PG 11

LITTLE NORTHEAST CREEK

SEAT ELEV.=14.38'

THOMAS J. MARSHALL AND KATHLEEN H. MARSHALL
DB 703 PG 488
DB 1322 PG 500
MB 3 PG 11

Wetland A
Impacts (Under Bridge) =
1500 ft^2 = 0.034 acres

Wetland B
Impacts (Under Bridge) =
435 ft^2 = 0.01 acres

MATCHLINE -L- 19+00.00 SEE SHEET 4

MATCHLINE -L- 34+00.00 SEE SHEET 6

UT #0
Impacts = 25 ft

JOHN W. BANKS, et ux
WILL BOOK 91-E-159
DB 1229 PG 762
DB 217 PG 212

Wetland K
Impacts = 1165 ft^2
= 0.03 acres

Wetland L
Impacts (Under Bridge) =
637 ft^2 = 0.0146 acres

Wetland F
Impacts = 0

MARIJENNIE B. WARLICK
DB 1233 PG 930
DB 929 PG 500

Wetland E
Impacts = 0

Wetland D
Impacts = 2600 ft^2
= 0.06 acres

N 45° 58' 28" E
76.95'

50' E

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

Replace Bridge No. 3
Over Little Northeast Creek
SR 1423 (Old Thirty Road), Onlsow County
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201, TIP No. B-3682

2 of 3

FIGURE 2

PROJECT REFERENCE NO.	SHEET NO.
B-3682 & W-3413	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

-L-
PI Sta 32+68.15
△ = 6° 54' 30.9" (LT)
D = 4° 00' 00.0"
L = 172.71'
T = 86.46'
R = 1,432.39'
SE = 0.07 FT/FT
RO = 175'

-L-
PI Sta 38+39.63
△ = 13° 11' 28.9" (RT)
D = 3° 00' 00.0"
L = 439.71'
T = 220.83'
R = 1,909.86'
SU = 0.06 FT/FT
RO = 150'

PI Sta 10+00.00

BEGIN CONSTRUCTION
-Y- STA 13+25.00

PCSta. 13+56.55

MARJORIE PADGETT
DB 229 PG 332

ROBIN L. BURLESON
DB 1390 PG 20

PTSta. 33+54.40

PCSta. 31+81.69

UNKNOWN

PTSta. 15+79.85

STA 35+00.00 -L- END STATE PROJECT 8.2261201
STA 35+00.00 -L- END F.A. PROJECT BRSTP-1423 (2)

STA 35+00.00 -L- BEGIN STATE PROJECT 8.7326024
STA 35+00.00 -L- BEGIN F.A. PROJECT STP-1423 (2)

PCSta. 41+76.65

MATCHLINE -L- 31+00.00 SEE SHEET 5

MATCHLINE -L- 44+00.00 SEE SHEET 7

-L- STA 34+88.13 =
-Y- STA 16+50.00

PTSta. 16+50.00

* Wetland G
(*Ruled Not a Wetland After Corps Field Review)
No Impacts

Wetland H
Impacts = 0

200 GAL FUEL TANK WITH PUMP (ABAND.)

PCSta. 36+18.80

ANDREW ZIHAR, ET UX
DB 529 PG 893

PTSta. 40+58.51

WILLIAM BALLANTINE
DB 178 PG 816

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

Replace Bridge No. 3
Over Little Northeast Creek
SR 1423 (Old Thirty Road), Onslow County
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201, TIP No. B-3682

3 of 3

FIGURE 2

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Onslow County, Federal Aid Project No. STP-1423(2),
State Project 8.7326024
TIP No. W-3413

ADMINISTRATIVE ACTION

CATEGORICAL EXCLUSION

U. S. Department of Transportation
Federal Highway Administration

and

N. C. Department of Transportation
Division of Highways

APPROVED:

4-22-02
Date

William D. Gilmore, P. E., Manager
Project Development and Environmental Analysis Branch, NCDOT

4/22/02
Date

for Nicholas L. Graf, P. E.
Division Administrator, FHWA

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Onslow County, Federal Aid Project No. STP-1423(2),
State Project 8.7326024
TIP No. W-3413

CATEGORICAL EXCLUSION

April 2002

Document Prepared in Project Development and
Environmental Analysis Branch By:

Jackie Obediente 4/22/02
Jackie Obediente
Project Development Engineer

Eric Midkiff 4/22/02
Eric Midkiff, P.E.
Project Development Unit Head

Lubin V. Prevatt
Lubin V. Prevatt, P. E., Assistant Manager
Project Development and Environmental Analysis Branch

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from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Onslow County, Federal Aid Project No. STP-1423(2),
State Project 8.7326024
TIP No. W-3413

SUMMARY

1. Description of Action

The North Carolina Department of Transportation, Division of Highways proposes to improve the horizontal curvature of SR 1423 (Old Thirty Road) and widen that facility at select locations (see Figure 1), between SR 1427 (Grants Creek Loop) and SR 1413 (Rocky Run Road) in Onslow County.

The 2.0 mile (3.3 km) project is included in the 2002-2008 Transportation Improvement Program (TIP), with right of way acquisition scheduled for FFY 2003, and construction scheduled for FFY 2004.

The estimated cost is $1,195,000 including $345,000 for right of way acquisition and $850,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $941,000, including $48,000 for right of way, $743,000 for construction, and $150,000 spent in prior years.

2. Summary of Environmental Impacts

Widening and realigning SR 1423 (Old Thirty Road), will have a positive impact on the project area by increasing the level of safety associated with the facility. Based on preliminary designs, no relocations of businesses or residents are anticipated as a result of this project. No recreational facilities or sites listed on the National Register of Historic Places will be involved. No publicly owned parks, recreational facilities or wildlife or waterfowl refuges of national, state, or local significance are in the vicinity of the project. The proposed project will impact 0.0425 ac (0.017 ha) of wetlands.

3. Summary of Environmental Commitments

PROJECT COMMITMENTS
SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway,
Onslow County, Federal Aid Project No. STP-1423(2),
State Project 8.7326024
TIP No. W-3413

Commitments Developed Through Project Development and Design

Project Development and Environmental Analysis Branch

Little Northeast Creek is listed as an Anadramous Fish Spawning Area 2.43 km (1.5 mi) downstream from Bridge No. 3 over Little Northeast Creek (Figure 1). The replacement of Bridge No. 3 over Little Northeast Creek will be done under another TIP project, B-3682. Environmental commitments associated with this bridge replacement will be documented in the Categorical Exclusion for B-3682. Anadramous Fish Guidelines should be adhered to avoid potential impacts to these fish.

4. Coordination

The following federal, state, and local officials were consulted regarding this project:

U.S. Army Corps of Engineers
U.S. Fish and Wildlife Services
U.S. Federal Highway Administration
* National Marine Fisheries
North Carolina Division of Coastal Management
North Carolina Wildlife Resources Commission
North Carolina Division of Water Quality
* State Historic Preservation Office

A citizen's informational workshop was held on November 30, 1999 to obtain public comment on the project (See Appendix C). Comments on the project that were received from the agencies are noted by an asterisk (*). Those comments are included in Appendix A.

5. Additional Information

Additional information concerning the proposal and assessment can be obtained by contacting the following:

W.D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 733-3141

Nicholas L. Graf, P.E., Division Administrator
Federal Highway Administration
Department of Transportation
310 New Bern Avenue, Suite 410
Raleigh, NC 27601-1442
(919) 856-4346

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Onslow County, Federal Aid Project No. STP-1423(2),
State Project 8.7326024
TIP No. W-3413

I. DESCRIPTION OF PROPOSED ACTION

The North Carolina Department of Transportation (NCDOT), Division of Highways, proposes to improve the horizontal curvature of SR 1423 (Old Thirty Road) and widen that facility at select locations (see Figure 1), between SR 1427 (Grants Creek Loop) and SR 1413 (Rocky Run Road) in Onslow County. NCDOT and FHWA classify this action as a Categorical Exclusion, due to the fact that no notable environmental impacts are likely to occur as a result of project construction.

The estimated cost is $1,195,000 including $345,000 for right of way acquisition and $850,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $941,000, including $48,000 for right of way, $743,000 for construction, and $150,000 spent in prior years.

The proposed project is included in the 2002-2008 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program. The project location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

II. PURPOSE OF PROJECT

A. Purpose and Need of Project

The purpose of the proposed project is to improve the overall safety of the facility.

1. Accident Analysis

There were 20 total accidents reported along the project section between July 1, 1995 and June 30, 1998. The overall accident rate during this period was 473.9 accidents per 100 million vehicle miles (acc/100MVM), which is substantially higher than the statewide average of 261.86acc/100MVM for rural two-lane secondary routes. Further review of the accident data reveals that 85% of the total accidents were ran-off-the-road accidents. The proposed improvements are intended to reduce the accident rate along this facility by providing more pavement and shoulder width, and by addressing substandard horizontal curvature.

B. Existing Conditions

1. Length of Project

The length of the studied section is approximately 2.0 miles (3.3 km).

2. Route Classification

NCDOT classifies SR 1423 as a Rural Minor Collector in the Statewide Functional Classification System.

3. Roadway Existing Cross Section

SR 1423 is a two-lane paved facility, with pavement width varying from 18ft (5.5m) to 21ft (6.4m). The existing roadway is characterized by tangent sections with abrupt transitions to sharp curvature. The existing horizontal alignments are substandard for the posted speed limit.

4. Existing Right of Way

The existing right-of-way (ROW) is approximately 60ft (18.3m).

5. Utilities

Overhead and underground utilities are present along both sides of SR 1423 throughout the project limits.

There is a 10-inch (1.5m) C.I. county water line located on the north side of SR 1423 throughout the project length. It is also located along SR 1427 on the west side.

6. Access Control

There is no control of access along SR 1423 (Old Thirty Road).

7. Speed Limits

The posted speed limit is 55mph (88.5km/hr).

8. Bridges and Drainage Structures

There are no bridges within the project limits, however Bridge No. 3 lies just west of the beginning of the project. This bridge is part of TIP Project B-3682 and will be replaced due to its structural deficiency. According to NCDOT Bridge Maintenance records, the bridge's sufficiency rating is 19.9 out of a possible 100.0.

Minor drainage structures exist along SR 1423. Roadside ditches are prevalent throughout the project study area. There are also several non-jurisdictional upland cut ditches/drainage areas in the project study area.

9. Horizontal Curvature

The horizontal curvature of SR 1423 is substandard for the posted speed limit, which contributes to the low level of safety of this facility.

10. Intersecting Roads

All intersections along SR 1423 (Old Thirty Road) are at grade. There are two stop-signed controlled intersections along the project, located at the intersections of SR 1427 (Grants Creek Loop) / SR 1423, and SR 1413 (Rocky Run Road) / SR 1423.

11. Project Terminals

The western project terminal is located at the intersection of SR 1423 (Old Thirty Road) and SR 1427 (Grants Creek Loop). This intersection is stop-signed controlled. The eastern project terminal is located at the intersection of SR 1423 and SR 1413 (Rocky Run Road). This intersection is stop-signed controlled.

12. Degree of Roadside Interference

The degree of roadside interference is low along SR 1423 (Old Thirty Road). The roadway is located in a rural area just north of the Jacksonville City Limits, and the development primarily consists of single family residential properties, widely spaced apart, with one school, Morton Elementary School, located approximately 1400 feet (427m) west of SR 1427 (Waters Road).

13. Schools / School Bus Data

Morton Elementary School is located west of the project limits, on the north side of SR 1423 (Old Thirty Road) approximately 1400 feet (427m) west of SR 1427 (Waters Road). The Transportation Director of the Onslow County School Bus Garage estimates that 40 buses per day travel on SR 1423.

14. Railroads

No railroads exist near or along this project.

15. Bicycle and Pedestrian Accommodations

Bicycle and pedestrian accommodations do not exist along the roadway section. However, the project section of SR 1423 is a designated bicycle route in Onslow County, the "Jacksonville City to the Sea" bicycle route.

16. Traffic Volumes

Traffic volumes for the section from SR 1427 to SR 1413 in the year 2000 are estimated to be 3,000 vehicles per day. The projected traffic volumes for the same section in the year 2025 are estimated to be 5,400 vehicles per day. Projected traffic volumes, major turning movements, truck data and design hour data are shown in Figure 3.

C. Other Proposed Highway Improvements in the Project Area

One roadway improvement project, included in the 2002-2008 Transportation Improvement Program, is located adjacent to the proposed project (see Figure 1). A brief description of this project, along with its current schedule, is listed below:

TIP Project B-3682 –
This project proposes to replace Bridge No. 3 over Little Northeast Creek, along with the widening and realignment of SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to SR 1427 (Grants Creek Loop) in Onslow County. The 0.47 mile (0.76km) project is included in the 2002-2008 Transportation Improvement Program (TIP) with right of way acquisition scheduled for FFY 2002 and construction scheduled for FFY 2004.

III. PROPOSED IMPROVEMENTS

A. Length of Project

The length of the proposed project is approximately 2.0 miles (3.33 km).

B. Roadway Realignment

The alignment for the project will be designed to improve the overall safety of the facility, and minimize impacts to wetlands, streams, and adjoining properties.

C. Cross Section

The realigned and roadway sections will be upgraded to AASHTO standards. The roadway typical section will have a 24-foot (7.2m) travelway, with 4-foot (1.2m) paved shoulders and 4-foot (1.2m) grassed shoulders along each side. Where guardrail is required, shoulders will be increased by a minimum of 3 feet (0.9m) on each side.

D. Bridges and Drainage Structures

Existing drainage structures along the project will be retained and extended in accordance with the widening, and existing drainage patterns will be maintained to the extent possible.

E. Design Speed

The recommended design speed is 50mph (80km/hr). The posted speed limit is expected to be 45mph (72.4km/hr).

F. Right of Way

The proposed ROW of the project varies between 60 ft (18.3 m) and 80 ft (24.4 m) throughout the project limits. In addition to the proposed right of way, temporary construction easements will also be required throughout the majority of the project (See Figure 2).

G. Access Control

No control of access is proposed.

H. Intersection Treatment

The intersections of SR 1423 at SR 1427 and SR 1413 are currently stop sign controlled. They will remain stop sign controlled after the project's construction. A left turn lane is proposed on SR 1423 onto SR 1427.

I. Bicycle and Pedestrian Accommodations

The project section of SR 1423 is a designated bicycle route in Onslow County, "Jacksonville City to the Sea" bicycle route. Therefore, 4ft (1.2m) paved shoulders have been implemented into the design. These paved shoulders will extend along both sides of the road.

J. Estimated Costs

The estimated cost is $1,195,000 including $345,000 for right of way acquisition and $850,000 for construction. The estimated cost projected by the 2002-2008 Transportation Improvement Program is $941,000, including $48,000 for right of way, $743,000 for construction, and $150,000 spent in prior years.

IV. ALTERNATIVES TO PROPOSED ACTION

A. No Build

This alternative would avoid the environmental impacts that are anticipated as a result of the project; however, this alternative does not meet the purpose of the project, which is to improve the level of safety associated with the facility. Therefore, there would be no positive effect on the safety of the highway. This alternative is not recommended, however, it does serve as a basis for comparison of other alternatives.

Because the no-build alternative would provide no positive effect on the safety of the highway, it was eliminated from further study.

V. SOCIAL, ECONOMIC, AND ENVIRONMENTAL EFFECTS

A. Geographical Location

Onslow County is located in North Carolina's Coastal Plain region. Onslow County is bounded by Pender, Duplin, Jones, and Carteret Counties and the Atlantic Ocean. The terrain is relatively flat. The project is located within Onslow County's planning jurisdiction, east of Jacksonville.

1. Project Study Area

The physical study area may extend beyond the actual limits of the project as defined in the TIP. The study area for this TIP project incorporates the community that may be affected by the project improvements. It was devised by examining the project's location in relation to the overlay of United States Census Tracts, the role the facility plays in the local network, and the development patterns of the region. The project study area is shown in Figure 5.

B. Community Profile

The assessment process begins with defining the project and the study area. This helps to identify the areas of potential impact. Secondly, a Community Profile is developed. A Community Profile is a summary of the history, present conditions, and anticipated future of an area. It determines the characteristics of the study area, such as: demographic information; location of residences and businesses; economic data; social history of the community; and existing and future land use. The development of the profile is supported by information collected from a variety of sources including extensive fieldwork, local agencies, census data, tax records, real estate brokers, local citizens and employers, historical societies, and local land use plans. A Community Profile can be used as a basis for identifying potential impacts of a proposed transportation project. It is part of the "affected environment" in a NEPA evaluation. The following comprises the Community Profile for the Old Thirty Road study area.

1. Population and Demographic Characteristics

The 1990 United States Census and 2000 United States Census data (when available) were used to gather information on the population and demographics of the project study area, unless otherwise stated. Census Tracts 1 and 23 are used to represent the Old Thirty Road Study Corridor for the 1990 Census data. However, Tract 1 was broken down into Tracts 1.01, 1.02, 1.03 for the 2000 Census data. With this breakdown, Tracts 1.03 and 23 encompass the length of the Old Thirty Road Study Corridor for the 2000 Census data. Therefore, comparisons at the tract level can only be made using Tract 23. Census data for the City of Jacksonville is included as comparison, even though the project is located in Onslow County's jurisdiction. The boundaries of the Census Tracts (for 2000) and the limits of the Old Thirty Road Study Corridor are shown in Figure 6.

a. Population Growth Trends

According to the available 1990 and 2000 census data, the total population for North Carolina increased by approximately 21.4 percent over the past decade. Onslow County's population only increased 0.3 percent, while the City of Jacksonville's population increased by 122 percent during that same period. This is due in part to the fact that the City of Jacksonville annexed a portion of Camp Lejeune in 1990. Within Census Tract 23, the population increased 34.7 percent.

b. Ethnicity and Race

From 1990 to 2000, both the "white" population and the "black" population as a percent of the total decreased in North Carolina, Onslow County, and the City of Jacksonville. Yet, within Tract 23, the "black" population as a percent of the total increased, while the "white" population as a percent of the total decreased. However, the majority of the population is racially white throughout North Carolina. Using 2000 Census data, a breakdown of the ethnicity and racial characteristics of Onslow County, the City of Jacksonville, and Tracts 1.03 and 23 is shown in Table 1. The same information for Onslow County, the City of Jacksonville, and Tracts 1 and 23 using 1990 Census data is shown in Table 2.

The Hispanic population has grown throughout North Carolina. Within Onslow County, the Hispanic population increased from 0.3 percent of the population in 1990, to 7.2 percent of the population in 2000. Within the City of Jacksonville, the Hispanic population increased from 5.2 percent of the population in 1990, to 10 percent of the population in 2000. However, for Tract 23, the Hispanic population remained 7.1 percent.

Table 1. Ethnicity and Race by State, County, City and Tract for 2000

Category	North Carolina	Onslow County	City of Jacksonville	Tract 1.03	Tract 23
Total Population	8,049,313	150,355	66,715	4,028	3,796
White	5,804,656 (72.1%)	108,351 (72.1%)	42,655 (63.9%)	3,275 (81.3%)	2,649 (69.8%)
Black or African American	1,737,545 (21.6%)	27,790 (18.5%)	15,987 (24%)	568 (14.1%)	749 (19.7%)
American Indian, and Alaska Native	99,551 (1.2%)	1,108 (0.7%)	503 (0.8%)	15 (0.4%)	16 (0.4%)
Asian	113,689 (1.4%)	2,526 (1.7%)	1,380 (2.1%)	24 (0.6%)	120 (3.2%)
Native Hawaiian and Other Pacific Islander	3,983 (0.05%)	283 (0.2%)	126 (0.2%)	1 (0.02%)	12 (0.3%)

Hispanic or Latino (of any race)	378,963 (4.7%)	10,896 (7.2%)	6,702 (10%)	124 (3.1%)	269 (7.1%)

Source: 2000 US Census

Table 2. Ethnicity and Race by State, County, City and Tract for 1990

Category	North Carolina	Onslow County	City of Jacksonville	Tract 1	Tract 23
Total Population	6,628,637	149,838	30,013	12,245	2,819
White	5,008,491 (75.6%)	111,939 (74.7%)	20,303 (67.6%)	10,899 (89%)	2,200 (78%)
Black	1,456,323 (22%)	29,808 (19.9%)	8,007 (26.7%)	980 (8%)	425 (15.1%)
American Indian, Eskimo, or Aleut	80,155 (1.2%)	939 (0.6%)	144 (0.5%)	69 (0.6%)	8 (0.3%)
Asian	49,970 (0.8%)	2,562 (1.7%)	800 (2.7%)	145 (1.2%)	91 (3.2%)
All Pacific Islander	2,196 (0.03%)	432 (0.3%)	102 (0.3%)	21 (0.2%)	10 (0.4%)
Hispanic origin	76,726 (1.2%)	376 (0.3%)	1,571 (5.2%)	337 (2.8%)	199 (7.1%)

Source: 1990 US Census

c. Age Distribution

Using 2000 Census data, age within the state, county, city and study area can be found in Table 3. The percent of the total number of persons each age group comprises is shown in parenthesis.

