

**SR 1500 (Midway Road) and SR 1401 (Galloway Road)
From NC 211 to US 17 Bypass
Brunswick County**

**Federal Aid Project No. STP – 1500(6)
WBS No. 34545.1.1
STIP Project No. R-3434**

ADMINISTRATIVE ACTION

ENVIRONMENTAL ASSESSMENT

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
AND
N.C. DEPARTMENT OF TRANSPORTATION

Submitted pursuant to 42 U.S.C. 4332(2) (c)



APPROVED:

12/8/14
Date

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Project Development and Environmental Analysis Unit, NCDOT

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Federal Highway Administration

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ENVIRONMENTAL ASSESSMENT

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Tamara Makhoulf
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PROJECT COMMITMENTS

**SR 1500 (Midway Road) and SR 1401 (Galloway Road)
Brunswick County
Federal Aid Project No. STP – 1500(6)
WBS No. 34545.1.1
STIP Project No. R-3434**

Project Development and Environmental Analysis Unit – Human Environment Section:

- Since the total site assessment score for farmland soils exceeds the threshold established by the Natural Resources Conservation Service (NRCS), notable project impacts to eligible soils may be anticipated. Therefore, NCDOT Community Studies will complete the NRCS CPA-106 farmland conversion form for linear projects prior to development of the final environmental document. A map showing the preliminary/functional design and impacted acreage will be included in the submission.
- The NCDOT will also coordinate with local farmers to address the potential agricultural impacts and impacts to movement of farm vehicles along and across the facility associated with the project.
- As per the Brunswick County Voluntary Agricultural District (VAD) ordinance, NCDOT will request that the VAD Advisory Board hold a public hearing if any property is obtained through eminent domain from farms participating in the VAD program.

Project Development and Environmental Analysis Unit – Human Environment Section:

- Because suitable breeding and feeding habitat is present for the Federally protected wood stork within the Project Study Area (PSA), NCDOT initially determined that the proposed project “May Affect, Not likely to Adversely Affect” the wood stork. While no wood stork have been observed within the study area, the U.S. Fish and Wildlife Service (USFWS) recommended that NCDOT wait until the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) and then conduct the necessary surveys, if needed. Concurrence with

the USFWS will be required prior to approval of the final environmental document in order to comply with the Endangered Species Act.

Roadway Design Union/Structures Unit/Hydraulics Unit:

- NCDOT will examine moving the crossing of Rattlesnake Branch slightly to the east and the crossing of Half Hell Branch slightly to the west during final design to minimize wetland impacts.
- NCDOT will extend the Middle Swamp Bridge beyond 165 feet, if necessary, to prevent permanent stream impacts to Middle Swamp Stream in the final design.
- Four-foot shoulders are included as part of the proposed improvements to Midway and Galloway roads to accommodate bicycle traffic on Midway and Galloway roads.

Hydraulics Unit

- The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP) to determine status of the project with regard to applicability of NCDOT'S Memorandum of Agreement or to approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

Division Three Construction

- This project involves construction activities on or adjacent to Federal Emergency Management Agency-(FEMA-)regulated stream(s). Therefore, Division 3 shall submit sealed, as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.



Executive Summary

This Environmental Assessment (EA) has been prepared to evaluate the potential impacts of this project. From this evaluation, the North Carolina Department of Transportation (NCDOT) does not anticipate that significant impacts to the human and/or natural environment will occur as a result of this proposed project. A final determination will be made following additional public involvement and review of comments received on the EA from the public and from local, state, and federal agencies.

The NCDOT proposes to improve SR 1500 (Midway Road) and SR 1401 (Galloway Road) between US 17 Bypass and NC 211 near Bolivia in Brunswick County. The general vicinity of Midway Road and Galloway Road near Bolivia in Brunswick County is shown on **Figure 1** (all referenced figures are included in Appendix A). The length of the project is 7.63 miles.

SR 1500 (Midway Road) and SR 1401 (Galloway Road) are both classified as major collectors by NCDOT and the corridor provides a north-south connection between NC 211 and the US 17 Bypass, which are designated as county and statewide hurricane evacuation routes, respectively. SR 1500 (Midway Road) and SR 1401 (Galloway Road) serve an important role in regional access to area beach communities, including Southport, Oak Island, and St. James. In addition, SR 1500 (Midway Road) and SR 1401 (Galloway Road) provide a connection to the “Second Bridge” to Oak Island, providing a critical additional access point to this popular coastal destination.