According to 2000 Census data, within North Carolina, 12 percent of the population is age 65 or older. Within the study area, the percent of the population age 65 or older ranges from 4.8 percent to 9.4 percent, which is lower than North Carolina as a whole. Furthermore, the median age of the residents in Onslow County and the City of Jacksonville is 25 and 22.4, respectively. Camp Lejeune, a Marine Corps base is located in Onslow County and according to the Onslow County 1997 Land Use Plan, over 126,000 people are directly associated with the base and of that number approximately 90 percent are residents of Onslow County. The presence of the base is indicative of the lower percentage of people aged 65 or older and the low median ages.

Table 3. Age Distribution within North Carolina, Onslow County, the City of Jacksonville and the Study Area Tracts for 2000

Age	North Carolina	Onslow County	City of Jacksonville	Tract 1.03	Tract 23
Total Population	8,049,313	150,355	66,715	4,028	3,796
Under 5 years	539,509 (6.7%)	13,288 (8.8%)	6,433 (9.6%)	292 (7.2%)	318 (8.4%)
5-9 years	562,553 (7%)	10,594 (7%)	4,346 (6.5%)	267 (6.6%)	328 (8.6%)
10-14 years	551,367 (6.8%)	9,854 (6.6%)	3,538 (5.3%)	290 (7.2%)	337 (8.9%)
15-19 years	539,931 (6.7%)	13,686 (9.1%)	7,256 (10.9%)	287 (7.1%)	330 (8.7%)
20-24 years	577,508 (7.2%)	27,775 (18.5%)	18,862 (28.3%)	286 (7.1%)	335 (8.8%)
25-34 years	1,213,415 (15.1%)	23,762 (15.8%)	10,514 (15.8%)	574 (14.3%)	624 (16.4%)
35-44 years	1,287,120 (16%)	20,206 (13.4%)	6,736 (10.1%)	761 (18.9%)	671 (17.7%)
45-54 years	1,085,150 (13.5%)	12,971 (8.6%)	3,750 (5.6%)	497 (12.3%)	358 (9.4%)
55-64 years	723,712 (9%)	8,720 (5.8%)	2,100 (3.1%)	394 (9.8%)	298 (7.9%)
65 years and over	969,048 (12%)	9,499 (6.3%)	3,180 (4.8%)	380 (9.4%)	197 (5.2%)
Median Age	**35.3**	**25**	**22.4**	**35.3**	**29.4**

Source: 2000 US Census

d. Income Levels

The median household income for North Carolina was $26,647 in 2000. The median household income for the study area is comparable to the state and ranges from $23,189 to $27,621.

Household income levels within the study area for 1989 can be found in Table 4. Also shown in Table 4 is the percent of the total number of households each income level comprises. Historical poverty tables from the United States Census Bureau show that the

weighted average poverty threshold for a family of four is $17,050 per year. According to the United States Census Income and Poverty Status in 1989, 179,906 families were below the poverty level in North Carolina, which equates to 7.1 percent of the total number of households. This is comparable to the percentage of families below the poverty level in the study area, which ranges from 5.4 percent to 8 percent of the total number of households.

Table 4. Income Levels and Poverty Status for Households in the Study Area for 1989

Income Level (1989)	North Carolina	Onslow County	City of Jacksonville	Tract 1	Tract 23
Total Number Of Households (family and nonfamily)	2,517,098	40,545	10,931	4,554	910
Families Below the Poverty Level (as a percentage of total households)	179,906 (7.1%)	3,235 (8%)	881 (8.1%)	322 (7.1%)	49 (5.4%)
Less than $ 5,000	185,418 (7.4%)	2,042 (5%)	620 (5.7%)	321 (7%)	20 (2.2%)
$ 5,000 to $ 9,999	243,607 (9.7%)	3,068 (7.6%)	900 (8.2%)	312 (6.9%)	30 (3.3%)
$10,000 to $14,999	250,496 (10%)	5,101 (12.6%)	995 (9.1%)	538 (11.8%)	90 (9.9%)
$15,000 to $24,999	497,371 (19.8%)	11,646 (28.7%)	2,753 (25.2%)	1,290 (28.3%)	244 (26.8%)
$25,000 to $34,999	432,954 (17.2%)	8,126 (20%)	2,151 (19.7%)	892 (19.6%)	226 (24.8%)
$35,000 to $49,999	443,188 (17.6%)	6,070 (15%)	1,820 (16.6%)	747 (16.4%)	175 (19.2%)
$50,000 to $74,999	312,349 (12.4%)	3,366 (8.3%)	1,204 (11%)	383 (8.4%)	93 (10.2%)
$75,000 to $99,999	85,545 (3.4%)	712 (1.8%)	295 (2.7%)	55 (1.2%)	32 (3.5%)
$100,000 to $149,999	42,401 (1.7%)	237 (0.6%)	97 (0.9%)	8 (0.2%)	0 (0%)
$150,000 or more	23,769 (0.9%)	177 (0.4%)	96 (0.9%)	8 (0.2%)	0 (0%)
Median Household Income	**$26,647**	**$23,386**	**$25,698**	**$23,189**	**$27,621**

Source: 1990 US Census

e. Educational Attainment

Educational attainment data was collected for persons 25 years or older in North Carolina, Onslow County, the City of Jacksonville, and Tracts 1 and 23. The highest percentage of people achieving a high school diploma or higher was in Tract 23 with 87.8 percent. This is compared to 70 percent in North Carolina. The highest percentage of people achieving a bachelor's degree or higher was in the City of Jacksonville with 18.2 percent. This is compared to 17.4 percent in North Carolina. The percentages of people achieving a high school diploma or higher was above the North Carolina percentage throughout the study area. However, the percentage of people achieving a bachelor's degree or higher was below the North Carolina percentage throughout the study area. This is indicative of Camp Lejeune being located in Onslow County. The majority of those enlisted for service, enlist after graduating from high school and do not attend college or receive their bachelor's degree until after serving four years with the military. The breakdown at all four levels, state, county, town, and tract can be found in Table 5.

Table 5. Educational Attainment within North Carolina, Onslow County, the City of Jacksonville and the Study Area Tracts for 1990

Educational Attainment (for persons 25 years or older)	North Carolina (4,253,494 persons)	Onslow County (72,824 persons)	City of Jacksonville (16,985 persons)	Tract 1 (7,172 persons)	Tract 23 (1,541 persons)
Less than 9th grade	539,974	4,312	799	724	64
9th to 12th grade, no diploma	737,773	8,038	1,834	1,005	124
High school graduate	1,232,868	26,830	5,384	2,541	653
Some college, no degree	713,713	18,789	4,347	1,725	432
Associate degree	290,117	5,079	1,535	413	134
Bachelor's degree	510,003	7,156	2,133	551	116
Graduate or professional degree	229,046	2,620	953	213	18
Percent high school graduate or higher	70%	83%	84.5%	75.9%	87.8%
Percent bachelor's degree or higher	17.4%	13.4%	18.2%	10.7%	8.7%

Source: 1990 US Census

f. Employment Status

Table 6 shows the total number of persons over the age of 16 that are in the labor force and the number of those not in the labor force. In North Carolina 67.6 percent of the population are in the labor force. This number rises in the City of Jacksonville to 71.1 percent, in Tract 23 to 77.6 percent, and in Onslow County to 79 percent. These high percentages are indicative of the high percentage of people that are "working class age" within the study area. The percentage of the population in the labor force in Tract 1 is 67 percent, which is comparable to North Carolina.

Table 6. Labor Force Status within North Carolina, Onslow County, the City of Jacksonville and the Study Area Tracts for 1990

Labor Force Status (for persons 16 years and older)	North Carolina (5,203,230 persons)	Onslow County (116,263 persons)	City of Jacksonville (21,888 persons)	Tract 1 (9,197 persons)	Tract 23 (2,001 persons)
Not in Labor Force	1,683,303	24,177	6,324	3,032	449
In Labor Force	3,519,927	92,086	15,564	6,165	1,552
Percent in Labor Force	67.6%	79.2%	71.1%	67%	77.6%

Source: 1990 US Census

2. Economic and Social Characteristics

a. Economic Base

According to the Onslow County, North Carolina 1997 Land Use Plan, the County's economy is poor when compared to the remainder of the counties in North Carolina. This is partly due to low wage rates, limited industrial parks, and stagnant population growth. The majority of the jobs in Onslow County are in the government, trade, and services sectors. Camp Lejeune, a Marine Corps base is located in Onslow County. According to base personnel, there are approximately 4,200 civilian employees.

However, the County's economy is improving and according to the Economic Development Commission for Onslow County, the county "strives to alleviate unemployment and stimulate the economic development of Onslow County by encouraging business and industry expansion and/or relocation to Onslow County." The N.A. Burton Industrial Park, located near Jacksonville on US Highway 258/NC 24 approximately three miles north of US Highway 17, is the only industrial park in the County. The park consists of 730 acres. According to the Chamber of Commerce in Onslow County, there are currently no industries located within the park. In addition, the

County is one of 13 counties within the Global Transpark (GTP) Region. Because, the majority of the study area is rural in nature, there are not a lot of employment opportunities within the study area. Morton Elementary School, located west of the project's limits is the largest employer in the area.

b. Housing Costs

The 2000 and 1990 Census data breakdown of owner-occupied housing units at the state, county, town and tract level can be found in Table 7 and Table 8. According to the data, from 1990 to 2000, the percent of owner occupied units increased in Onslow County from 53.7 percent to 58.1 percent and in Tract 23 from 64.4 percent to 68 percent, while it decreased in the City of Jacksonville from 48.7 percent to 39.2 percent.

The 2000 Census data on housing values is not currently available. The 1990 Census data indicates the values of owner-occupied housing units range from less than $50,000 to greater than $300,000. According to the data, the vast majority of homes within the study area are valued at less than $99,000. The median value of homes is reported to be $65,800 in North Carolina. The median value of homes in Onslow County and Tracts 1 and 23 is reported to be $62,200, $60,200, and $60,900, respectively. These values are slightly lower than the North Carolina value. However, the median value of homes in the City of Jacksonville is $66,100. The breakdown of the housing values at the state, county, city and tract level within the study area can be found in Table 9.

Table 7. Housing Units for 2000

	North Carolina	Onslow County	City of Jacksonville	Tract 1.03	Tract 23
Total Housing Units (Vacant or Occupied)	3,523,944	55,726	18,312	1,696	1,410
Total Occupied Units	3,132,013	48,122	17,175	1,546	1,310
- Owner Occupied	2,172,355 (69.4%)	27,973 (58.1%)	6,733 (39.2%)	1,190 (77%)	891 (68%)
- Renter Occupied	969,658 (30.6%)	20,149 (41.9%)	10,442 (60.8%)	356 (23%)	419 (32%)

Source: 2000 US Census

Table 8. Housing Units for 1990

	North Carolina	Onslow County	City of Jacksonville	Tract 1	Tract 23
Total Housing Units (Vacant or Occupied)	2,818,193	47,526	11,810	5,365	1,037
Total Occupied Units	2,517,026	40,658	10,916	4,603	961
- Owner Occupied	1,711,817 (68%)	21,835 (53.7%)	5,311 (48.7%)	3,183 (69.2%)	619 (64.4%)
- Renter Occupied	805,209 (32%)	18,823 (46.3%)	5,605 (51.3%)	1,420 (30.8%)	342 (35.6%)

Source: 1990 US Census

Table 9. Housing Values (Owner Occupied) for 1990

Housing Values	North Carolina	Onslow County	City of Jacksonville	Tract 1	Tract 23
Specified Owner Occupied Housing Units	1,217,975	14,774	4,705	1,867	531
Less than $50,000	382,781 (31.4%)	4,103 (27.8%)	1,037 (22%)	581 (31.1%)	84 (15.8%)
$50,000 to $99,000	575,677 (47.3%)	8,912 (60.3%)	3,019 (64.2%)	976 (52.3%)	434 (81.7%)
$100,000 to $149,000	155,158 (12.7%)	1,220 (8.3%)	505 (10.7%)	179 (9.6%)	8 (1.5%)
$150,000 to $199,999	56,252 (4.6%)	312 (2.1%)	77 (1.6%)	65 (3.5%)	2 (0.4%)
$200,000 to $299,000	33,088 (2.7%)	170 (1.2%)	44 (0.9%)	52 (2.8%)	3 (0.6%)
$300,000 or more	15,019 (1.2%)	57 (0.4%)	23 (0.5%)	14 (0.7%)	0 (0%)
Median Value	$65,800	$62,200	$66,100	$60,200	$60,900

Source: 1990 US Census

c. Business Activities and Employment Centers

The project study area is rural in nature and consists primarily of farmland and rural residential development. Morton Elementary School, located west of Grants Creek Loop, just beyond the project's western terminus is the largest employer in the area. According to school personnel, Morton Elementary has approximately 70 employees. In addition, several small businesses are located along Old Thirty Road at the intersection with Waters Road approximately one mile west of the project's limits.

3. Land Use and Transportation Plans

a. Existing Land Use

The project study area is located in a rural area within Onslow County's planning jurisdiction. Farmland, woodlands, and dispersed linear residential development encompass the length of the study area from Rocky Run Road to Grants Creek Loop. The residences appear to be owner-occupied. The homes are relatively old and well maintained. However, there were a few newer homes built in a cluster. Based on field observations, the residents appear to be middle class and predominantly white, although African Americans comprise a portion of the area's residents.

A small, family cemetery is located in a field on the north side of Old Thirty Road east of Grants Creek Loop. The cemetery is set back well from the road in the middle of an agricultural field.

Just beyond the project's western terminus, after crossing the bridge over Little Northeast Creek on Old Thirty Road, is Morton Elementary School on the north side of Old Thirty Road. Morton Elementary School is relatively small, with approximately 500 students. The school consists of five main buildings. The bridge that crosses over Little Northeast Creek will be replaced on new location in a separate NCDOT TIP Project, identified as TIP Project No. B-3682.

b. Existing Land Use and Transportation Plans

Onslow County's policies on future development, land use, and growth can be found in the Onslow County, North Carolina 1997 Land Use Plan, prepared by Holland Consulting Planners, Inc. According to the document, Onslow County has full planning and regulatory authority over approximately 58 percent of the land within the county's 490,940 acres. Approximately 262,270 acres of Onslow County's regulatory jurisdiction is undeveloped. However, 46.6 percent of this acreage may be considered wetlands. This leaves approximately 122,218 acres of suitable land available for future development. Most of the existing land use within the County relates directly to the following three factors: Camp Lejeune, Coastal Environment, and Agriculture and Forestry Operations.

According to the County Planner, Onslow County does not have a formal zoning ordinance. Currently, the County is in the process of completing a Comprehensive Plan,

which may dictate the need for formal zoning. However, parts of Old Thirty Road are within a Special Development district. Within this district anything is permissible except adult stores. In addition, stores selling alcoholic beverages require a special use permit. The Onslow County, North Carolina 1997 Land Use Plan classifies the study area as "rural with services." This classification provides for very low-density land uses including residential, public facilities, and health care facilities.

The 1988 Onslow County Recreation and Park Master Plans were prepared by East Carolina University. The plan called for the acquisition, administration, development and management of future parks; as well as a greenway system and additional water based recreation opportunities. It was recommended that there be three district parks; one on the northeastern side of Jacksonville, one in the Swansboro area (expansion of the present Hubert Bypass County Park), and one in the northwestern portion of the county (development of the recently purchased Richlands/Steed County Park). Furthermore, a greenway or linear park system is needed to provide active and passive opportunities for recreation. It was recommended that the location of these trails be dispersed throughout the county using existing streams, river corridors, abandoned railroad rights-of-way, utility rights-of-way, and existing parks/trails.

The proposed improvements are included in the City of Jacksonville's thoroughfare plan, which includes Onslow County. In addition, the *Onslow County, North Carolina 1997 Land Use Plan* was prepared in accordance with requirements of the North Carolina Coastal Area Management Act (CAMA).

c. Future Land Use and Transportation Plans

According to the County Planner, no new developments have been approved for the study area. However, Rocky Run Road (SR 1413), located at the project's eastern terminus, has recently undergone residential development and the possibility exists for further residential development on Rocky Run Road. Over time, this trend may spread to Old Thirty Road beginning at the intersection with Rocky Run Road. No other developments have been discussed or approved for the study area.

Currently Onslow County does not have a thoroughfare plan. The County is incorporated into the City of Jacksonville's transportation plans. However, if the Comprehensive Plan, currently being finalized, dictates that the County needs a separate thoroughfare plan, one will be developed in the future.

4. Community Facilities

Morton Elementary School is located west of Grants Creek Loop, beyond the project limits. The school provides educational services for approximately 500 students ranging from Kindergarten to Grade 5. According to school personnel, the primary mode of transportation is school bus. No other public or community facilities exist within the study area.

5. Farmland Impacts

The Farmland Policy Protection Act (FPPA) of 1981 (7 CFR 658) requires all federal agencies to consider the impact of land acquisition and construction projects on prime and important farmland soils, as designated by the United States Soil Conservation Service (USDA). The proposed improvements to Old Thirty Road will directly convert approximately 4.84 acres of farmland. The Farmland Conversion Impact Rating Form that was sent to the USDA's National Resource Conservation Service (NRCS) in Raleigh, North Carolina has been received. The form is included in Appendix A.

6. Wild and Scenic Rivers

The National Wild and Scenic Rivers Act of 1968 (16 USC 1271) was adopted to preserve certain rivers with outstanding natural, cultural, or recreational features in a free-flowing condition. The Act classifies designated rivers as Wild, Scenic, or Recreational. Wild Rivers are those rivers free of impoundments, inaccessible except by trails, with primitive, pristine shorelines and unpolluted waters. Scenic rivers must meet these same criteria, with the exception of being accessible by roadways. Recreational rivers are the least pristine of the three classifications, as there may be some development along their shoreline, are accessible by roadways, and may have been impounded in some sections. Rivers classified under the Act must first be listed on the National Rivers Inventory (NRI). The Act requires that all federal actions, which may compromise the designation of a Wild and Scenic River, or foreclose the possibility of future designation of an NRI river, be coordinated with the United States Department of Interior. No Wild, Scenic, or Recreational Rivers designated under the Act occur within the project area.

North Carolina passed similar legislation in 1971, the Natural and Scenic Rivers Act. Four rivers have been designated as State Scenic Rivers: the New River, Lumber River, Horse Pasture River, and the Linville River. None of these rivers are located within the project area.

C. Analyzing Community Impacts

1. Social and Psychological Aspects

Social and psychological impacts can result from changes in population, community cohesion, social values, or the quality of life of the residents in the project study area as a result of the proposed project. The project will provide positive improvements to the area by increasing the level of safety associated with the roadway. The project will not directly cause or encourage an influx or loss of population, affect the cohesion of the area, or isolate people from one another. The study area is sparsely populated with residences, many associated with farms. The development pattern is not conducive to pedestrian movement, although a few homes are clustered together. The improvements will not change mobility within the study area, reduce access among study area residences, or isolate one or more residences from the others. The project will benefit the community by reducing the driving hazards associated with the poor horizontal curvature of the roadway. Therefore, based on field

surveys and discussions with a local planner, it is concluded that the proposed project is not expected to cause any changes to the social and psychological aspects of the community.

2. Physical Aspects

Physical impacts can result from the construction of a barrier (noise walls or fencing) or increased noise, vibration or air pollution in the project study area. None of the above mentioned impacts are expected to occur as a result of the proposed project.

3. Visual Environment

Visual impacts can affect a community from both the view of the road and the view from the road. The view of the road by the residents contributes to the feeling of community pride and value. The view from the road is from the user's perspective and leaves an impression of the community on the driver as well as the residents. The proposed improvements include the addition of pavement along the roadway. However, the addition of pavement will not change the character of the area or the residence's relationship to the roadway. The addition of pavement will benefit the community by increasing the safety of the roadway, which is too narrow. Therefore, no adverse impacts to the visual environment are expected to occur as a result of the proposed project.

4. Land Use

The proposed improvements to Old Thirty Road are compatible with the Onslow County, North Carolina 1997 Land Use Plan. According to the land use plan, the study area is classified as "rural with services." This classification provides for very low-density land uses including residential, public facilities, and health care facilities. No developments have been approved for the area. The project will not provide access to undeveloped land or create any new intersections. Hence, the improvements are not expected to encourage development in the study area. Therefore, the proposed project is not likely to cause changes in the land uses along Old Thirty Road. In addition, sewer services are not currently provided by the county and according to the county planner, there are no plans in the near future to provide sewer services to the county. This will limit the development of the county and study area.

5. Economic Conditions

The proposed improvements to Old Thirty Road are not expected to cause any changes in the economic condition of the project study area. The project is not expected to encourage growth within the study area. However, some land will be required for right-of-way, removing it from the area's tax base.

6. Mobility and Access

Old Thirty Road is part of the designated "Jacksonville City to the Sea" bicycle route. Currently, paved shoulders along both sides of the roadway are proposed. However, to better accommodate bicyclists, it is recommended that "Share the Road" signs be installed to notify motorists of the possible presence of cyclists.

According to the director of Onslow United Transit Services (OUTS), transportation services are provided on an as needed basis for elderly and disabled residents of Onslow County. In addition, the Council on Aging, Department of Social Services in Onslow County provides limited transportation to elderly and disabled residents of Onslow County. This service is provided Monday through Friday for residents age 60 years or older. The Council of Aging is a client of OUTS and most of the residents who contact the Council of Aging for transportation are transported by Coach, the vender for OUTS. Although, there are no scheduled routes, it is estimated that Coach uses Old Thirty Road approximately twice a week. In addition, OUTS with NCDOT funding offers a program called Rural General Public (RGP) to residents of Onslow County regardless of age or disability. The RGP will transport anyone as long as the route is rural to rural, urban to rural, or rural to urban. Under the RGP program, people are not transported from an urban location to another urban location. The proposed project is not expected to impact the area's access to this type of transportation.

7. Provision of Public Services

There is one school located on Old Thirty Road just west of Grants Creek Loop. The primary mode of transportation for Morton Elementary School students is bus service. According to personnel at the Onslow County school system's transportation department, there are approximately 14 bus stops associated with the Onslow County school system, one Head Start bus stop, and two bus stops for alternative schooling within the study area. However, there are approximately 108 school buses that travel this section of the road on a daily basis. The improvements will provide a safer route of transportation for the school buses.

Onslow County provides public water services to properties throughout the project area. Sewer services are not provided to the project area. The project is not expected to adversely affect or interrupt public facilities or services within the study area.

8. Safety

No adverse impacts to safety are expected to occur as a result of the proposed project. The project is expected to greatly enhance safety by improving the horizontal curvature of the roadway and by adding pavement to provide wider travel lanes.

9. Displacement

No displacements of residences or businesses are anticipated as a result of the proposed project.

10. Indirect and Cumulative Impacts

The Council on Environmental Quality defines indirect impacts as those "which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable" (40 CFR 1508.8). Cumulative impacts are defined as "impacts on the environment which results from the incremental impact of the action when added to other

past, present, and reasonably foreseeable future actions regardless off what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.8). Based on these definitions, the current land use plan for Onslow County, and information provided by the County Planner, it is concluded that the project will not produce indirect impacts within the study area. Furthermore, the proposed improvements will improve the safety of the roadway.

Based on the forecast in the Onslow County, North Carolina 1997 Land Use Plan, during the next seven to ten year period, Onslow County anticipates no substantial development in the study area. However, Onslow County has no formal zoning requirements; therefore, unplanned development may occur. The proposed improvements, while enhancing safety, are not expected to make the study area more attractive to developers. In addition, the lack of sewer services within the study area is expected to deter development. Furthermore, the proposed improvements will improve vehicle and driver safety along the roadway but will not increase capacity along the roadway. No public or private actions have taken place in the study area that would adversely affect its residents. Therefore, it is concluded that no past or present actions combine to result in a cumulative impact that would either adversely or beneficially affect the study area.

11. Title VI and Environmental Justice

Title VI of the Civil Rights Act of 1964, and related statutes, requires there be no discrimination in Federally-assisted programs on the basis of race, color, national origin, age, sex, or disability. Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," provides that "each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Executive Order makes clear that its provisions apply fully to the American Indian populations and Indian tribes. Environmental justice refers to the equitable treatment of people of all races, cultures, and income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

The proposed project will not place any adverse impacts upon any areas having low income and/or minority populations, or split or isolate any such communities. No residences are being displaced by the project or isolated from one another. In addition, Census data and field surveys indicate that no predominantly low income or minority communities exist within the immediate vicinity of the project. This assessment has found no evidence or indication of discrimination on the basis of race, color, national origin, age, sex, or disability. The proposed project is being implemented in accordance with Executive Order 12898.

D. Findings and Recommendations

1. Summary of the Effects of the Project

Based on a review of the proposed project, the overall direct impact from the addition of pavement and the improvement of the horizontal curvature on Old Thirty Road will be low, and should in fact be positive by improving vehicular and driver safety along the roadway.

2. Mitigation and Enhancement

Mitigation involves any action that alleviates or offsets any anticipated adverse impacts or replaces an appropriated resource. Enhancement measures involve adding a desirable or attractive feature to the proposed project to make it fit more harmoniously into the community. Enhancement measures are not designed to replace lost resources or alleviate impacts caused by the proposed project. No adverse impacts are expected to occur as a result of the proposed project. Therefore, no mitigation or enhancement measures are proposed

E. Relocation Impacts

One residential relocatee was identified based on the preliminary designs (see Relocation Report in Appendix B). However, after further review, it was concluded that the slopes in the vicinity of residence could be modified to avoid relocating the house. Therefore, no relocatees are anticipated as a result of this project.

F. Historic and Cultural Resources

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at 36 CFR Part 800. Section 106 requires that for federally funded, licensed, or permitted projects having an effect on properties listed in or eligible for the National Register of Historic Places, the Advisory Council on Historic Preservation be given the opportunity to comment.

1. Historic Architecture

Maps and files were reviewed by the State Historic Preservation Office (SHPO) to locate any potential structures within the Area of Potential Effect (APE). In a concurrence form dated 11/21/99, the State Historic Preservation Officer (SHPO) concurred that there are no historic architectural resources either listed in or eligible for listing in the National Register of Historic places within the APE. A copy of the concurrence form is included in Appendix A.

2. Archaeology

The State Historic Preservation Officer (SHPO), in a memorandum dated April 19, 1999, recommended that "no archaeological investigation be conducted in connection with this project." A copy of the SHPO memorandum is included in Appendix A.

G. Natural Systems

Research of the project study area was conducted prior to field investigations. Information sources used in the pre-field investigation include: U.S. Geological Survey (USGS) quadrangle map (Kellum, NC), NCDOT aerial photomosaics of the project study area (1:200) and Soil Survey of Onslow County (USDA, 1992). Water resource information was obtained from publications of the North Carolina Department of Environment and Natural Resources (NCDENR), and North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR). Information concerning the occurrence of federal and state protected species in the study area was gathered from the U.S. Fish and Wildlife Service (USFWS) List of Endangered, Threatened, and Candidate Species and Federal Species of Concern, By County, in North Carolina (16 June 2000) and from the North Carolina Natural Heritage Program (NHP) database of Rare Species and Unique Habitats.

General field surveys were conducted along the proposed alignment by NCDOT biologists on 14 and 15 June 2000, 17 July 2000, 22 August 2000, and 7 and 12 September 2000. Plant communities and their associated wildlife were identified and recorded. Wildlife identification involved using one or more of the following observational techniques: active searching and capture, visual observations (binoculars), identifying characteristic signs of wildlife (sounds, scat, tracks and burrows). Jurisdictional wetland determinations were performed utilizing delineation criteria prescribed in the "Corps of Engineers Wetland Delineation Manual" (Environmental Laboratory, 1987).

1. Physical Characteristics

Soil and water resources, which occur in the project study area, are discussed below. Soil types and availability of water directly influence composition and distribution of flora and fauna in any biotic community.

Onslow County lies in the Lower Coastal Plain Physiographic Province. Land in the project study area is characterized as relatively flat. The project is located in outside Jacksonville surrounded by fields, woods, and houses interspersed throughout. The project study area is located between approximately 10 ft (3.8 m) and 25 ft (7.6 m) above mean sea level.

a. Soils

The project study area is located within the Norfolk-Goldsboro-Onslow Association and the Muckalee-Dorovan Association. The Norfolk-Goldsboro-Onslow Association is characterized by gently sloping upland soils that are moderately-well to somewhat-poorly drained, and have a loamy subsoil. The Muckalee-Dorovan Association is characterized as nearly level flood plain soils that are poorly drained and are loamy throughout.

The project study area is located along five different soil series and five mapped soil units. Four occur in upland areas and include the Goldsboro series, the Norfolk series, the Onslow series, and the Lynchburg series. The Muckalee series occurs in the floodplain.

The Goldsboro series includes one mapped soil unit: Goldboro fine sandy loam, 0-2% slopes. This soil is non-hydric, moderately-well to well drained, brownish, and has moderate infiltration and slow to medium surface runoff, increasing as slope increases.

The Norfolk series includes one mapped soil unit: Norfolk loamy fine sand 2-6% slopes. This soil is non-hydric, moderately-well to well drained, brownish, and has moderate infiltration and slow to medium surface runoff, increasing as slope increases.

The Onslow series includes one mapped soil unit: Onslow loamy fine sand. This soil is non-hydric, somewhat-poor to poorly drained, grayish brown, has moderate infiltration and slow surface runoff.

The Lynchburg series includes one mapped soil unit: Lynchburg fine sandy loam. This soil is somewhat-poor to poorly drained, grayish brown, has moderate infiltration and slow surface runoff. Lynchburg fine sandy loam is a non-hydric soil that may contain some hydric inclusions of Rains soil.

The Muckalee series includes the soil mapped unit: Muckalee loam. This soil is coarsely textured, poorly drained, grayish brown, has moderate infiltration and very slow surface runoff, and is a hydric soil. This soil is frequently flooded for brief periods from November to April and in wider flood plain areas water may pond for long periods during winter.

b. Water Resources

This section contains information concerning those water resources likely to be impacted by the project. Water resource information encompasses the resources' relationship to major water systems, its physical aspects, best usage classification, and water quality of the resources. Probable impacts to these water bodies are also discussed, as are means to minimize impacts.

1. Characteristics of Water Resources

Water resources that are located in the project vicinity lie in the White Oak River Basin. The proposed project crosses four intermittent unnamed tributaries (UT) and two perennial UTs of Horse Swamp located in the New River and Tributaries Subbasin 03-05-02 and United States Department of Interior Hydrologic Unit 03030001. Horse Swamp flows into Little Northeast Creek which is listed as an Anadramous Fish Spawning Area 1.5 mi (2.43 km) downstream from Bridge No. 3 over Little Northeast Creek (Figure 1). Anadramous fish are those which spend most of their life in the ocean but return to their natal freshwater streams to spawn. Little Northeast Creek flows into Northeast Creek 3.8 mi (6.2 km) south and downstream from the bridge. Approximately 1.2 mi (1.9 km) downstream from where they join, Northeast Creek is designated as a Fish Nursery Area.

UT #1, an intermittent stream, crosses SR 1423 0.33 mi (0.53 km) east of SR 1427. UT#1 originates north of SR 1423 and flows south where in converges with Horse Swamp. North of SR 1423 the channel is ditch-like and located in cleared agriculture land. To the south, the channel is well shaded and more naturally vegetated.

UT #2, an intermittent stream, crosses SR 1423 0.47 mi (0.76 km) east of SR 1427. UT#2 originates north of SR 1423 and flows south where in converges with Horse Swamp. Water is flowing from two separate channels that converge into UT#2 within the project study area. The channels are not well defined and are well shaded.

UT #3, an intermittent stream, crosses SR 1423 0.74 mi (1.2 km) east of SR 1427. UT#3 originates north of SR 1423 and flows south where in converges with Horse Swamp. The channel is well defined and well shaded and had vegetation growing in the streambed.

UT #4, a perennial stream, crosses SR 1423 1.1 mi (1.8 km) west of SR 1413. UT#4 originates north of SR 1423 and flows south where in converges with Horse Swamp. The channel is well defined and well shaded.

UT #5, an intermittent stream, crosses SR 1423 1.2 mi (0.73 km) west of SR 1413. UT#5 originates north of SR 1423 and flows south where in converges with Horse Swamp. The channel is well defined and well shaded.

UT #6, a perennial stream, crosses SR 1423 0.6 mi (1.0 km) west of SR 1413. UT#6 originates north of SR 1423 and flows south where in converges with Horse Swamp. The channel is sinuous throughout and is well shaded south of SR 1423 and in a cleared maintained yard north of the road. Fish, crawdads, and frogs were observed at UT#6.

Table 10. Water Resource Characteristics in the Project Study Area

Stream	Class	Width ft (m)	Depth in (cm)	Substrate[1]	Flow	Clarity
UT#1	Intermittent	1.5 (0.5)	2 (5.1)	sa	none	Poor
UT#2	Intermittent	1.5 (0.5)	2 (5.1)	sa	moderate	Good
UT#3	Intermittent	2 (0.6)	8 (20.3)	sa	none	Poor
UT#4	Perennial	2 (0.6)	6 (15.2)	Sa	slow	Poor
UT#5	Intermittent	3 (0.9)	3 (7.6)	Sa, gr, co	slow	Poor
UT#6	Perennial	2 (0.6)	3 (7.63)	Sa, gr, co	slow	Fair

[1] sa: sand, gr: gravel, co: cobble

Roadside ditches are prevalent throughout the project study area. There are also several non-jurisdictional upland cut ditches/drainage areas in the project study area.

2. Best Usage Classification

Streams have been assigned a best usage classification by the Division of Water Quality (DWQ). According to the DWQ, the best usage classification of Horse Swamp (DWQ Index No. 19-16-2-1) is C NSW. Unnamed tributaries receive the same classification as the stream into which they flow therefore, the best usage classification of all the UTs is C NSW. Class C waters are suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The supplemental classification NSW (Nutrient Sensitive Water) are waters which require limitations on nutrient inputs. No water resources classified as High Quality Waters (HQW's), Water Supplies (WS-I or WS-II), or Outstanding Resource Waters (ORW's) are located within 1.0 mi (1.6 km) of the project study area.

3. Water Quality

The DWQ has initiated a basinwide approach to water quality management for the 17 river basins within the state. To accomplish this goal the DWQ collects biological, chemical, and physical data that can be used in basinwide assessment and planning. All basins are reassessed every five years. AMS station P-3100000 (O209317585) is located on Little Northeast Creek at SR 1406 near Jacksonville, NC below its confluence with Horse Swamp. The station is approximately 2.3 mi (3.7 km) downstream from Bridge No. 3 over Little Northeast Creek, located 0.1 mi (150 m) west of SR 1427, and was last sampled in 1994. The station at Little Northeast Creek was the only station in subbasin 03-05-02 to exceed the water quality criterion for three specific water quality parameters. The pH and dissolved oxygen fell below the criterion and the results for the fecal coliforms was above the criterion. The swamp-like conditions along the shore of Little Northeast Creek may account for its inability to meet certain water quality standards.

Likewise, the Benthic Macroinvertebrate Ambient Network (BMAN) is managed by the DWQ and is part of an ongoing ambient water quality monitoring program which addresses long term trends in water quality. The program assesses water quality by sampling for selected benthic macroinvertebrate organisms at fixed monitoring sites. Macroinvertebrates are sensitive to very subtle changes in water quality; thus, the species richness and overall biomass of these organisms are reflections of water quality. There are no BMAN sampling stations within the project study vicinity.

Point source pollution refers to discharges that enter surface water through a pipe, ditch, or other defined points of discharge. Point source dischargers located throughout North Carolina are permitted through the National Pollutant Discharge Elimination System (NPDES) program. Any discharger is required to register for a permit. Horse Creek Farms Utilities Corporation (Permit No. NC 0062359, Date 10/22/92) is a permitted point source discharger to Little Northeast Creek, located approximately 0.13 mi (0.21 km) south of Bridge No. 3, west of the project study area.

Non-point source pollution refers to runoff that enters surface waters through stormwater flow or a non-defined point of discharge. There are many types of land use activities that can serve as sources of non-point source pollution in the White Oak River Basin including land development, construction, crop production, landfills, roads, and parking lots. Water quality may be significantly influenced by agricultural runoff. Land clearing can cause soil erosion which leads to stream sedimentation, and animal waste can cause nutrient loading in streams. Oxygen-consuming waste is also likely to be a primary source of water quality degradation in the project vicinity.

4. Summary of Anticipated Impacts to Water Resources

Potential impacts to water resources in the project study area are dependent upon final construction limits. Roadway construction in and adjacent to water resources may result in water quality impacts. Clearing and grubbing activities near the creek will result in soil erosion leading to increased sedimentation and turbidity. These effects may extend downstream for considerable distance with decreasing intensity.

Removal of streamside vegetation will have a negative effect on water quality. The vegetation typically shades the water's surface from sunlight, thus moderating water temperature. The removal of streamside canopy during construction will result in more extreme fluctuating water temperatures. During warmer portions of the year, the water temperature will increase, resulting in a decrease in dissolved oxygen because warmer water holds less oxygen. Streambank vegetation stabilizes streambanks and reduces sedimentation by trapping soil particles.

Construction activities adjacent to water resources increase the potential for toxic compounds (gas, oil, and highway spills) to be carried into nearby water resources via precipitation, sheet flow, and subsurface drainage. Increased amounts of toxic materials can adversely alter the water quality of any water resource, thus impacting its biological and chemical functions. Indirect impacts to surface waters may extend both upstream and downstream of the project study area. Indirect impacts may include changes in flooding regime, discharge, erosion and sedimentation patterns.

In order to minimize impacts to water resources in the entire impact area, NCDOT's Best Management Practices (BMPs) for the Protection of Surface Waters should be strictly enforced during the entire life of the project. The NCDOT, in cooperation with the DWQ, has developed a sedimentation control program for highway projects which adopts formal BMPs for the protection of surface waters.

Erosion and sedimentation will be most pronounced as a result of disturbance of the stream banks and substrate. Sedimentation from these activities may be high during construction, but should diminish rapidly following project completion if exposed soils are revegetated and streambanks stabilized.

2. Biotic Resources

Biotic resources include terrestrial, aquatic and wetland ecosystems. This section describes those ecosystems encountered in the study area, as well as the relationships between fauna and flora within these ecosystems. Composition and distribution of biotic communities throughout the project area are reflective of topography, hydrologic influences and past and present land uses. Descriptions of the terrestrial systems are presented in the context of plant community classifications.

Dominant flora and fauna likely to occur in each community are described and discussed. Fauna observed during field investigations are denoted with an asterisk (*). Scientific nomenclature and common names (when applicable) are provided for each animal and plant species described. Subsequent references to the same organism will include the common name only.

Plant community descriptions are based on a classification system utilized by the North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names follow nomenclature found in Radford *et al.* (1968). Habitats used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Martof *et al.* 1980; Webster *et al.* 1985; Rohde *et al.* 1994; Potter *et al.* 1980).

a. Terrestrial Communities

Two terrestrial communities are identifiable in the project study area: disturbed community and mixed pine hardwood forest.

1. Disturbed Community

This community encompasses several types of habitats that have recently been or are currently impacted by human disturbance: roadside shoulder, maintained yard, power line easement, and fallow fields. These irregularly maintained habitats are kept in a low-growing, early successional state. Herbs, grasses and vines located in the roadside shoulder and maintained yard, include fescue (Festuca sp.), beadgrass (Paspallum sp.), broom sedge (Andropogon virginicus), common plantain (Plantago major), English plantain (P.lanceolata), goldenrod (Solidago sp.), geranium (Geranium sp.), pennywort (Hydrocotyle sp.), dog fennel (Eupatorium capillifolium), crabgrass (Digitaria sp.), white clover (Trifolium repens), trumpet creeper (Campsis radicans), dandelion (Taraxicum officinale), and bermuda grass (Cynodon dactylon). The power line easement is located on the southeast end of the project study area. Herbs, grasses and vines located in the power line easement and fields include beadgrass, daisy fleabane (Erigeron annuus), bushclover (Lespedeza cuneata), dog fennel, wild onion (Alium canadense), goldenrod, broom sedge, panic grass (Panicum sp.), poison ivy (Toxicodendron radicans), bracken fern (Pteridium aquilinum), saw greenbrier (Smilax bona- nox), trumpet creeper, and vervain (Verbena sp.). These

areas receive less maintenance and have more shrubs and saplings than other disturbed areas. Shrubs and tree species located in the power line easement include blackberry (Rubus argutus), blueberry (Vaccinium sp.), black gum (Nyssa sylvatica), sweetgum (Liquidambar styraciflua), black cherry (Prunus serotina), red maple (Acer rubrum), winged elm (Ulmus alata), persimmon (Diospyros virginiana), sourwood (Oxydendrum arboreum), American holly (Ilex opaca), and loblolly pine (Pinus taeda). Plants located in the roadside ditches include Carex crinita, Cyperus sp., Rhynchospora sp, and a rush (Juncus sp.).

2. Mixed Pine Hardwood Forest

There are varying degrees of succession in this community. Subsequently, pines began to grow in the drier conditions that resulted. Dominant species located in the canopy and subcanopy include sweetgum, black gum, wax myrtle (Myrica cerifera), sourwood, flowering dogwood (Cornus florida), tulip poplar (Liriodendron tulipifera), horse sugar (Symplocus tinctoria), American elm (Ulmus americana), blackjack oak (Quercus marilandica), southern red oak (Q. falcata), post oak (Q. stellata), water oak (Q. nigra), white oak (Q. alba), pepperbush (Clethra sp.), red chokeberry (Aronia arbutifolia), bitter gallberry (Ilex glabra), titi (Cyrilla racemiflora), sweetbay magnolia (Magnolia virginiana), and loblolly pine. Species located in the herb and vine layer include trumpet creeper, yellow jessamine (Gelsemium sempervirens), winged sumac (Rhus copallina), poison ivy, greenbrier, strawberry (Fragaria sp.), giant cane (Arundinaria gigantea), and muscadine grape (Vitis rotundifolia).