The need for the proposed project is based on the following deficiencies:

Safety

At several locations along this project, the existing horizontal alignment does not meet current standards (e.g., curves with sharp radii that do not meet the statutory speed limits), which contributes to the high number of lane departure crashes along this facility (84 over a 5-year period, or 43% of the total number of crashes).

From May 1, 2009 to April 30, 2011, seven accidents were reported at the intersection of SE 1401 (Galloway Road) with US 17 Business, and six accidents were reported at the intersection of SE 1500 (Midway Road) with US 17/US 17 Business.

Two bridges along this facility are structurally deficient and in need of replacement.

Emergency Response & Evacuation

This corridor provides connections to NC 211 and US Highway 17 Bypass, both designated hurricane evacuation routes. As observed during post-hurricane conditions, other similar facilities in the area, such as NC 211, NC 87, and NC 133, have a history of flooding problems, which can hamper emergency response. SR 1500 (Midway Road), on the other hand, is typically found to be one of the least flood-prone roadways in the area, with elevations ranging from 25 to 50 feet above mean sea level, thus providing an ideal route for evacuation traffic, as well as a reliable artery for emergency responders.

Additionally, a plume exposure pathway Emergency Planning Zone (EPZ) for the Brunswick Nuclear Plant has been delineated as a 10-mile radius around the plant for evacuation planning and protection



during radiological emergencies. Approximately three-quarters of the subject project is included in the EPZ. Duke Energy operates a shelter in Bolivia near the northern project terminus, as well as an Emergency Operating Facility (EOF) at the Brunswick County Government Center. During events, travel is required on Midway Road between the EOF, the government center, and the power plant.

The purpose of this project is to make safety and operational improvements and facilitate weather-related evacuations and general emergency response events.

With input from federal and state agencies, NCDOT carried forward three alternatives for detailed study:

- Alternative 1 – 2 Lanes on 2-Lane Right of Way. This alternative includes upgrading the existing horizontal alignment of the two-lane facility to current standards. In addition, the intersections of SR 1500 (Midway Road) and SR 1401 (Galloway Road) with US 17 Business will be realigned into one intersection. As part of this proposed project, all structurally insufficient bridges will be replaced.
- Alternative 2 – 4 Lanes on 4-Lane Right of Way. This alternative includes widening the existing two-lane facility to a four-lane, median-divided facility and upgrading the horizontal alignment to current standards. In addition, the intersections of SR 1500 (Midway Road) and SR 1401 (Galloway Road) with US 17 Business will be realigned into one intersection. As part of this proposed project, all structurally insufficient bridges will be replaced.
- Alternative 3 – 2 Lanes on 4-Lane Right of Way. This alternative includes widening the existing two-lane facility to a two-lane facility on a four-lane right of way with wider shoulders. In addition, the intersections of SR 1500 (Midway Road) and SR 1401 (Galloway Road) with US 17 Business will be realigned into one intersection. As part of this proposed project, all structurally insufficient bridges will be replaced.

Currently, NCDOT has not chosen a recommended alternative. Information in the EA will be presented to the community and local project stakeholders at the corridor public hearing after the completion of the EA, and copies of EA will also be distributed to federal, state, and local project stakeholders. Subsequent to the corridor public hearing, a recommended alternative will be identified based on the design information prepared and public outreach comments received. This recommended alternative will be presented to the Merger Team at the CP 3 meeting. At this meeting, the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative will be chosen.

The anticipated impacts of the project are shown in **Table ES-1**.

Permits

For this project, a United States Army Corps of Engineers (USACE) Individual Permit in accordance with Section 404 of the Clean Water Act will be required; however, the USACE holds the final discretion as to which permit will be required to authorize project construction. If a Section 404 permit is required, then a Section 401 Water Quality Certification from the NCDWR will also be needed. A CAMA permit may also be required if impacts occur in Areas of Environmental Concern (AEC).