Nine wetland communities were identified scattered throughout the mixed pine hardwood forest of the project study area. The wetlands are thoroughly described in Section 3.a.1.b.

b. Terrestrial Faunal Component

Many species prefer open, disturbed habitat to feed and nest in. The least shrew (*Cryptotis parva*) inhabits relatively open areas dominated by herbaceous vegetation. The Eastern harvest mouse (*Reithrodontomys humulis*) and the hispid cotton rat (*Sigmodon hispidus*) prefer old fields and roadsides where they feed on seeds, shoots and leaves. In disturbed areas that are exposed to sunlight and near edges, the Carolina anole (*Anolis carolinensis*) is found. Birds such as the mourning dove (*Zenaida macroura*)*, the fish crow (*Corvus ossifragus*)* and the brown headed cowbird (*Molothrus ater*)* forage for seeds and insects in open, disturbed areas. Soaring over open areas searching for carrion, the turkey vulture (*Cathartes aura*)* can be observed.

Many species are highly adaptive and may utilize the edges of forests and clearings. The Eastern cottontail (*Sylvilagus floridanus*) prefers a mix of herbaceous and woody vegetation in disturbed open areas such as old fields and edges of forests. The opossum (*Didelphis viginiana*)* prefers woodlands but can be found in open areas as well and can be observed as roadkill in the area. The gray squirrel (*Sciurus carolinensis*)* can be seen in residential yards as well as wooded areas. The black rat snake (*Elaphe obsoleta*)* will

come out of forested habitat to forage in open areas. The northern mockingbird (*Mimus polyglottos*)* can be observed perched singing in edge habitat.

Many species prefer to forage and nest primarily in forested communities. The gray fox (*Urocyon cinereoargenteus*) may be found in the early successional stages of the forest. White-tailed deer (*Odocoileus virginianus*)* tracks were observed in wetland areas in the interior part of the forest. The spring peeper (*Hyla crucifer*) may be found under forest litter and in the undergrowth and will breed in wetter areas such as roadside ditches and wetlands. The Eastern box turtle (*Terrapene carolina*) is a terrestrial turtle but will be found near water in hot, dry weather. The five-lined skink (*Eumeces fasciatus*) and the copperhead (*Agkistrodon contortrix*) may also be found in forested communities. Birds such as the Northern cardinal (*Thryothorus ludovicianus*)*, tufted titmouse (*Parus bicolor*), Carolina chickadee (*Parus carolinensis*), red bellied woodpecker (*Melanerpes carolinus*)*, red eyed vireo (*Vireo olivaceus*)*, and the wood thrush (*Hylocichla mustelina*) will forage and nest within the forested community.

c. Aquatic Communities

There are both intermittent and perennial streams located in the project study area. Physical processes such as flow variability, channel structure and substrate have a tremendous influence on the ecology of streams. Physical processes in addition to the chemistry and temperature of the stream water have a profound influence on the aquatic biota that the stream is capable of supporting.

Intermittent streams are channels which carry water during the wet times of the year. They are partially supplied by ground water rising to the surface as stream baseflow. Because water is not flowing year round, they do not support the aquatic fauna, such as salamanders and fish, as a perennial stream does. They will, however, support species that do not depend on constant water flow. Species such as the marble salamander (*Ambystoma opacum*) can be found under logs and leaf litter in areas that will flood their nest sites in winter. The Eastern spadefoot toad (*Scaphiopus holbrooki*) is found near temporary pools of water in the lowlands of the coastal plain. Many of the terrestrial species such as the opossum and the white-tailed deer will utilize intermittent streams during wet periods.

Perennial streams sustain flow throughout the year. Perennial streams support an assemblage of fauna that require constant source of flowing water, as compared to intermittent or standing water. There are many amphibians and reptiles that may be observed in and adjacent to small, slow flowing creeks such as UT# 4. The marbled salamander and the southern dusky salamander (*Desmognathus auriculatus*) can be found under logs, rocks, and leaf litter in moist areas along streams. The little grass frog (*Limnaodus ocularis*) frequents forests streams with swampy conditions in the coastal plain. The green frog (*Rana clamitans*) and the snapping turtle (*Chelydra seroentina*) are also found along streams. Fish species that may be located here include swamp darter (*Etheostoma fusiforme*), bluegill (*Lepomis macrochirusi*), creek chubsucker (*Erimyzon oblongus*), eastern mosquitofish (*Gambusia holbrooki*), pirate perch (*Aphredoderus sayanus*), eastern silvery minnow (*Hybognathus regius*), flier (*Centrarchus*

macropterus), redfin pickerel (*Esox americanus*), warmouth (*Lepomis gulosus*), sunfishes (*Lepomis* spp.). Possible anadramous fish include the alewife (*Alosa pseudoharengus*) and the blueback herring (*A. aestivalis*). Invertebrates observed in the perennial streams include whirlygig beetles (Family Gyrinidae), water striders (Family Gerridae), dragonflies (Order Odonata), and damselflies (Order Odonata).

d. Anticipated Impacts to Biotic Resources

Construction of the proposed project will have various impacts on the biotic resources described. Any construction related activities in or near these resources have the potential to impact biological functions. This section quantifies and qualifies impacts to the natural resources in terms of the ecosystems affected.

1. Terrestrial Impacts

Calculated impacts to terrestrial communities reflect the relative abundance of each community (Table 11). Project construction will result in the clearing and degradation of portions of these communities. Estimated impacts are derived using the ROW limits within the project study area. Usually, project construction does not require the entire ROW width; therefore, actual impacts may be considerably less.

Table 11. Anticipated Impacts to Terrestrial Communities in the Project Study Area.

Community	Project Total
Disturbed	4.63 (11.42)
Mixed Pine Hardwood	0.28 (0.70)
Total	**4.91 (12.12)**

Units: Hectares (Acres); Values are approximate.

The biotic communities found within the project area will be altered as a result of project construction. Terrestrial communities serve as nesting, foraging, and shelter habitat for fauna. During construction, species that utilize the open disturbed habitat will temporarily be displaced. Eventually, altered areas will revegetate and a disturbed community will be re-established. Because the species that inhabit disturbed communities are adapted to living in highly altered habitats, the area should be repopulated by species for which suitable habitat is provided following project completion.

Some of the forested habitats located along the project study area are already relatively fragmented by powerline easements, fields, and houses. Following construction completion and revegetation, edge species will still have adequate habitat and the impacts from the loss of habitat should be minimal. The forested habitat loss will potentially impact fauna not located in the project study area as well. Interior species may be impacted from the reduced forested habitat available. If forested tracts become too small in area, interior species will not repopulate. However, because the impact will be along the already disturbed edge habitat, and

due to the fragmented nature of the area, impacts to fauna in the forest communities should be minimal.

2. Aquatic and Wetland Impacts

Construction activities will impact the water resources located in the project area as well as those downstream. Impacts are likely to result from the physical disturbance of aquatic habitats (i.e. substrate and water quality). Disturbance of aquatic habitats has a detrimental effect on aquatic community composition by reducing species diversity and the overall quality of aquatic habitats. Physical alterations to aquatic habitats can result in the following impacts to aquatic communities:

- Inhibition of plant growth.
- Algae blooms resulting from increased nutrient concentrations.
- Loss of benthic macroinvertebrates through scouring resulting from an increased sediment load.

Road construction impacts can affect the functions that wetlands perform in an ecosystem as well. Wetlands influence regional water flow regimes by intercepting and storing storm runoff which ultimately reduces the danger of flooding in surrounding and downstream areas. Loss of wetland communities will result in loss of water storage area. Wetlands have been documented to remove organic and inorganic nutrients and toxic materials from water that flows across them as well as decrease the sediment load. In this respect, impacting wetlands can directly affect the water quality, and therefore the aquatic organisms, of the UTs in the project study area.

Impacts to aquatic communities can be minimized by strict adherence to BMPs for Protection of Surface Waters. Strict erosion and sedimentation controls will be maintained during the entire life of the project. Anadramous Fish Guidelines should be adhered to avoid potential impacts to these fish.

3. Jurisdictional Issues

This section provides descriptions, inventories and impact analysis pertinent to three important issues--Waters of the United States, Protected and Rare Species, and Essential Fish Habitat.

a. Waters of the United States

Surface waters and jurisdictional wetlands fall under the broad category of "waters of the United States," as defined under 33 of the Code of Federal Register (CFR) §328.3 (a). Wetlands, defined in 33 CFR §328.3 (b), are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in

saturated conditions. Surface waters are waters used in interstate or foreign commerce, waters subject to ebb and flow of tides, all interstate waters including interstate wetlands, and all other waters such as intrastate lakes, rivers, and streams. Any action that proposes to place fill material into these areas falls under the jurisdiction of the U.S. Army Corps of Engineers (COE) under Section 404 of the Clean Water Act (CWA) (33 U.S.C. 1344).

1. Characteristics of Wetlands and Surface Waters

   a. Jurisdictional Streams

   Four intermittent UTs and two perennial UTs of Horse Swamp are considered jurisdictional surface waters. These water resources are described thoroughly in Section 1.b.1.

   b. Jurisdictional Wetlands

   Potential wetland communities were evaluated using criteria specified in the 1987 "Corps of Engineers Wetland Delineation Manual". For an area to be considered a "wetland", the following specifications must be met; 1) presence of hydric soils (low soil chroma values), 2) presence of hydrophytic vegetation, and 3) evidence of hydrology, including; saturated soils, stained leaf litter, oxidized rhizospheres, matted vegetation, high water marks on trees, buttressed tree bases, and surface roots.

   The Cowardin classification system (Cowardin et al. 1979) is a uniform approach in describing concepts and terms used in classifying ecological taxa located in a wetland system. The DWQ rating scale gauges wetland quality using a numerical rating system (1-100 with 100 being the highest value). See Table 13.

   Nine wetland communities are identified scattered throughout the mixed pine hardwood forest natural community. The wetland communities and streams that lie within the project limits are shown in Figure 2.

Wetland M

Wetland M is located south of SR 1423 approximately 0.47 mi (0.76 km) east of SR 1427, adjacent to UT#2. Wetland M is located on a freshwater intermittent stream and is a headwater forest that is intermittently flooded. Vegetation located in wetland M includes poison ivy, trumpet creeper, Japanese honeysuckle, Virginia creeper, sycamore (*Plantanus occidentalis*), Chinese privet, sweetgum, muscadine grape, black willow (*Salix nigra*), giant cane, and tag alder (*Alnus serrulata*). Drift lines, sediment deposits, drainage patterns, oxidized root channels, and low chroma soil colors were observed. The Cowardin classification for wetland M is PFO1EM1 (Palustrine: Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 39. This wetland is a non-riverine system.

Wetland N

Wetland N is located north of SR 1423 approximately 0.47 mi (0.76 km) east of SR 1427, adjacent to UT#2. Wetland N is located on a freshwater intermittent stream and is a headwater forest that is intermittently flooded. Vegetation located in wetland N includes poison ivy, trumpet creeper, Japanese honeysuckle, Virginia creeper, sycamore, Chinese privet, sweetgum, muscadine grape, black willow, giant cane, and tag alder. Drift lines, sediment deposits, drainage patterns, oxidized root channels, and low chroma soil colors were observed. The Cowardin classification for wetland N is PFO1EM1 (Palustrine: Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 39. This wetland is a non-riverine system.

Wetland P

Wetland P is located south of SR 1423 approximately 0.54 mi (0.87 km) west of SR 1413. Wetland P is an isolated freshwater ephemeral wetland that is seasonally flooded or inundated. Vegetation located in wetland P includes soft rush (*Juncus effusus*), blackberry, black willow, goldenrod, pennywort, bushclover, red maple, dog fennel, and a panic grass (*Panicum* sp.). Drainage patterns, sediment deposits, oxidized root channels, and low chroma soil colors were observed. The Cowardin classification for wetland P is PEM1 (Palustrine: Emergent- persistent), and the DWQ rating is 13. This wetland is a non-riverine system.

Wetland Q

Wetland Q is located north of SR 1423 and approximately 0.73 mi (1.2 km) west of SR 1413, adjacent to UT#5. Wetland Q is located on a freshwater intermittent stream and is a bottomland hardwood forest wetland that is seasonally flooded or inundated. Vegetation located in wetland Q includes sweetgum, giant cane, red maple, laurel-leaf greenbriar (*Smilax laurifolia*), netted chainfern (*Woodwardia areolata*), wisteria (*Wisteria* sp.), sweetbay magnolia, chinese privet, wax myrtle, poison ivy, and tag alder. Drift lines, water marks, water-stained leaves, and low chroma soil colors were observed. The Cowardin classification for wetland Q is PFO1 (Palustrine: Forested- broad-leaved deciduous), and the DWQ rating is 40. This wetland is a riverine system.

Wetland R

Wetland R is located on UT#4 north of SR 1423 approximately 1.1 mi (1.8 km) west of SR 1413. Wetland R is located on a freshwater perennial stream and is a bottomland hardwood forest wetland that is seasonally flooded or inundated. Vegetation located in wetland R includes red maple, Chinese privet, tulip poplar, goldenrod, muscadine grape, sweetgum, trumpet creeper, elderberry (*Sambucus*

canadensis), Japanese honeysuckle, and blackberry. Drift lines, sediment deposits, water-stained leaves, oxidized root channels, and low chroma soil colors were observed. The Cowardin classification for wetland R is PSS1/4 (Palustrine: Scrub-Shrub- broad-leaved deciduous / needle-leaved evergreen), and the DWQ rating is 49. This wetland is a non-riverine system.

Wetland S

Wetland S is located on UT#4 south of SR 1423 approximately 1.1 mi (1.8 km) west of SR 1413. Wetland S is located adjacent to a freshwater perennial stream and is a bottomland hardwood forest wetland that is seasonally flooded or inundated. Vegetation located in wetland S includes red maple, Chinese privet, tulip poplar, goldenrod, muscadine grape, sweetgum, trumpet creeper, elderberry, Japanese honeysuckle, and blackberry. Drift lines, sediment deposits, water-stained leaves, oxidized root channels, and low chroma soil colors were observed. The Cowardin classification for wetland S is PSS1/4 (Palustrine: Scrub-Shrub-broad-leaved deciduous / needle-leaved evergreen), and the DWQ rating is 49. This wetland is a riverine system.

Wetland T

Wetland T is located north of SR1423 and approximately 0.74 mi (1.2 km) east of SR 1427, adjacent to UT#3. Wetland T is located on a freshwater intermittent stream and is a bottomland hardwood forest wetland that is intermittently flooded or inundated. Vegetation located in wetland T includes royal fern (*Osmunda regalis*), tag alder, red bay (*Persea borbonia*), bushclover, wax myrtle, netted chain fern, giant cane, common greenbrier, American holly, water oak, cinnamon fern (*Osmunda cinnamomea*), false nettle (*Boehmeria cylindrica*), buttonbush (*Cephalanthus occidentalis*), sweetgum, and tulip poplar. Water marks, drift lines, sediment deposits, drainage patterns, water-stained leaves, and low chroma soil colors were observed. The Cowardin classification for wetland T is PFO1EM1 (Palustrine: Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 45. This wetland is a non-riverine system.

Wetland U

Wetland U is located south of SR 1423 approximately 0.73 mi (1.2 km) east of SR 1427, adjacent to UT#3. Wetland U is located on a freshwater intermittent stream and is a bottomland hardwood forest wetland that is intermittently flooded or inundated. Vegetation located in wetland U includes royal fern, tag alder, red bay, bushclover, wax myrtle, netted chain fern, giant cane, common greenbrier, American holly, water oak, cinnamon fern, false nettle, buttonbush, sweetgum, and tulip poplar. Water marks, drift lines, sediment deposits, drainage patterns, water-stained leaves, and low chroma soil colors were observed. The Cowardin classification for wetland U is PFO1EM1 (Palustrine: Forested- broad-leaved

deciduous, Emergent- persistent), and the DWQ rating is 45. This wetland is a non-riverine system.

Wetland V

Wetland V is located south of SR1423 and 1.2 mi (1.2 km) east of SR 1427, adjacent to UT#3. Wetland V is located on a freshwater intermittent stream and is a bottomland hardwood forest wetland that is intermittently flooded or inundated. Vegetation located in wetland V includes royal fern, tag alder, red bay, bushclover, wax myrtle, netted chain fern, giant cane, common greenbrier, American holly, water oak, cinnamon fern, false nettle, buttonbush, sweetgum, and tulip poplar. Water marks, drift lines, sediment deposits, drainage patterns, water-stained leaves, and low chroma soil colors were observed. The Cowardin classification for wetland V is PFO1EM1 (Palustrine: Forested- broad-leaved deciduous, Emergent- persistent), and the DWQ rating is 45. This wetland is a non-riverine system.

2. Summary of Anticipated Impacts

Approximately 173 ft (54 m) of jurisdictional water is located within the ROW limits of the project study area (Table 12). Actual impacts to the surface water community may be less than reported because the entire ROW width and easements are often not impacted by construction projects. The amount of surface water impacts may be modified by any changes in roadway design.

Table 12. Stream Impacts Within the Project Study Area

Water Resource[1]	Class	Stream Impact[2]
UT #1	Intermittent	39 ft (12 m)
UT #2	Intermittent	15 ft (5 m)
UT #5	Intermittent	38 ft (12 m)
UT #6	Perennial	51 ft (16 m)
Total		**173 ft (54 m)**

[1] All are Unnamed tributaries of Horse Swamp

[2] Impact was calculated based on the feet(meters) of stream located in the ROW limits, not including segments of stream that are already piped.

Nine separate wetland systems are located in the project vicinity, however four are within the ROW limits of the project. The total estimated impact to these areas by the project is 0.0425 ac (0.017 ha). The wetlands are individually described in Section 3. Jurisdictional Issues under section a.1.b and in Table 13.

Table 13. Wetland Impacts Within the Project Study Area and Classifications

Water Resource	Stream Site	Impact Area ac(ha)[1]	Cowardin Class[2]	DWQ rating[3]
Wetland M	UT #2	0.01 (0.004)	PFO1EM1	39
Wetland N	UT #2	0.0035 (0.001)	PFO1EM1	39
Wetland P	Ephemeral	0.014 (0.0056)	PEM1	13
Wetland Q	UT #5	0.015 (0.006)	PFO1E	40
Wetland R	UT #4	0	PSS1/4	49
Wetland S	UT #4	0	PSS1/4	49
Wetland T	UT #3	0	PFO1EM1	45
Wetland U	UT #3	0	PFO1EM1	45
Wetland V	UT #3	0	PFO1EM1	45
Total		**0.0425 (0.017)**		

[1] IMPACT ESTIMATES ARE DERIVED USING THE ROW LIMITS WITHIN THE PROJECT STUDY AREA.

[2] Cowardin classifications for each wetland are defined in Section 3.a.1.b.

[3] The DWQ rating scale gauges wetland quality using a numerical rating system (1-100 with 100 being the highest value).

3. Permits

Impacts to surface waters are anticipated from project construction. In accordance with provisions of Section 404 of the Clean Water Act, a permit will be required from the COE for discharge of dredge or fill material into "waters of the United States." Due to surface water impacts, a Section 404 Nationwide 14 Permit (NWP 14) will likely be necessary for this project. Final decision concerning applicable permits rests with the COE.

A NWP 14 authorizes activities required for the construction, expansion, modification, or improvement of linear transportation crossings (e.g., highways, railways, trails, and airport runways and taxiways) in waters of the United States, including wetlands. A NWP 14 may be used for public linear transportation projects in non-tidal waters, excluding non-tidal wetlands adjacent to tidal waters, provided the discharge does not cause the loss of greater than ½ acre of waters of the United States. This permit requires that the District Engineer be notified if: the discharge causes a loss of greater than 1/10 acre of waters of the United States; and if there is a discharge in a special aquatic site, including wetlands.

This project will require a 401 Water Quality Certification from the DWQ prior to the issuance of the Nationwide Permit. Section 401 of the CWA requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to waters of the United States. The issuance of a 401 permit from the DWQ is a prerequisite to issuance of a Section 404 permit. The COE reserves the discretionary authority to process the permit application as an individual permit.

The subject project is located within a county that is under the jurisdiction of Coastal Area Management Act (CAMA). CAMA is administered by the N. C. Division of Coastal Management (NCDCM). The NCDCM is the lead permitting agency for projects located within its jurisdiction.

CAMA directs the Coastal Resources Commission (CRC) to identify and designate Areas of Environmental Concern (AEC) in which uncontrolled develop might cause irreversible damage to property, public health and natural environment. A CAMA permit from the NCDCM is required if the project meets all of the following conditions:

a) Located in one of the twenty counties covered by CAMA;
b) Located in or affects an AEC designated by the CRC;
c) Considered to be "development" under CAMA; and,
d) Not qualify for an exemption as identified by CAMA or the CRC.

An NCDCM representative determined that this project necessitates a CAMA permit. Because a CAMA permit is required, a CAMA Major Development permit will also be required.

The CAMA Major Development permit application will also serve as an application for other state permits and for permits from the U. S. Army Corps of Engineers (USACE) as required by Section 10 the Rivers and Harbors Act and Section 404 of the Clean Water Act. It is likely that the USACE would authorize the project under a Section 404 General Permit 291. The state permits include:

a) Authorization to excavate and/or fill;
b) Authorization into lands covered by water; and, Authorization under 401 Water Quality Certification.

4. Avoidance, Minimization, Mitigation

The COE has adopted through the Council on Environmental Quality (CEQ) a wetland mitigation policy which embraces the concept 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 wetlands has been defined by the CEQ to include: Avoiding impacts (to

wetlands), minimizing impacts, and rectifying impacts (40 CFR 1508.20). Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practical possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the Environmental Protection Agency (EPA) and COE, in determining "appropriate and practical" measures to offset unavoidable impacts, such measures should be appropriate to the scope and degree of those impacts and practical in terms of costs, existing technology and logistics in light of overall project purposes.

Minimization includes the examination of appropriate and practical 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.

Practical means to minimize impacts to surface waters and wetlands impacted by the proposed project include:

- Decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes and/or road shoulder widths.
- Installation of temporary silt fences, earth berms, and temporary ground cover during construction.
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters and wetlands.
- Reduction of clearing and grubbing activity in and adjacent to water bodies.
- Asymmetric widening to whichever side of the road will have the least wetland impacts.

Due to the close proximity of the 4 wetlands to the existing facility, avoidance of these wetlands was not possible. The four impacted wetlands are located so close to the existing edge of pavement that complete avoidance could only be attained by doing nothing or re-routing the road to a new location. However, through the use of steeper side slopes (3:1) and by widening the road symmetrically, NCDOT was able to minimize impacts to these streams and wetlands.

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

b. Protected and Rare Species

Some populations of fauna and flora have been in, or are in, the process of decline either due to natural forces or their inability to coexist with human activities. Federal law (under the provisions 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. Other species may receive additional protection under separate state laws.

1. Federally-protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the ESA. As of 26 February 2001, there are 11 federally protected species listed for Onslow County (Table 14). Following are brief descriptions of the characteristics and habitat requirements for each listed species. The biological conclusion for each species will resolve the potential impacts due to the proposed project.

Table 14. Federally Protected Species of Onslow County.

Scientific Name	Common Name	Status
Alligator mississippiensis	American alligator	T(S/A)
Caretta caretta	Loggerhead sea turtle	T
Charadrius melodus	Piping plover	T
Chelonia mydas	Green sea turtle	T
Dermochelys coriacea	Leatherback sea turtle	E
Felis concolor cougar	Eastern cougar	E*
Picoides borealis	Red-cockaded woodpecker	E
Amaranthus pumilus	Seabeach amaranth	T
Carex lutea	Golden sedge	E
Lysimachia asperulaefolia	Rough-leaved loosestrife	E
Thalictrum cooleyi	Cooley's meadowrue	E

[1] **Endangered (E)** species are a taxon which is in danger of extinction throughout all or a significant portion of its range.
Threatened (T) species are a taxon likely to become endangered within the foreseeable future throughout all or a significant portion of its range.
Threatened by Similarity of Appearance T(S/A) species are a taxon which is threatened by similarity of appearance with other species and is listed for its protection.
Proposed Endangered (PE) species are a taxon proposed for official listing as endangered.
* indicates an obscure and incidental record.

***Alligator mississippiensis* (American alligator) T(S/A)**
Animal Family: Alligatoridae
Date Listed: 4 June 1987

The alligator is a large aquatic reptile, measuring 1.8-5.8 meters in length, with a broadly rounded snout, heavy body, laterally compressed tail, and a dark gray or blackish color. Young are black with conspicuous yellow crossbands; the banding may occasionally persist on adults, although very faintly. Unlike the American crocodile, the fourth tooth on the lower jaw of the alligator fits in a notch in the upper jaw and is not exposed when the jaws are closed.

The alligator is found in rivers, streams, canals, lakes, swamps, bayous, and coastal marshes. Adult animals are highly tolerant of salt water, but the young are apparently more sensitive, with salinities greater than 5 parts per thousand considered harmful. The diet consists of anything of suitable size, including mammals, reptiles, amphibians, birds, fish, and crustaceans.

Nesting takes place in late spring and early summer, with the female building a mound of grass and other vegetation that may be two feet high and six feet across. The nest is usually constructed near the water, in a shaded location. The clutch of 30-60 (average 35) eggs is laid in a cavity near the top of the mound, and is incubated by the heat from the decaying vegetation. The female usually remains near the nest until the eggs hatch. Hatching takes place in about nine weeks, at which time the young begin calling to alert the female to excavate the nest.

This species is listed as Threatened Due to Similarity of Appearance, and is therefore not protected under Section 7 of the Endangered Species Act. However, in order to control the illegal trade of other protected crocodilians such as the American crocodile, federal regulations (such as hide tagging) are maintained on the commercial trade of alligators. No survey is required for this species

***Caretta caretta* (Loggerhead turtle) Threatened**
Animal Family: Cheloniidae
Date Listed: 28 July 1978

The loggerhead sea turtle is a large marine reptile, weighing 170-500 kg. The loggerhead has a large head and blunt, powerful jaws. The carapace and flippers are reddish-brown and the plastron is yellow. There are five pairs of pleural scutes on the carapace, with the first touching the nuchal scute. Three scutes on each side connect the carapace and the plastron.

The loggerhead sea turtle is found in a wide variety of habitats, including the open ocean, bays, lagoons, salt marshes, creeks, ship channels, and large river mouths. Hatchlings are often seen in association with floating sargassum seaweed. The diet includes sponges, jellyfish, mollusks, crustaceans, and fish. Loggerheads often forage in coral reefs, rocky areas, and shipwrecks.

On the east coast of the U.S., the nesting season begins in about May and lasts until November. Females crawl onto the beach at night and excavate a chamber in the sand, using their hind flippers. They lay 64-341 eggs, the average being about 115. These hatch in about two months, usually emerging at night. The hatchlings crawl toward the ocean, possibly using illumination off the water and slope of the beach as cues to find the water. Little is known about where the young go once they enter the ocean, but evidence suggests that 12-30 years are required to reach sexual maturity. Females only nest every 2-3 years, but may lay 2-6 clutches during a reproductive year.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the loggerhead sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the loggerhead sea turtle within 1.6 km (1.0 mi) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Charadrius melodus* (Piping plover) Threatened**

Animal Family: Charadriidae
Date Listed: 11 December 1985

The piping plover is a small shorebird resembling a sandpiper, weighing 42-56 g, with a length of 15-20 cm. Their plumage is white below and brownish gray above, with a black band across the forehead and a black ring around the neck. The black marking may be indistinct during the winter. The legs are yellow, and the bill is yellow in summer and dark in the winter. Chicks are precocial and covered with a sandy-colored down. This plover's call is a clear "peep-lo". This bird's movement pattern during foraging is like that of most plovers, running in short starts and stops.

Piping plovers prefer habitat that consists of large sandflats or mudflats for foraging in close proximity to a sandy beach for roosting and nesting. They nest on sandy or gravelly beaches in sparsely vegetated areas that are slightly higher in elevation than the surrounding beach. The nest is a shallow scrape in the sand, often with shell fragments in it, and a clutch usually consists of four eggs. The eggs hatch in May and the young fledge about a month later. Parents will often try to distract predators from the nest by feigning a broken wing. Migration to the wintering grounds occurs in early September.

Piping plovers eat a wide variety of worms, fly larvae, beetles, crustaceans, molluscs, and other invertebrates (Bent 1928). The foraging behavior consists of quick darting movement across the sand or mudflat, with sudden stops to probe the sand for food items.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the piping plover is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the piping plover within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Chelonia mydas* (Green sea turtle) Threatened**
Animal Family: Cheloniidae
Date Listed: 28 July 1978

The green sea turtle is a large marine reptile, weighing 100-295 kg. The smooth, keelless carapace is light to dark brown with darker mottling and the plastron is light yellow. The head is fairly small with a serrated lower jaw, and there is a single claw on each front flipper. There are four pairs of pleural scutes on the carapace, with none touching the nuchal scute, and a single pair of elongated scales between the eyes. Hatchlings generally have a black carapace, white plastron, and white markings on the edge of the carapace and flippers.

Adult green sea turtles are generally found in shallow water, especially in lagoons and shoals inside reefs, bays, and inlets where marine grasses and algae are abundant. Hatchlings are often seen offshore, in association with floating sargassum seaweed. The diet consists mainly of marine grasses and algae, although mollusks, sponges, crustaceans, and jellyfish may also be taken.

On the east coast of the U.S., the nesting season begins in about June and lasts until September. Females crawl onto the beach at night and excavate a chamber in the sand, using their hind flippers, in which a clutch of 75-200 eggs is deposited. Incubation takes 48-70 days, and the hatchlings usually emerge at night. The hatchlings crawl toward the ocean, possibly using illumination off the water and slope of the beach as cues to find the water. Little is known about where the young go once they enter the ocean, but evidence suggests that 25-50 years are required to reach sexual maturity. Females only nest every 2-4 years, but may lay seven clutches during a reproductive year, with 9-13 days between clutches.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the green sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the green sea turtle within 1.6 km (1.0 mi) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Dermochelys coriacea* (Leatherback sea turtle) Endangered**
Animal Family: Dermochelydae
Date Listed: 2 June 1972

The leatherback sea turtle is the largest of the turtles, weighing 295-680 kg with a length of 1.2-1.8 m. This turtle is unique in that its carapace is not composed of hard scutes, but is rubbery with small bones embedded in it. The carapace has seven longitudinal keels, and is dark brown or black. The plastron has five longitudinal keels. There is not a well-defined angle between the carapace and plastron, making the animal somewhat barrel-shaped. The head and flippers are brown or black with whitish spots, and the flippers have no claws. The beak is somewhat hooked, with a tooth-like cusp on either side of the upper jaw. Hatchlings are dark brown or black, with white or yellowish carapace keels, and their skin has small scales that are lost as the animal grows.

The leatherback sea turtle is a strong swimmer and mainly pelagic, often seen near the edge of the continental shelf. Preferred nesting beaches are usually isolated, with close proximity to deep water, bordered by vegetation, and steep enough so that dry sand is not too far from the water. The diet consists mainly of jellyfish, along with some sea urchins, crustaceans, squid, tunicates, fish, and seaweed.

Nesting in North Carolina takes place in June through September. Clutch size is approximately 80-100 eggs, of which a third may be yolkless. Females may nest several times in a single season, but probably do not nest every year. Incubation takes 55-74 days, and the hatchlings emerge at night. They immediately head for the ocean, possibly using light cues to find the water.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable nesting and foraging habitat for the leatherback sea turtle is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the leatherback sea turtle within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

Felis concolor cougar* (Eastern cougar) Endangered
Animal Family: Felidae
Date Listed: 4 June 1973

The eastern cougar is a large, unspotted, long-tailed cat weighing between 68 and 91 kg. Males are 30-40 percent larger than females. The cougar's body and legs are a uniform tawny color, although the belly is a pale reddish color, and the backs of the ears, tip of the tail, and sides of the muzzle are black. Kittens are spotted with black and have ringed tails until they are about 6 months old.

Historically, the eastern cougar occurred from eastern Canada south to Tennessee and South Carolina. Its distribution has contracted to a few scattered locations in Minnesota, Michigan, and the Great Smoky Mountains National Park. Additional sightings have also been reported in several counties of western and southeastern North Carolina. No populations of this species are well documented. Habitat requirements consist primarily of large tracts of wilderness and adequate prey, and this species can live in coastal swamps as well as mountainous regions. Cougars feed mainly on white-tailed deer (*Odocoileus virginianus*), although they may also eat small mammals, wild turkeys, and occasionally domestic livestock. It is estimated that a female cougar can have a range of 5-20 square miles, and a male can have a range upwards of 25 square miles.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for the Eastern cougar is not located within the project study area. The project vicinity is relatively fragmented by cultivated land, residential areas, and a school, not allowing for the large tracts of wilderness required by the Eastern cougar. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the eastern cougar within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Picoides borealis* (red-cockaded woodpecker) Endangered**
Animal Family: Picidae
Date Listed: 13 October 1970

The adult red-cockaded woodpecker (RCW) has a plumage that is entirely black and white except for small red streaks on the sides of the nape in the male. The back of the RCW is black and white with horizontal stripes. The breast and underside of this woodpecker are white with streaked flanks. The RCW has a large white cheek patch surrounded by the black cap, nape, and throat.
The RCW uses open old growth stands of southern pines, particularly longleaf pine (*Pinus palustris*), for foraging and nesting habitat. A forested stand must contain at least 50% pine, lack a thick understory, and be contiguous with other stands to be appropriate habitat for the RCW. These birds nest exclusively in trees that are > 60 years old and are contiguous with pine stands at least 30 years of age. The foraging range of the RCW is up to 500 acres (200.0 hectares). This acreage must be contiguous with suitable nesting sites. These woodpeckers nest exclusively in living pine trees and usually in trees that are infected with the fungus that causes red-heart disease. Cavities are located in colonies from 12-100 ft (3.6-30.3 m) above the ground and average 30-50 ft (9.1- 15.7 m) high. They can be identified by a large incrustation of running sap that surrounds the tree. The RCW lays its eggs in April, May, and June; the eggs hatch approximately 38 days later.

BIOLOGICAL CONCLUSION: NO EFFECT

A survey for red-cockaded woodpeckers in the potential habitat areas at the project site was conducted on December 13, 2000 by NCDOT Biologists Hal Bain, Jared Gray, Jill Holmes, and Matt Haney. No red-cockaded woodpeckers were observed, nor were nesting cavities, or any other evidence that they may be using the project study area. A review of the North Carolina Heritage Program Database of Rare Species and Unique Habitats revealed no known occurrences of the red-cockaded wookpecker within 1.6 miles of the project study area. Therefore it can be concluded that the construction of this project will not impact this species.

***Amaranthus pumilus* (seabeach amaranth) Threatened**
Plant Family: Amaranthaceae
Flowers Present: June to frost

Seabeach amaranth is an annual legume that grows in clumps containing 5 to 20 branches and are often over a foot across. The trailing stems are fleshy and reddish-pink or reddish in color. Seabeach amaranth has thick, fleshy leaves that are small, ovate-spatulate, emarginate and rounded. The leaves are usually spinach green in color, cluster towards the end of a stem, and have winged petioles. Flowers grow in axillary fascicles and the legume has smooth, indehsicent fruits. Seeds are glossy black. Both fruits and flowers are relatively inconspicuous and born along the stem.

Seabeach amaranth is endemic to the Atlantic Coastal Plain beaches. Habitat for seabeach amaranth is found on barrier island beaches functioning in a relatively dynamic and natural manner. Seabeach amaranth grows well in overwash flats at the accreting ends of islands and the lower foredunes and upper strands of noneroding beaches. Temporary populations often form in blowouts, sound-side beaches, dredge spoil, and beach replenishment. This species is very intolerant to competition and is not usually found in association with other species. Threats to seabeach amaranth include beach stabilization projects, all terrain vehicles (ATV's), herbivory by insects and animals, beach grooming, and beach erosion.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for seabeach amaranth does not occur within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of the seabeach amaranth within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Carex Lutea* (Golden Sedge) Proposed Endangered**
Plant Family: Cyperaceae
Flowers Present: mid April to mid June

Golden sedge is a perennial sedge whose culm (stem) may reach three feet (1m) or more in height. The yellowish green leaves are grasslike, with those of the culm mostly basal and up to 10in (28cm) long, while those of the vegetative shoots reach a length of 25in (65cm). The inflated perigynia (sac which encloses the ovary) are bright yellow at flowering and about .16 to .20 in (4 to 5 mm) long, and the perigynia beaks are out-curved and spreading. Golden sedge is most readily identified from mid-April to mid-June during flowering and fruiting. It is distinguished from other Carex species that occur in the same habitat by its bright yellow color, by its height and slenderness, and especially by the out-curved beaks of the crowded perigynia (LeBlond et al. 1994).

Carex lutea grows in sandy soils overlying coquina limestone deposits, where the soil pH is unusually high for this region, typically between 5.5 and 7.2 (Glover 1994). Soils supporting the species are very wet to periodically shallowly inundated. The species prefers the ecotone between the pine savanna and adjacent wet hardwood or hardwood/conifer forest (LeBlond 1996; Schafale and Weakley 1990). Most plants occur in the partially shaded savanna/swamp where occasional to frequent fires favor an herbaceous ground layer and suppress shrub dominance. The species appears to be a very rare, narrowly restricted endemic to an area within a 2-mile radius of the Onslow/Pender County line in southeastern North Carolina (LeBlond 1996).

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for golden sedge is not located within the project study area. There are no pine savanna areas in the project study area and all wetland areas are dominated by shrubs and trees and therefore do not favor an open herbaceous ground layer. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of golden sedge within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Lysimachia asperulaefolia* (rough-leaved loosestrife) Endangered**
Plant Family: Primulaceae
Federally Listed: 12 June 1987
Flowers Present: June

Rough-leaved loosestrife is a perennial herb having slender stems and whorled leaves. This herb has showy yellow flowers which usually occur in threes or fours. Fruits are present from July through October.

Rough-leaved loosestrife is endemic to the coastal plain and sandhills of North and South Carolina. This species occurs in the ecotones or edges between longleaf pine uplands and pond pine pocosins (areas of dense shrub and vine growth usually on a wet, peat, poorly

drained soil), on moist to seasonally saturated sands and on shallow organic soils overlaying sand. It has also been found to occur on deep peat in the low shrub community of large Carolina bays (shallow, elliptical, poorly drained depressions of unknown origins). The areas it occurs in are fire maintained. Rough-leaved loosestrife rarely occurs in association with hardwood stands and prefers acidic soils.

BIOLOGICAL CONCLUSION: NO EFFECT

Suitable habitat for rough-leaved loosestrife is not located within the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of rough-leaved loosestrife within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

***Thalictrum cooleyi* (Cooley's meadowrue) Endangered**
Plant Family: Ranunculaceae
Federally Listed: 7 February 1989
Flowers Present: late June-July (best mid July)

Cooley's meadowrue is a tall herb growing to 1 m or more when in flower. Its slender stems are erect in sunny locations and lax or sprawling when shaded. The leaves are ternately divided and the leaflets are about 2 cm long, narrow with entire margins or rarely with two or three lobes near the tip. The entire plant is glabrous with no hairs or glands. Male and female flowers occur on separate plants in loose few-flower clusters at the top of the plant. The flowers lack petals and the sepals fall off early. The male flowers have numerous pale lavender stamens. The female flowers have several separate spindle-shaped carpels which develop into narrowly ellipsoid, ribbed, one-seeded fruits 6 mm long, each tipped with a persistent linear style.

Cooley's meadowrue occurs in wet pine savannas, grass-sedge bogs and savanna like areas, often at the border of intermittent drainages or swamp forests. This species is usually found in areas that contain some type of disturbance such as clearings, burned savanna edges, maintained roadsides and power line rights-of-ways. It is found on fine sandy loam, circumneutral soils that are seasonally (winter) moist or saturated and only slightly acidic (pH 5.8-6.6).

BIOLOGICAL CONCLUSION NO EFFECT

Suitable habitat for Cooley's meadowrue is not located within the project study area. There are no wet boggy areas in the disturbed and open habitat found in the project study area. A review of the North Carolina NHP database of Rare Species and Unique Habitats revealed no known occurrences of Cooley's meadowrue within 1.0mi (1.6km) of the project study area. Therefore it can be concluded that construction of this project will not impact this species.

2. Federal Species of Concern

Federal Species of Concern (FSC) are those plant and animal species which may or may not be listed in the future. There are 22 FSC listed for Onslow County as of 16 June 2000. FSC are not afforded federal protection 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. Organisms which are listed as Endangered, Threatened or Special Concern by the NHP list of Rare Plant and Animal Species 1993 are afforded state protection or are monitored under the State Endangered Species Act and the NC Plant Protection and Conservation Act of 1979. However, the level of protection given to the state listed species does not apply to NCDOT activities. Table 15 provides the FSC listed in Onslow County and indicates the species state status, and whether or not there is adequate habitat for each species in the project area.

Table 15. Federal Candidate/NC Protected Species in Onslow County.

Scientific Name	Common Name	State Status[1]	Habitat
Aimophila aestivlis	Bachman's Sparrow	SC	No
Ammodramus henslowii	Henslow's sparrow	SR	No
Heterodon simus	Southern hognose snake	SR	No
Laterallus jamaicensis	Black rail	SR	No
Ophisaurus mimicus	Mimic glass lizard	SC	No
Passerina ciris ciris	Eastern painted bunting	SR	No
Rana capito capito	Carolina gopher frog	SC	No
Procambarus plumumanus	Croatan crayfish	W3	Yes
Asplenium heteroresiliens	Carolina spleenwort	E	No
Carex chapmanii	Chapman's sedge	W1	Yes
Dionea muscipula	Venus flytrap	C/SC	No
Litsea aestivalis	Pondspice	C	No
Lobelia boykinii	Boykin's lobelia	C	No
Myriophyllum laxum	Loose watermilfoil	T	No
Oxypolis ternata	Savanna Cowbane	W1	No
Panicum hirstii	Hirsts panic grass	E	No
Parnassia caroliniana	Carolina grass-of-parnassus	E	No
Rhexia aristosa	Awned meadowbeauty	T	No
Rhynchospora thornei	Thorne's beaksedge	C/PE	No
Solidago pulchra	Carolina goldenrod	E	No
Solidago verna	Spring-flowering goldenrod	E/PT	No
Tofieldia glabra	Carolina asphodel	C	No

[1]**Endangered (E)** species are a taxon whose continued existence as a viable component of the state's flora/fauna is determined to be in jeopardy.
Threatened (T) species are a taxon which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
Special Concern (SC) species are a taxon in North Carolina which requires monitoring.
Significantly Rare (SR) species are a taxon not listed by the NC WRC but which exists in small numbers and has been determined by the NHP to need monitoring.
Candidate (C) species are a taxon that is very rare in North Carolina, generally with 1-20 populations in the state.
Watch List (W) species are any other species believed to be rare and of conservation concern in the state but not warranting active monitoring at this time (**W1**: rare but relatively secure, **W3**: rare but uncertain documentation).

Proposed Threatened/Endangered (PT/PE) species are a taxon which has been formally proposed for listing as Threatened/Endangered, but has not yet completed the legally mandated listing process.

A review of the NHP database of Rare Species and Unique Habitats on 12 April 2000 revealed findings of *Peltandra saggittifolia*, Hooker's milkwort (*Polygala hookeri*), short-bristled beaksedge (*Rhynchospora breviseta*), and graceful goldenrod (*Solidago gracillima*) within 1.0mi (1.6km) of the project area. Surveys for these species and the FSC were not conducted during the site visit, nor were the species observed during the site visit.

c. Essential Fish Habitat

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth a new mandate to identify and protect important marine and anadramous fisheries habitat. Federal action agencies which fund, permit, or carry out activities that may adversely impact essential fish habitat (EFH) are required to consult with National Marine Fisheries Service (NMFS) regarding potential adverse effects of their actions on EFH. The MSFCMA requires that EFH be identified for all fisheries which are Federally managed. EFH is defined in the MSFCMA as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth or maturity."

Onslow County is listed as a county that contains waterbodies in which EFH species are found. None of the waterbodies listed are immediately within the project study area or vicinity, however Little Northeast Creek flows into Northeast Creek which converges with the New River, a listed waterbody. The New River is approximately 8.9 km (5.5 mi) downstream from the project site. Ron Sechler, of NMF, commented that an Essential Fish Habitat study "would not be necessary because the (project study) area was far enough away from the waters of primary concern." He also agreed that due to the presence of freshwater mussels in Little Northeast Creek, it is not likely that EFH species would be found in the project study area. EFH species are usually found in waters of higher salinity content than freshwater mussels can live in.

H. Geology and Hazardous Materials Evaluation

A field reconnaissance survey was conducted in the vicinity of the project. In addition to a field survey, a file search of appropriate environmental agencies was conducted to identify any known problem sites along the proposed project alignment. Based on the field reconnaissance and records search, no anticipated UST sites were found within the project area. No regulated or unregulated landfills or dumpsites occur within the project limits. No potential RCRA or CERCLA sites were identified within the project limits. However, unregulated UST's and unregulated landfills may be encountered by right of way during their initial contacts with the impacted properties. The NCDOT Geotechnical Unit should be notified of their presence prior to acquisition so that the actual condition of the site can be examined. If a site with unregulated UST's, dumpsites, or landfill is identified by Right of Way, a further investigation should be performed prior to right of way. This assessment will also be used by the Department to estimate the associated clean up cost and make right-of-way recommendations.

I. Highway Traffic Noise Analysis and Air Quality Analysis

This project is located in Onslow County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR part 51 and 93 is 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. The project will not increase traffic volumes; therefore, the project's impact on noise and air quality will not be significant.

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 NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise if Title 23 of the Code of Federal Regulations, Part 772, and for air quality of the 1990 Clean Air Act Amendments and the NEPA process, and no additional reports are necessary.

J. Floodplain Involvement and Hydraulic Concerns

The drainage area of Little Northeast Creek at the proposed crossing is 9.3 square miles (24.1 square kilometers). Onslow County is currently participating in the National Flood Insurance Regular Program. This crossing of Little Northeast Creek is located in a designated flood hazard zone. No detailed flood studies have been done at the subject crossing. The crossing of Little Northeast Creek is located below headwaters. It is not anticipated that the proposed project should have any adverse impacts on the existing floodplain. Figure 7 is a copy of the Flood Insurance Rate Map for Onslow County on which the 100-year flood fringes are shown. There are no buildings located on the upstream or downstream floodplain, which is primarily wooded.

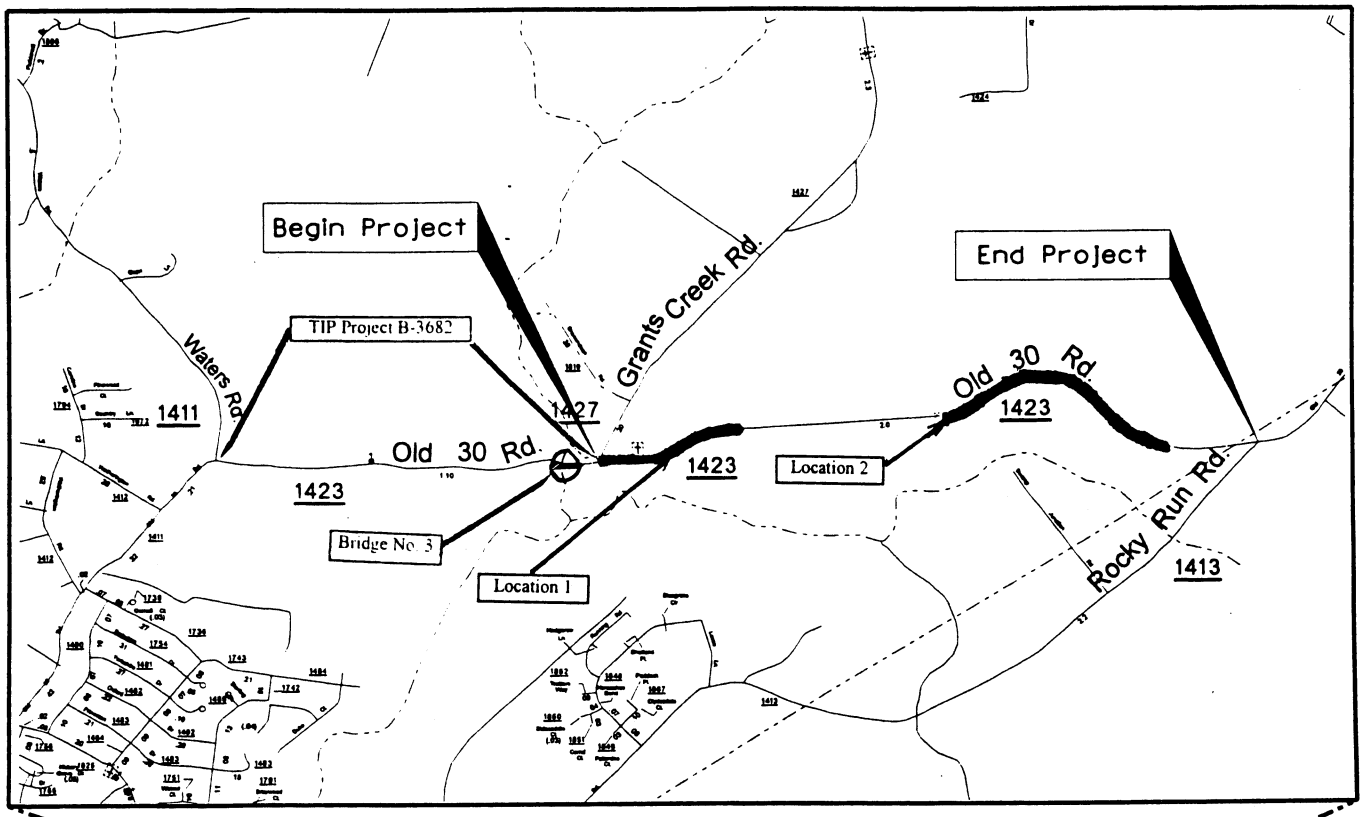
K. Section 4(f) Resources

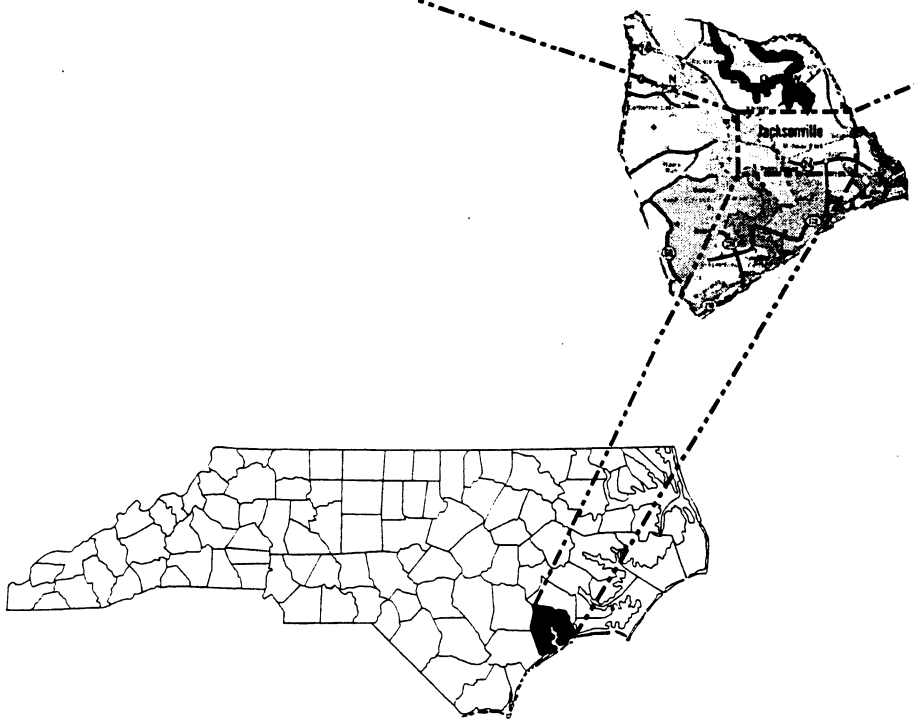
No Section 4(f) properties will be involved with this project.

VI. COMMENTS, COORDINATION, AND PUBLIC INVOLVEMENT

On November 30, 1999, a citizen's informational workshop was held in Onlsow County at Morton Elementary School (see Appendix B for a copy of the Notice of a Citizens Informational Workshop and the Workshop Handout). This workshop was held in order to obtain comments and suggestions about the project from the public. Additionally, the proposed improvements were presented to the resource agencies on November 8, 2001 in order to address agency concerns and to determine if any changes were recommended. Agencies in attendance included the US Environmental Protection Agency, US Fish and Wildlife Resources Commission, Federal Highway Administration, Division of Coastal Management, North Carolina Wildlife Resources Commission, and the North Carolina Division of Water Quality. Minutes of the meeting are included in Appendix A.

FIGURES



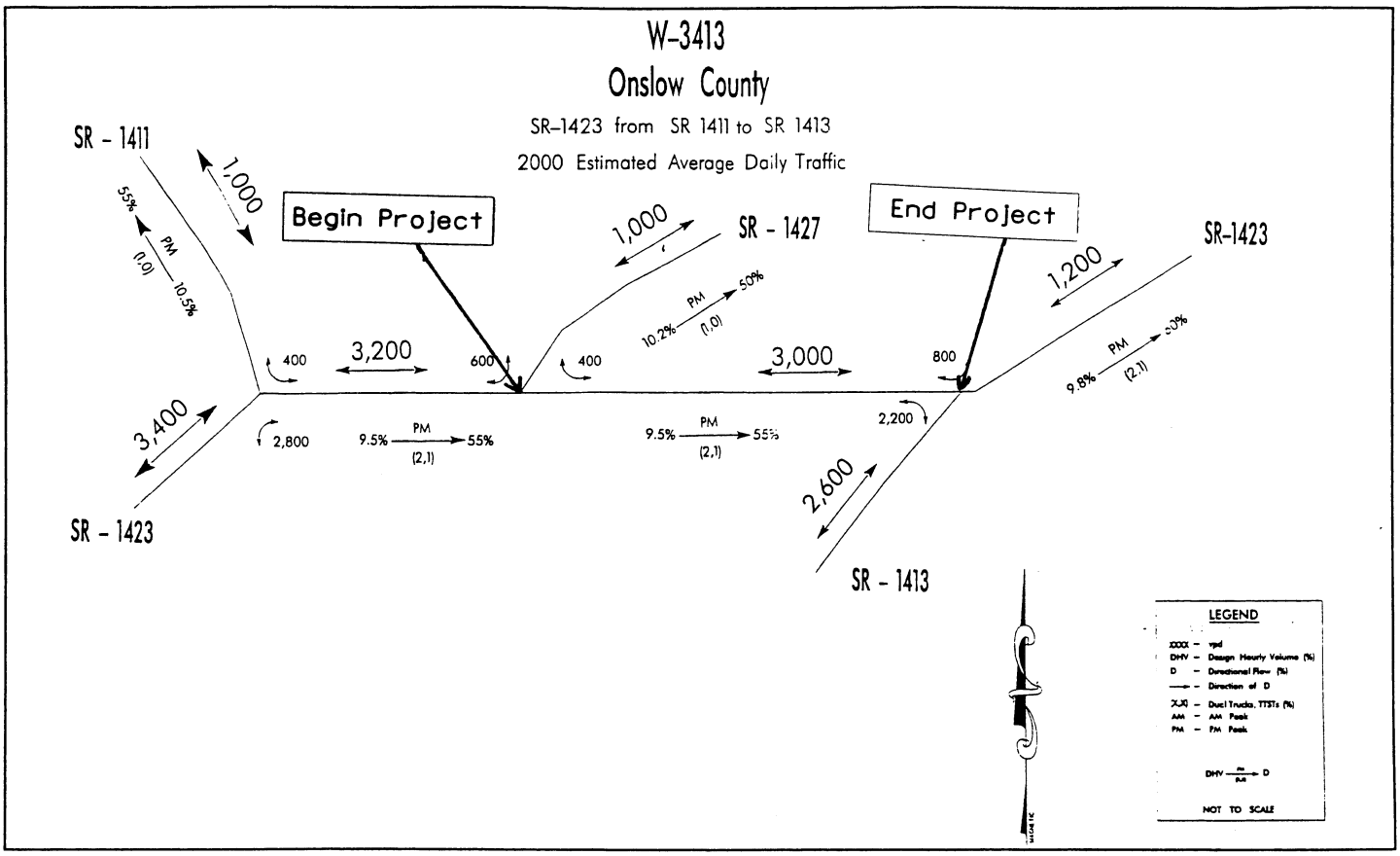


NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

Improvements to SR 1423 (Old Thirty Road)
From SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road)
Onslow County, State Project 8.7326024
Federal Aid Project No. STP-1423(2)
TIP Project No. W-3413

FIGURE

2000 / 2025 Traffic Volumes



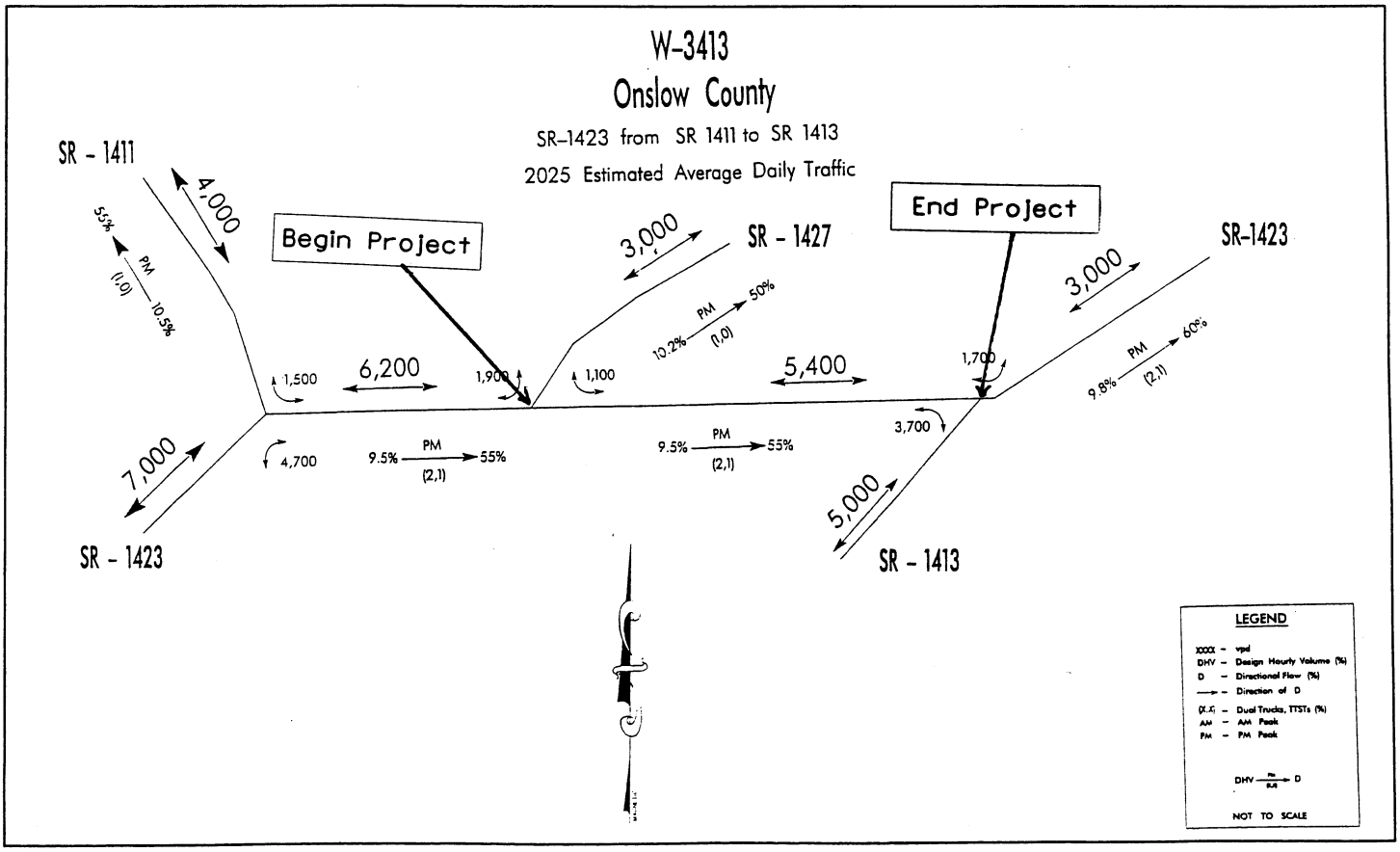


Figure 3

PROPOSED TWO-LANE SHOULDER SECTION

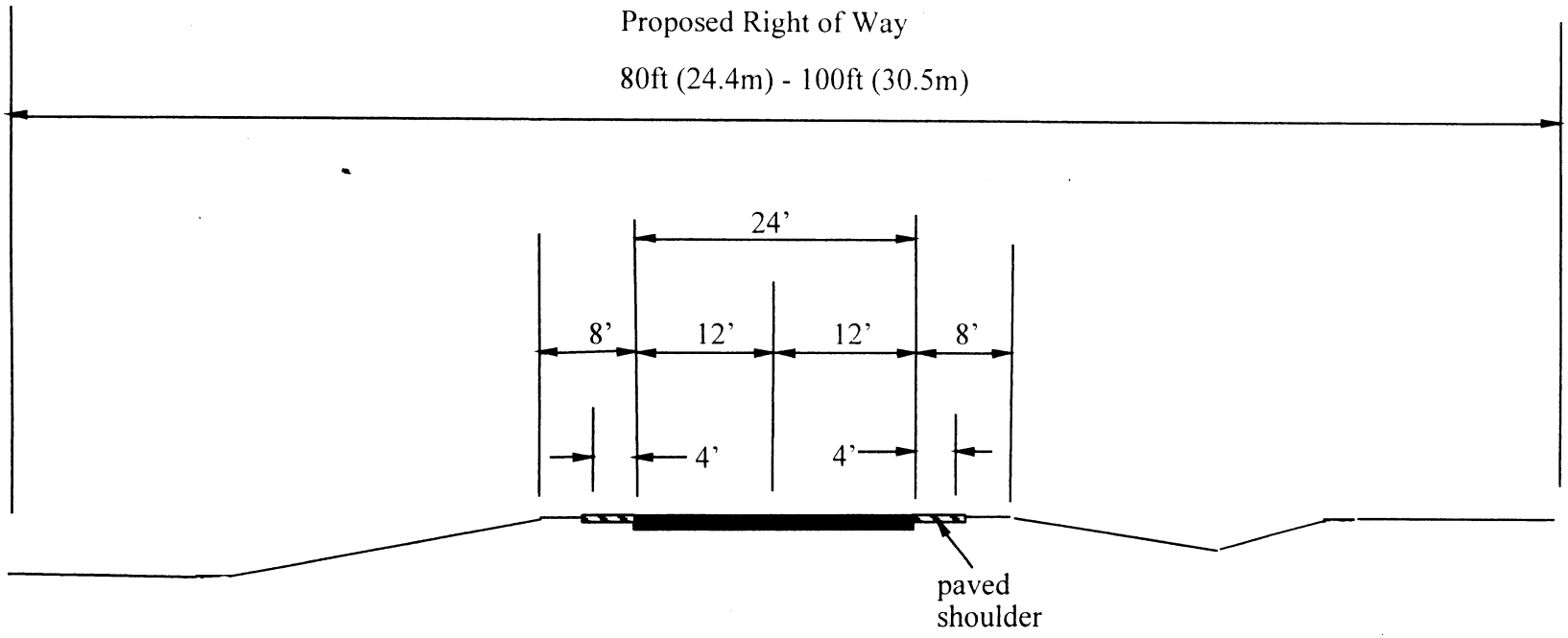
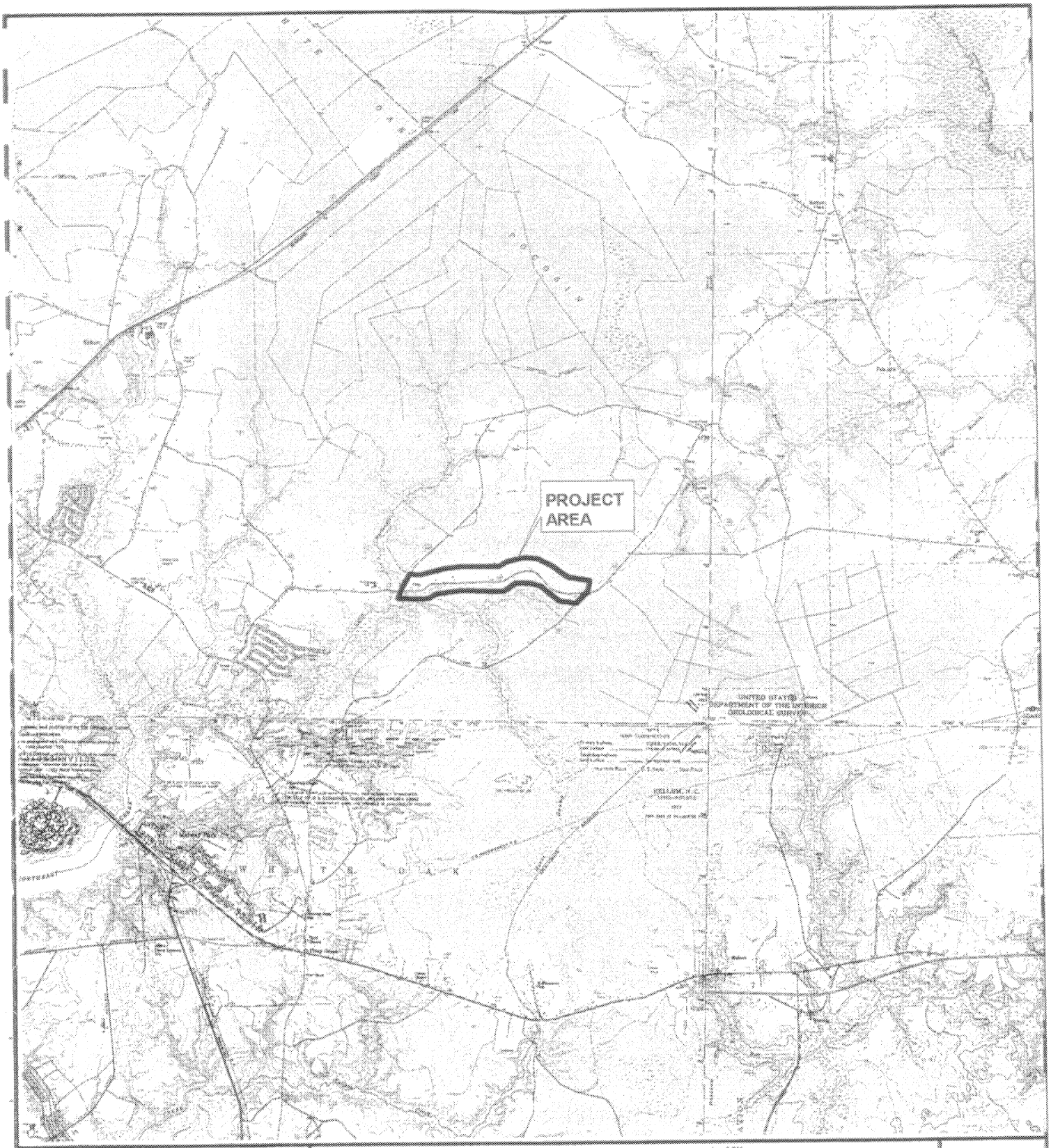
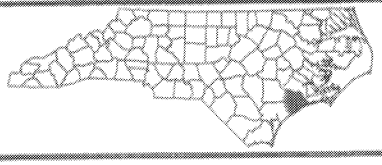


FIGURE 4





1 0 1 Miles

2 0 2 Kilometers

SCALE: 1:24,000

USGS 7.5 Minute Topographic Map: KELLUM, NC

N

ARCADIS G&M of North Carolina, Inc.

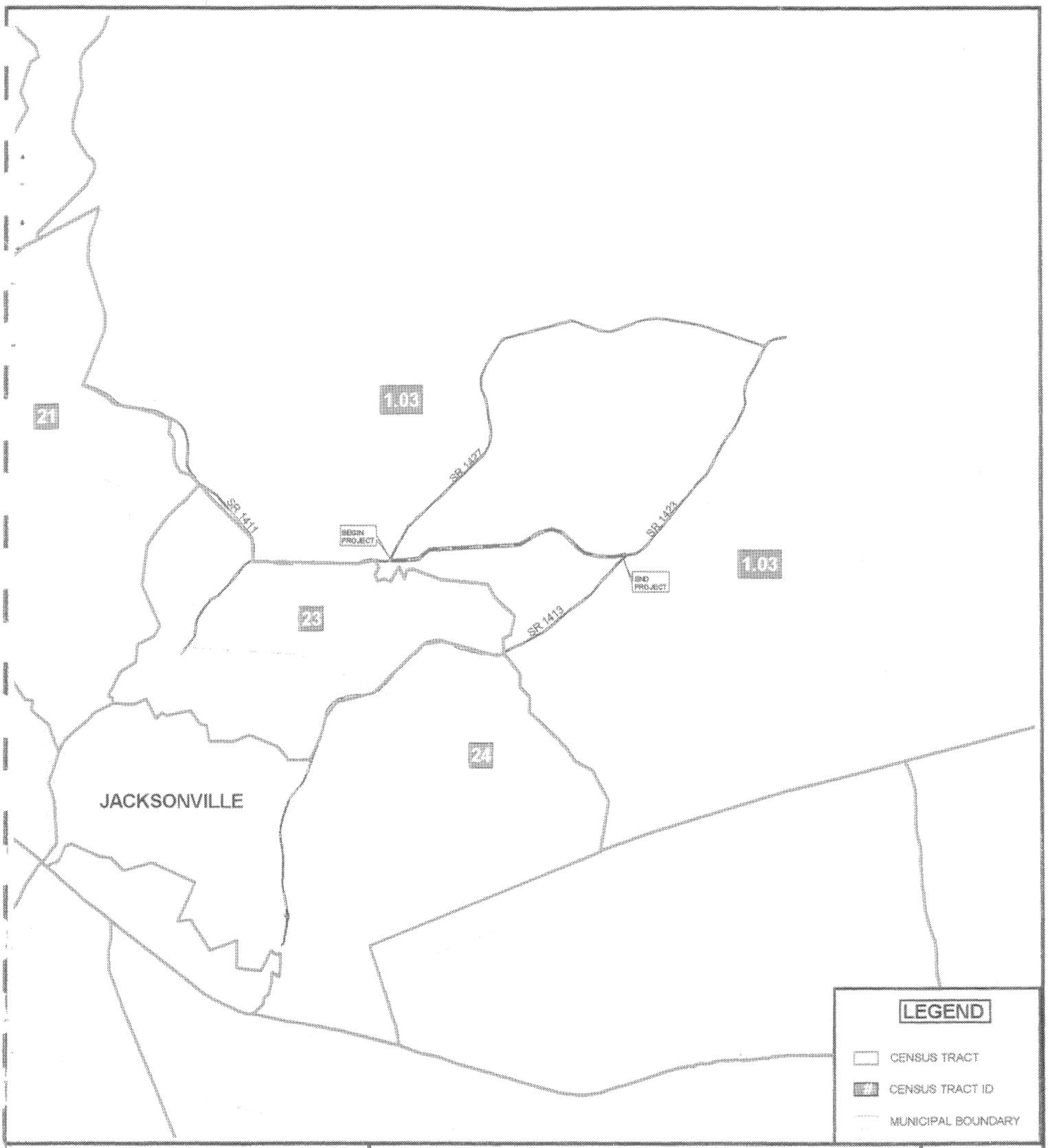
2301 Rexwoods Drive
Post Office Box 31388, Raleigh, NC 27622-1388
Tel: 919/782-5511 Fax: 919/782-5905

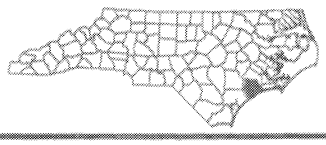
Prepared For:

COMMUNITY IMPACTS PROJECT STUDY AREA

OLD 30 ROAD (SR 1423) WIDENING
T.I.P. No. W-3413
ONSLOW COUNTY, NORTH CAROLINA

FIGURE
5





1 0 1 Miles

2 0 2 Kilometers

SCALE: 1:155,000

N

ARCADIS G&M of North Carolina, Inc.
2301 Rexwoods Drive, Suite 102
Raleigh, NC 27607
Tel: 919/782-5511 Fax: 919/782-5905

Prepared For:

Source: United States Census 2000

CENSUS TRACTS

OLD 30 ROAD (SR 1423) WIDENING
T.I.P. No. W-3413
ONSLOW COUNTY, NORTH CAROLINA

FIGURE 6

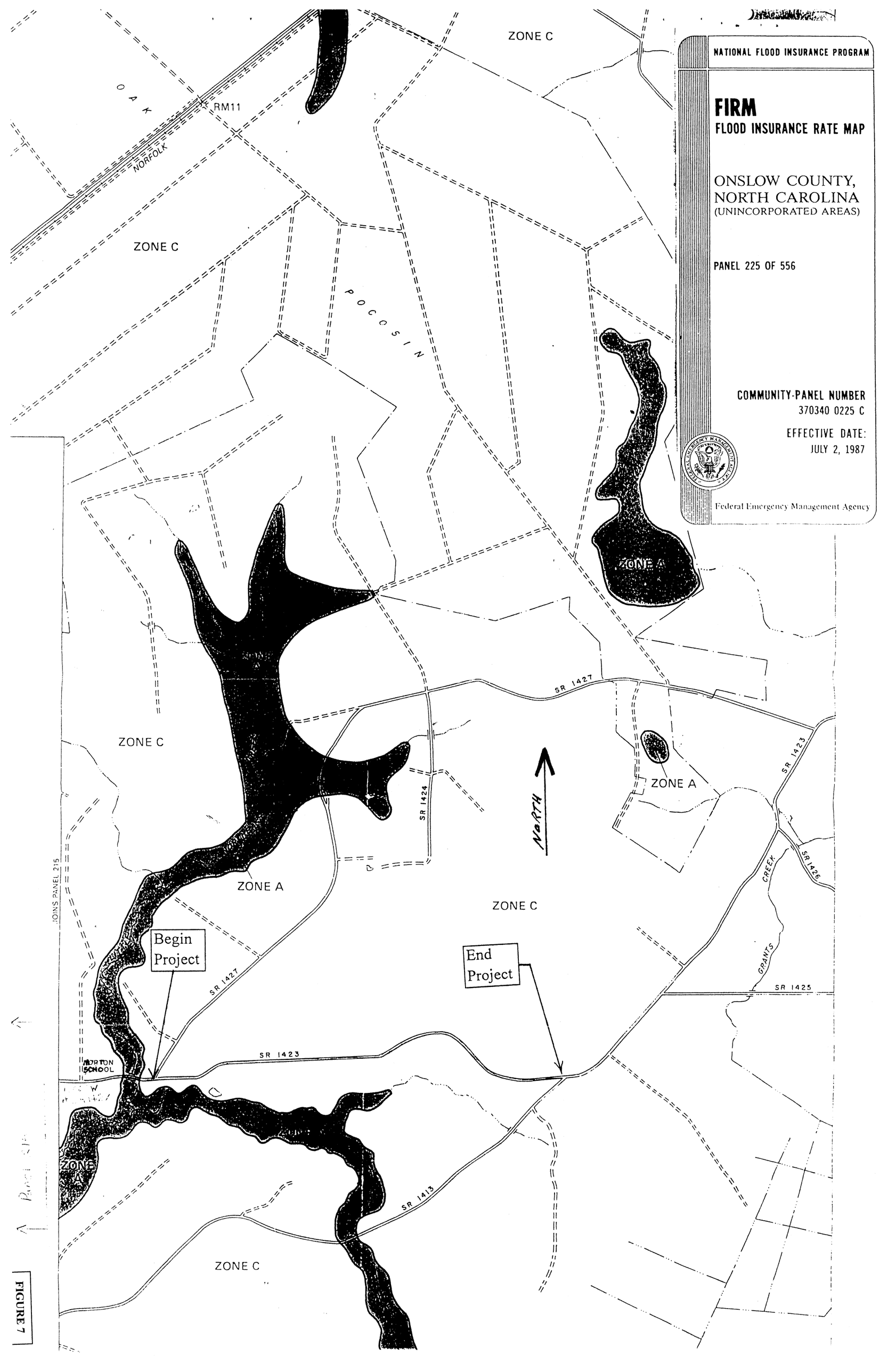

NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
ONSLOW COUNTY,
NORTH CAROLINA
(UNINCORPORATED AREAS)
PANEL 225 OF 556
COMMUNITY-PANEL NUMBER
370340 0225 C
EFFECTIVE DATE:
JULY 2, 1987
Federal Emergency Management Agency
ZONE C
ZONE A
ZONE C
ZONE C
ZONE A
ZONE A
ZONE C
ZONE A
ZONE C
OAK
RM11
NORFOLK
POCOSIN
SR 1427
SR 1424
SR 1423
SR 1426
SR 1425
SR 1413
CREEK
GRANTS
NORTH
Begin Project
End Project
NORTON SCHOOL
JOINS PANEL 215

FIGURE 7

APPENDIX A

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

November 16, 2001

Mr. Bill Gilmore, Manager
Project Development and Environmental Analysis
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Attention: Jackie Obediente

Dear Mr. Gilmore:

This responds to your October 23, 2001, request for National Marine Fisheries Service (NMFS) comments on Project number B-3683/W-3413, Improvement of SR 1423 from SR 1411 to SR 1413, including replacement of Bridge No.3 on new location, in Onslow County, North Carolina. The purpose of the project is to increase safety levels and to replace Bridge No. 3 over Little Northeast Creek. The new bridge would be located approximately 80 feet south of the existing bridge location and the old bridge would be removed once work on the new bridge is completed.

Our initial review of the project indicates that reasonable efforts have been made to avoid and minimize impacts to wetlands and aquatic resources. We note that unavoidable wetland losses and adverse impacts are anticipated in connection with relocation of 322 linear feet of stream and planned filling of 0.12 acre of wetlands. These impacts need to be offset and we recommend that this occur in advance of, the Department of the Army (DA) permit application process. Ideally, the DA public notice for the project should describe the mitigation to be provided, and we should be able to concur without providing further comments and recommendations. You may wish to consult further with us in connection with these mitigation needs.

Little Northeast Creek, is a tributary of the New River and it provides habitat for anadromous fishery resources for which the NMFS has stewardship and management responsibilities. Plans, as stated in your letter, to adhere to the North Carolina Department of Transportation's (NCDOT) Anadromous Fish Guidelines are commendable and should be strictly adhered to. This would seasonally restrict or limit work in waters and wetlands during periods of anadromous fish spawning. Planned incorporation of the NCDOT's Guidelines and Best Management Practices for Bridge Demolition is also desirable and alleviates the need for detailed comments and recommendations concerning this aspect of the project.

Thank you for the opportunity to provide these comments. If you have questions or additional needs, please contact me at the letterhead address, or at (252) 728-5090.

Sincerely,

Ron Sechler

Ronald S. Sechler
Fishery Biologist

— Peters

North Carolina Department of Cultural Resources

James B. Hunt Jr., Governor
Betty Ray McCain, Secretary

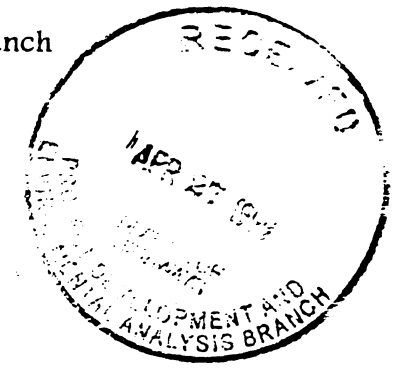
Division of Archives and History
Jeffrey J. Crow, Director

April 19, 1999

MEMORANDUM

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

FROM: David Brook
Deputy State Historic Preservation Officer



SUBJECT: SR 1423 from SR 1411 to SR 1413, Onslow County, Federal Aid Project STP-1423(2) and BRSTP-1423(3), State Project 8.7326024 and 8.2261201, TIP W-3413 and B-3682, ER 99-8343

Thank you for your memorandum of February 18, 1999, concerning the above project.

We have checked our maps and files and have located the following historic structures within the project area:

ON 267, House

ON 386, Erasmus Morton House

Both are located on the north side of the road and shown on the attached map. A North Carolina Department of Transportation architectural historian should evaluate these properties.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

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.

E Peters

BRSTP-1423(3)? B-3682?
Federal Aid #STP-1423(2) *TIP* #W-3413 *County*: Onslow

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

Project Description: Improvements to SR 1423 from SR 1411 to SR 1413, including replacement of Bridge No. 3

On October 21, 1999, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] North Carolina State Historic Preservation Office (SHPO)

Reviewed the subject project at

- [ ] a scoping meeting
- [x] photograph review session/consultation
- [ ] other

All parties present agreed

- [ ] there are no properties over fifty years old within the project's area of potential effect.
- [x] there are no properties less than fifty years old which are considered to meet Criterion Consideration G within the project's area of potential effect.
- [x] there are properties over fifty years old (list attached) within the project's area of potential effect, but based on the historical information available and the photographs of each property, properties identified as Properties 1-7 are considered not eligible for the National Register and no further evaluation of them is necessary.
- [x] there are no National Register-listed properties located within the project's area of potential effect.

Signed:

Mary Pope Furr — 10.21.99
Representative, NCDOT — Date

Ray C Shelton — 10/25/99
FHWA, for the Division Administrator, or other Federal Agency — Date

J. F. Matt — 10/21/99
Representative, SHPO — Date

David Brook, Deputy SHPO — 11/2/99
State Historic Preservation Officer — Date

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

December 14, 2001

TO: Meeting Attendees

FROM: Jackie Obediente
Project Development Engineer
Project Development and Environmental Analysis Branch

SUBJECT: B-3682/W-3413 Agency Meeting Minutes

An agency meeting was held on November 8, 2001 at 1:00 p.m., in the Photogrammetry Conference Room in the Century Center. The following were in attendance:

Jackie Obediente	Project Development and Environmental Analysis Branch (PD&EA)
Eric Midkiff	PD&EA
Jill Holmes	PD&EA
Ron Lucas	Federal Highway Administration
Bill Arrington	Division of Coastal Management
Cathy Brittingham	Division of Coastal Management
David Cox	North Carolina Wildlife Resources Commission
Beth Barnes	Division of Water Quality
Cynthia Perry	Roadway Design
Tim Goins	Roadway Design
Tom McCartney	US Fish and Wildlife Service – Raleigh
Chris Militshcer	USEPA – Raleigh
Mason Herndon	Division 3 - DEO
Joe Blair	Division 3 – DCE

This project is not going through the merger process, however, the purpose of this agency meeting was to present and review the preliminary designs to determine whether any changes need to be made, or whether any permitting problems are anticipated.

Below is a summary of the topics that were discussed:

- **The current project schedules are as follows –**
  B-3682: Categorical Exclusion – December 2001
  RW – August 2002

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

LET – January 2004

W-3413: Categorical Exclusion – January 2002
RW – January 2003
LET – January 2004

- **CAMA** – This project will require a CAMA Major Permit. This permit must be applied for 3-4 months before LET date. Utility relocations will be addressed and included in the CAMA permit. Conditions of the permit will be coordinated during the permitting process.

- **Anadramous Fish Moratorium and T&E Species**– Because this project lies within an anadramous fish spawning area, Anadramous Fish Guidelines will be followed. There is a possibility that this moratorium period may be the longest period, which lasts from February 15 to September 30. We will look into coordinating the LET date around this moratorium period. T&E Species survey report will be included in the Categorical Exclusion (CE).

- **Bridge Demolition and Construction** – For purposes of the environmental document, PD&EA is required to calculate a worst-case scenario concerning amounts of bridge demolition debris that have the potential to fall into the water. It is assumed that the worst-case scenario would involve the entire concrete deck falling into the water during removal. In accordance with any CAMA permit, NCDOT is aware that no debris will be allowed to fall into the water during the removal of the bridge. Bridge removal methods will be discussed in the CE.

- **Avoidance and Minimization of Wetlands** – descriptions concerning avoidance and minimization measures taken will be included in the Categorical Exclusion. These minimization measures include the implementation of 2:1 slopes at the bridge approaches, and avoidance and minimization of impacts to wetlands at curves and along the roadway. Descriptions will include justification of why the curves and the roadway could not be designed differently to avoid wetland impacts, and how 2:1 slopes at the bridge approaches were implemented into the design.

If you have any questions concerning the meeting, or the meeting minutes, please call me at 919-733-7844 extension 228, or email me at jyobediente@dot.state.nc.us.

cc: David Timpy, USACE
Allen Pope, Division 3 Engineer
John Hennesy, DWQ
Ron Sechler, National Marine Fisheries, HCD
Jimmy Gooodnight, Roadway Design

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date of Land Evaluation Request: November 6, 2001
Name of Project: NCDOT TIP Project No. W-3413	Federal Agency Involved: FHWA
Proposed Land Use: Transportation facility	County and State: Onslow, North Carolina
PART II *(To be completed by NRCS)*	Date Request Received by NRCS: Nov. 19, 2001

Does the site contain prime, unique, statewide or local important farmland? (*If no, the FPPA does not apply - do not complete additional parts of this form*).	Yes ☑	No ☐	Acres Irrigated: None	Average Farm Size: 158

Major Crop(s): Corn	Farmable Land in Govt. Jurisdiction Acres: 384252 % 65.7	Amount of Farmland As Defined in FPPA Acres: 345,021 % 65.
Name of Land Evaluation System Used: Onslow LE	Name of Local Site Assessment System: None	Date Land Evaluation Returned by NRCS: 12/11/01

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	4.84			
B. Total Acres To Be Converted Indirectly				
C. Total Acres in Site	19.39			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime and Unique Farmland	3.58			
B. Total Acres Statewide and Local Important Farmland	0.00			
C. Percentage of Farmland in County or Local Govt. Unit to be Converted	<0.01			
D. Percentage of Farmland in Govt. Jurisdiction with Same or Higher Relative Value	73.20			
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value of Farmland to be Converted *(Scale of 0 to 100 Points)*	16.25			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*)	Maximum Points				
1. Area in Nonurban Use	15	15			
2. Perimeter in Nonurban Use	10	10			
3. Percent of Site Being Farmed	20	15			
4. Protection Provided by State and Local Government	20	20			
5. Distance from Urban Built-up Area	15	15			
6. Distance to Urban Support Services	15	10			
7. Size of Present Farm Unit Compared to Average	10	10			
8. Creation of Non-Farmable Farmland	10	0			
9. Availability of Farm Support Services	5	5			
10. On-Farm Investments	20	10			
11. Effects of Conversion on Farm Support Services	10	0			
12. Compatibility with Existing Agricultural Use	10	0			
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value of Farmland (*From Part V*)	100	16.25			
Total Site Assessment (*From Part VI above or a local site assessment*)	160	110			
TOTAL POINTS (*Total of above 2 lines*)	260	126.25			

Site Selected:	Date of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

APPENDIX B

RELOCATION REPORT

North Carolina Department of Transportation

[X] E.I.S. [ ] CORRIDOR [ ] DESIGN

PROJECT:	8.7326024	COUNTY	Onslow	Alternate	of Alternate
I.D. NO.:	W-3413	F.A. PROJECT	BRSTP-1423(3)		
DESCRIPTION OF PROJECT:	Improvements to SR 1423 (Old Thirty Road) from SR 1427 (Grants Creek Loop) to SR 1413 (Rocky Run Road)				

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	1	0	1	0
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

Yes	No	*Explain all "YES" answers.*
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affect by Displacement?
X		3. Will business services still be available after Project?
	X	4. Will any business be displaced? If so, Indicate size, type, estimated number of Employees, minorities, etc.
	X	5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
	X	9. Are there large, disabled, elderly, etc. Families?
	X	10. Will public housing be needed for project?
X		11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing Housing available during relocation period?
	X	13. Will there be a problem of housing within Financial means?
X		14. Are suitable business sites available (list Source).
		15. Number months estimated to complete RELOCATION? 18

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
	1			

VALUE OF DWELLING

Owners		Tenants	
0-20M		$ 0-150	
20-40M		150-250	
40-70M	1	250-400	
70-100M		400-600	
100 UP		600 UP	
TOTAL	1		

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M		$ 0-150	
20-40M		150-250	
40-70M		250-400	
70-100M		400-600	
100 UP		600 UP	

REMARKS (Respond by Number)

NOTE: All residential displacees considered families.

3. There is an ample supply of businesses not affected by this project.

6. & 14. MLS Services, local realtors, newspapers, etc.

8. As mandated by law.

11. Onslow County

12. Or built if necessary.

S R Straugman — Right of Way Agent — 2/4/02 — Date

Am Simpson — Approved by — 2-7-02 — Date

Form 15.4 Revised 10/00

Original & 1 Copy: State Relocation Agent
2 Copy Division Right of Way Office

APPENDIX C

NOTICE OF A CITIZENS INFORMATIONAL WORKSHOP
FOR PROPOSED IMPROVEMENTS
ON SR 1423 (OLD THIRTY ROAD)
FROM SR 1411 TO SR 1413

Projects 8.7326024/8.2261201 **W-3413/B-3682** **Onslow County**

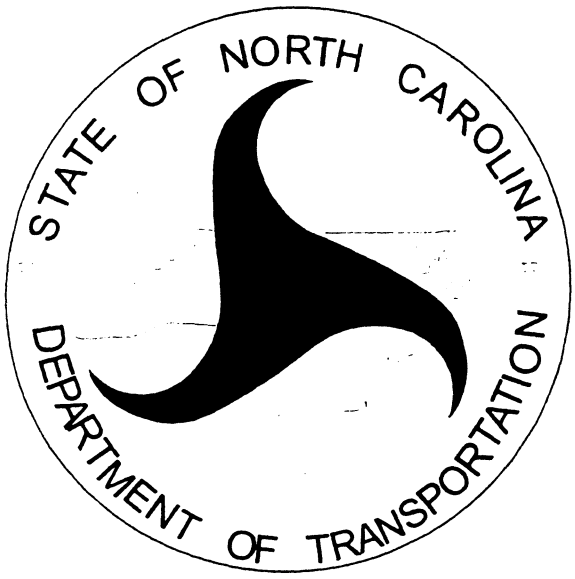
The North Carolina Department of Transportation (NCDOT) will hold a Citizens Informational Workshop on November 30, 1999, between the hours of 4:00 PM and 7:00 PM in the Cafeteria of Morton Elementary School, 485 Old 30 Road, Jacksonville.

Project W-3413 will improve SR 1423 from north of SR 1411 to SR 1413, and Project B-3682 will replace Bridge #3 over Little Northeast Creek. Comments from the public will be used in the preparation of the environmental document being developed for this project.

NCDOT representatives will be available at the workshop to answer questions and receive comments relative to the proposed projects. Information at the workshop will be general in nature. No detailed designs are available. Interested individuals may attend at their convenience during the above-stated hours. Anyone desiring additional information may contact Mr. Edwin A. Peters, Project Development Engineer, at P. O. Box 25201, Raleigh, NC 27611, or call 919-733-7844, ext. 228.

In order to comply with the Americans with Disabilities Act, NCDOT will provide auxiliary aids and services for disabled persons who wish to attend the workshop. To receive special services, please contact Mr. Peters at the above address or fax 919-733-9794 prior to the date of the workshop.

North Carolina Department of Transportation
Planning and Environmental Branch



SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD) TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY TIP PROJECT NO. W-3413 AND B-3682

NOVEMBER 30, 1999

Citizens Informational Workshop

CITIZENS INFORMATIONAL WORKSHOP

SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD)
TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY
TIP PROJECT NO. W-3413 AND B-3682

Purpose of the Citizens Informational Workshop

The purpose of the Citizens Informational Workshop is to involve the public in the project planning process. If you have comments or suggestions about the proposed improvements described in this handout, please let a representative of the North Carolina Department of Transportation know. A comment sheet is provided for you to write down your questions or concerns so that we can keep a record of and fully consider your ideas, comments, and suggestions.

The North Carolina Department of Transportation realizes individuals living close to a proposed project want to be informed of the possible effects of the project on their homes and businesses. However, exact information is not available at this stage of the planning process. Additional design work is necessary before the actual right of way limits can be established. More detailed information will be available at a later date.

A comment sheet is included in this handout. Written comments on this project may be left with North Carolina Department of Transportation representatives at the Citizens Informational Workshop or submitted through the mail. If additional information is needed or you would like to submit comments after the Citizens Informational Workshop, please address your requests and comments to:

Mr. William D. Gilmore, P.E., Manager
Program Development and Environmental Analysis Branch
North Carolina Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611

Description of the Project

The North Carolina Department of Transportation's 2000-2006 Transportation Improvement Program (TIP) proposes to improve the horizontal curvature of SR 1423(Old Thirty Road) and replace Bridge No. 3 over Little Northeast Creek.

Project Schedules

The proposed project is scheduled for right of way acquisition in fiscal year (FY) 2001 and for construction in FY 2002. The current cost estimate is $2,240,000, which includes $2,150,000 for construction and $90,000 (TIP) for right of way acquisition.

Current Status

Currently, planning and environmental studies are in progress. A Categorical Exclusion is scheduled to be completed in September 2000. A public hearing will be scheduled following the completion of the Categorical Exclusion. At this public hearing, the public will have an opportunity to review a map showing the proposed design. Factors that may affect the design of this project include engineering criteria and environmental factors such as relocation of homes or businesses, wetlands, historic sites, etc. A form is

available from NCDOT representatives if you feel you have or know of a structure which has historical significance. The improvements currently under investigation are described in the next paragraphs.

Proposed Improvements

The proposed project includes providing additional pavement and improving the horizontal curvature of the roadway at select locations along SR 1423 (Old Thirty Road) from SR 1411 (Waters Road) to SR 1413 (Rocky Run Road) where the design speed of the curves is inconsistent with the design speed of the overall facility. Additionally, Bridge No. 3 over Little Northeast Creek will be replaced on new location in conjunction with these horizontal alignment improvements.

Anticipated Right of Way Impacts

The existing right of way on SR 1423 is approximately 60 feet. It is anticipated that minimal additional right of way will be needed to accommodate the proposed improvements.

NCDOT will use the result of the environmental and engineering studies within the study corridor to develop an alignment which is safe and cost effective and which minimizes impacts to existing development and historic and natural resources.

No final decisions have been made regarding this project. Therefore, the above information and schedule are preliminary and subject to change. As planning for the project continues, we will include all comments and suggestions to the extent possible.

COMMENT SHEET

SR 1423 (OLD THIRTY ROAD), FROM SR 1411 (WATERS ROAD)
TO SR 1413 (ROCKY RUN ROAD), ONSLOW COUNTY
TIP PROJECT NO. W-3413 AND B-3682

(You do not have to answer all the questions on these sheets, but please take the time to give us your comments and concerns regarding this project. Please continue any responses on the back of this sheet.)

NAME: _____
(Please print)

ADDRESS: _____
(Please print)

COMMENTS, CONCERNS AND/OR QUESTIONS REGARDING PROJECT W-3413 and B-3682:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

(If you need additional space, please continue on the back.)

WE WOULD APPRECIATE YOUR RESPONSES TO THE FOLLOWING QUESTIONS.

WAS THE PROJECT ADEQUATELY EXPLAINED TO YOU? _____ WERE NCDOT REPRESENTATIVES UNDERSTANDABLE AND CLEAR IN THEIR EXPLANATIONS? _____ PLEASE EXPLAIN. _____

_____

_____

WERE DISPLAY MAPS EASY TO READ AND UNDERSTAND? _____
PLEASE EXPLAIN. _____

_____

_____

WERE NCDOT REPRESENTATIVES COURTEOUS AND HELPFUL? _____
PLEASE EXPLAIN. _____

_____

_____

HOW MIGHT WE BETTER PRESENT PROPOSED PROJECTS AND ADDRESS CITIZEN'S CONCERNS IN FUTURE INFORMATIONAL WORKSHOPS?

_____

_____

_____

HOW DID YOU HEAR ABOUT THIS MEETING TODAY? _____

_____

_____

DO YOU FEEL THE MEETING WAS ADEQUATELY PUBLICIZED? _____
PLEASE EXPLAIN. _____

_____

Additional comments can be sent to Mr. William D. Gilmore, P.E., Manager of the Project Development and Environmental Analysis Branch, North Carolina Department of Transportation, P.O. Box 25201, Raleigh, North Carolina 27611.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta. 32+68.15
△ = 6° 54' 30.9" (LT)
D = 4° 00' 00.0"
L = 172.71'
T = 86.46'
R = 1,432.39'
SE = 0.07 FT/FT
RO = 175'

-L-
PI Sta. 38+39.63
△ = 13° 11' 28.9" (RT)
D = 3° 00' 00.0"
L = 439.71'
T = 220.83'
R = 1,909.86'
SU = 0.06 FT/FT
RO = 150'

NAD 83

POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y- STA 13+25.00

S 29° 02' 59.2" W

PCSta. 13+56.55

BY-15
POT 9+00.00

STA 35+00.00 -L- END STATE PROJECT 8.2261201
STA 35+00.00 -L- END F.A. PROJECT BRSTP-1423 (2)

STA 35+00.00 -L- BEGIN STATE PROJECT 8.7326024
STA 35+00.00 -L- BEGIN F.A. PROJECT STP-1423 (2)

BL-16
PINC 34+78.60

PCSta. 41+76.65

PT Sta. 33+54.40

PCSta. 31+81.69

PT Sta. 15+79.85

BL-14
PINC 28+81.41
BY-A14
PINC 7+74.96

WOODS

N 74° 42' 42.6" W

N 84° 17' 02.2" E

POT STA. 16+50.00

N 89° 35' 02" E

S 36° 37' 10" E

-L- STA 34+88.13 =
-Y- STA 16+50.00

200 GAL FUEL TANK WITH PUMP (ABAND.)

2SBD

HTR

G

PCSta. 36+18.80

PT Sta. 40+58.51

* Wetland G
(*Ruled Not a Wetland After Corps Field Review)
No Impacts

Wetland H
Impacts = 0

MATCHLINE -L- 31+00.00 SEE SHEET 5

MATCHLINE -L- 44+00.00 SEE SHEET 7

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

Replace Bridge No. 3
Over Little Northeast Creek
SR 1423 (Old Thirty Road), Onslow County
Federal Aid Project No. BRSTP-1423(3)
State Project 8.2261201, TIP No. B-3682

Preliminary Mapping

FIGURE 2

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCHLINE -L- STA. 44+00.00 SEE SHEET 6

MATCHLINE -L- STA. 58+00.00

CEMETERY

MARJORIE PADGETT
DB 229 PG 332

UT #1
Impacts = 39 ft

UT #2
Impacts = 15 ft

Wetland N (LQ)
Impacts = 155 ft^2
= 0.0035 acres

Wetland M (LQ)
Impacts = 450 ft^2
= 0.01 acres

KATHLEEN M. LEONE
DB 1229 PG 286

JOHN S. MARTIN
DB 1245 PG 987

JOHN A. SANTONI
DB 1059 PG 860

RANDY L. WEAVER
DB 1215 PG 110

ISFD

HTR

RCP

CPP

WOODS

GRAVEL

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway
Onslow County, Federal Aid Project No. STP-1423(2),
State Project No. 8.7326024, TIP No. W-3413

Preliminary Plans

FIGURE 2

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCHLINE -L- STA. 84+00.00

MATCHLINE -L- STA. 96+00.00 SEE SHEET 9

B

S

HTR

ISFD

SOIL

N 42° 40' W
210.00'

105'

E

18" RCP

N 38° 25' 28" E
177.61'

12" RCP

43.70'

25'

4'x4' CO

TROTT PROPERTIES, LLC.
DB 1513 PG 494
DB 265 PG 525

TROTT PROPERTIES, LLC.
DB 1513 PG 494
DB 265 PG 525
MB 26 PG 86

R/W

WOODS

15" CMP

N 56° 51' 41.4" E

6" PVC

0.08' R/W TO EIP

EIP

0.63' R/W TO EIP

S 15° 59' 22" E
208.17'

0.07' EIP TO R/W

S 69° 37' 09" E
242.19'

EDWARD TROTT, JR.
DB 697 PG 869

N 73° 34' 38" E
154.18'

S 14° 21' 31" E
800.14'

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway
Onslow County, Federal Aid Project No. STP-1423(2),
State Project No. 8.7326024, TIP No. W-3413

Preliminary Plans — FIGURE 2

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

Wetland Q (LQ)
Impacts = 660 ft^2
= 0.015 acres

UT #5
Impacts = 38 ft

UT #6
Impacts = 51 ft

SADIE E. MORTON
DB 691 PG 263
MB 26 PG 86,198

CHARLES E. FRANKLIN
DB 863 PG 273

DONALD R. CROOM
DB 954 PG 483
MB 26 PG 198

JEFFERY L. LAMBERT
DB 1302 PG 220
MB 33 PG 153

JONATHAN D. RASMUSSEN
DB 1313 PG 430
MB 32 PG 66

MARY E. MORTON
DB 697 PG 392

LOYD R. BUFFINGTON
DB 1505 PG 632
MB 26 PG 198

JAMES V. ROSSE
DB 1220 PG 523
DB 1356 PG 681
MB 34 PG 163

DONALD R. CROOM
DB 954 PG 483
MB 26 PG 198

S 84° 01' 20" E
780.49'

N 9° 32' 34" E
408.48'

S 84° 01' 42" E
302.06'

S 85° 42' 19" E
126.34'

N 9° 37' 16" E
125.27'

N 9° 31' 40" E
52.19'

N 3° 21' 19" E
432.20'

S 81° 43' 13" E

S 3° 06' 44" W
125.33'

S 1° 52' 29" W
150.87'

S 0° 14' 37" E
145.89'

S 27° 53' 13" E
16.87'

S 4° 32' 43" W
25.63'

S 10° 52' 10" E
33.12'

S 7° 57' 43" W
425.96'

S 8° 16' 42" W
185.21'

S 81° 45' 38" E
139.56'

S 8° 17' 35" W
29.62'

MATCHLINE -L- STA. 96+00.00 SEE SHEET 8

MATCHLINE -L- STA. 109+00.00 SEE SHEET 10

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway
Onslow County, Federal Aid Project No. STP-1423(2),
State Project No. 8.7326024, TIP No. W-3413

Preliminary Plans — FIGURE 2

Sheet 4 of 6

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCHLINE -L- STA. 109+00.00 SEE SHEET 9

MATCHLINE -L- STA. 121+00.00 SEE SHEET 11

CHRISTOPHER R. CROOM
DB 1288 PG 496
MB 33 PG 77

PHILLIP CROOM
DB 1288 PG 493
MB 33 PG 77

KLAUS G. FROEHLICH
DB 1363 PG 725
MB 34 PG 191

LARRY E. CAMPBELL
DB 1560 PG 827
MB 37 PG 03

JOSEPH H. HENDERSON
WILL FILE 89-E-129
DB 527 PG 674

Wetland P (LQ)
Impacts = 600 ft^2
= 0.014 acres

S 41°28'09" E

NORTH CAROLINA DEPARTMENT
OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS BRANCH

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway
Onslow County, Federal Aid Project No. STP-1423(2),
State Project No. 8.7326024, TIP No. W-3413

Preliminary Plans FIGURE 2

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

STA 127+09.46 -L- END STATE PROJECT 8.7326024
STA 127+09.46 -L- END F.A. PROJECT STP-1423 (2)

MATCHLINE -L- STA. 121+00.00 SEE SHEET 10

PHILLIP CROOM
DB 1288 PG 493
MB 33 PG 77

CHRISTOPHER R. CROOM
DB 1288 PG 496
MB 33 PG 77

B. BARDEN LANIER
DB 673 PG 739
MB 33 PG 77

RAHIM A. SHOMARI
DB 1417 PG 511
DB 1428 PG 947
MB 35 PG 192
MB 35 PG 222

GUY C. KING
DB 1327 PG 401
MB 34 PG 36

SCRUB
WOODS
E
18" RCP
15" RCP
EIP
10' GRAVEL
10' SOIL
0.58' (DU TO R/W)
0.36' (DU TO R/W)
N 52° 21' 34" E 365.31'
N 31° 40' 10" W 395.84'
S 10° 00' 45" W 66.64'
S 65° 48' 04" W 23.86'
S 45° 23' 04" W 100.57'
GAS PIPELINE EASEMENT
HTR

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

SR 1423 (Old Thirty Road)
from SR 1427 (Grants Creek Loop)
to SR 1413 (Rocky Run Road),
Improve horizontal curvature of roadway
Onslow County, Federal Aid Project No. STP-1423(2),
State Project No. 8.7326024, TIP No. W-3413

Sheet 6 of 6

Preliminary Plans

FIGURE 2