Table ES-1: Detailed Study Alternatives Environmental Effects Summary

Category	Alternative 1 (2-Lane)	Alternative 2 (4-Lane)	Alternative 3 (2-Lane Enhanced)
Project Description			
Project Length (miles)	7.63	7.63	7.63
Human Environment Effects			
Community Facilities Impacted	0	0	0
Total Residential Relocations (number)	6	14	14
Total Business Relocations (number)	1	2	2
Total Relocations of Places of Worship (number)	1	1	1
Low Income / Minority Populations (Adverse/Disproportionate)	Low	Low	Low
Noise Impacts (number of impacted receptors)	63	87	44
Physical Environment Effects			
Section 4(f) Resources	0	0	0
Impacts to Voluntary Agricultural Districts	0	1	1
Prime Farmland (acres)	TBD*	TBD*	TBD*
Known Potential Hazardous Materials Sites (number)	Low Impact 3 sites	Low Impact 3 sites	Low Impact 3 sites
Natural Environment Effects			
Ponds	0	0	0
Stream Impacts (linear feet) [#]	2,398	3,090	2,389
Wetland Impacts (acres) [#]	3.2	6.3	4.6
FEMA Floodplain Impacts (acres)	3.29	5.05	3.16
Federally Protected Species (Wood Stork)**	MA/NLAA***	MA/NLAA***	MA/NLAA***
Impacts to Forested Acres	20.19	35.76	23.39
Costs (\$ 2013)			
Construction Costs	\$22,500,000	\$46,500,000	\$28,100,000
Utility Relocation Costs (including water and sewer relocation costs)	\$2,149,282	\$2,624,545	\$2,624,545
Right-of-Way Costs	\$10,925,000	\$15,140,000	\$15,140,000
Total	\$35,574,282	\$63,864,545	\$45,864,545

[#] Impacts to streams and wetlands are calculated from slope stake to slope stake, plus an additional 25 feet outside of each limit as determined from preliminary design plans for each alternative.

* In accordance with FPPA, an NRCS farmland conversion form will be finalized by NCDOT during development of the final environmental document and will be submitted to the NRCS for further analysis.

** To be determined based on surveys to be completed after the LEDPA/Preferred Alternative is chosen.

*** MA/NLAA – May Affect/Not Likely to Adversely Affect the Wood stork.



The proposed project primarily involves improving an existing road, which crosses streams. Wetlands are adjacent to the existing road, as well. Total avoidance of streams and wetlands by the project is not feasible. NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable when choosing a preferred alternative and during project design. At this time, no final decisions have been made with regard to the location or design of the preferred alternative. Once a final decision has been rendered on the location of the preferred alternative, NCDOT will investigate potential on-site stream and wetland mitigation opportunities. If on-site mitigation is not feasible, mitigation will be provided by the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP).

This project is using the Section 404/NEPA Merger Process (Merger Process) to streamline the project development and permitting process, agreed to by the USACE, North Carolina Department of Environment and Natural Resources (NCDENR)-NCDWR, Federal Highway Administration (FHWA), and NCDOT, and supported by other stakeholder agencies and local units of government. To this effect, the Merger Process provides a forum for appropriate agency representatives to discuss and reach consensus on ways to facilitate meeting the regulatory requirements of Section 404 of the Clean Water Act during the NEPA decision-making phase of transportation projects. Cooperating agencies included in the Merger Process of this project are as follows:

- FHWA
- USACE
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service
- NC Division of Water Resources
- NC Division of Marine Fisheries
- NC Division of Coastal Management
- NC Wildlife Resource Commission
- State Historic Preservation Office
- Cape Fear Rural Planning Organization
- NCDOT

The points of contact for this project for FHWA and NCDOT are:

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Table of Contents

Executive Summary	i
1 DESCRIPTION OF PROPOSED ACTION	1-1
1.1 General Description	1-1
1.2 Schedule and Cost.....	1-1
2 PURPOSE AND NEED FOR PROJECT	2-1
2.1 Purpose of Project.....	2-1
2.2 Need for Project	2-1
2.2.1 Study Area	2-2
2.2.2 Description of Existing Conditions.....	2-2
2.2.3 Transportation and Land Use Plans	2-7
2.2.4 Regional Travel Patterns.....	2-8
2.3 Benefits of Proposed Project.....	2-8
3 ALTERNATIVES.....	3-1
3.1 No Build Alternative.....	3-1
3.2 Alternative Modes of Transportation.....	3-1
3.2.1 Alternative Modes of Travel.....	3-1
3.2.2 Traffic Management Alternative.....	3-2
3.3 Build Alternatives	3-2
3.3.1 <i>Alternative 1</i> - Improved Two-Lane Section	3-3
3.3.2 <i>Alternative 2</i> - Four-Lane Median-Divided Section	3-3
3.3.3 <i>Alternative 3</i> - Expanded Two-Lane Section	3-3
3.3.4 Alternatives Eliminated.....	3-3
3.4 Alternatives Evaluation.....	3-4
3.4.1 Alternatives Evaluation Matrix.....	3-4
3.5 NCDOT Recommended Alternatives	3-4
4 PROPOSED IMPROVEMENTS.....	4-1
4.1 Roadway Cross-Section and Alignment	4-1
4.1.1 Roadway Cross-Section	4-1
4.1.2 Roadway Alignment	4-1
4.2 Right-of-Way and Access Control.....	4-1
4.3 Speed Limit.....	4-2



4.4	Design Exceptions	4-2
4.5	Intersections and Interchanges	4-2
4.6	Structures	4-4
4.7	Bicycle and Pedestrian Facilities	4-6
4.8	Utilities.....	4-6
4.9	Noise Barriers	4-6
4.10	Work Zone, Traffic Control, and Construction Phasing	4-6
4.11	Traffic Analysis	4-6
5	ENVIRONMENTAL EFFECTS OF PROPOSED ACTIONS.....	5-1
5.1	Natural Resources	5-1
5.1.1	Biotic Resources	5-1
5.1.2	Waters of the United States.....	5-5
5.1.3	Rare and Protected Species	5-12
5.1.4	Topography and Soils	5-16
5.2	Cultural Resources	5-17
5.2.1	Compliance	5-17
5.2.2	Historic Architectural Resources	5-17
5.2.3	Archaeological Resources.....	5-17
5.3	Section 4(f) and Section 6(f) Resources.....	5-18
5.4	Farmland	5-18
5.5	Social Effects	5-19
5.5.1	Neighborhoods/Communities	5-19
5.5.2	Community Demographics	5-20
5.5.3	Transportation and Land Use Plans	5-21
5.5.4	Relocation of Residences and Businesses.....	5-23
5.5.5	Environmental Justice	5-23
5.5.6	Limited English Proficiency	5-24
5.5.7	Bicycle and Pedestrian Facilities	5-25
5.5.8	Parks and Recreational Facilities	5-25
5.5.9	Other Public Facilities and Services	5-25
5.6	Economic Effects	5-26
5.7	Land Use	5-27
5.7.1	Existing Land Use and Zoning.....	5-27



5.7.2	Future Land Use and Planning.....	5-27
5.7.3	Community Cohesion	5-28
5.7.4	Project Compatibility with Local Plans	5-29
5.8	Indirect and Cumulative Effects	5-29
5.8.1	Indirect Summary Statement.....	5-29
5.8.2	Indirect Effects Screening.....	5-30
5.8.3	Indirect Effects Screening Results	5-32
5.8.4	Water Quality Statement.....	5-33
5.8.5	Cumulative Effects Summary Statement	5-33
5.9	Flood Hazard Evaluation	5-34
5.10	Traffic Noise Analysis	5-35
5.10.1	Title 23 Code of Federal Regulations Part 772 (23 CFR 22).....	5-35
5.10.2	Traffic Noise Impacts and Noise Contours.....	5-35
5.10.3	No Build Alternative.....	5-35
5.10.4	Traffic Noise Abatement Measures	5-36
5.10.5	Noise Barriers	5-36
5.10.6	Traffic Noise Analysis Summary.....	5-36
5.11	Air Quality Analysis	5-37
5.11.1	Attainment Status.....	5-37
5.11.2	Mobile Source Air Toxics (MSAT).....	5-37
5.11.3	Summary	5-41
5.12	Utilities.....	5-41
5.13	Hazardous Materials	5-41
5.14	Summary of Environmental Effects.....	5-42
6	PUBLIC INVOLVEMENT AND AGENCY COORDINATION.....	6-1
6.1	Public Involvement	6-1
6.1.1	Citizens Informational Workshop.....	6-1
6.1.2	Public Hearing	6-2
6.2	Agency Coordination	6-2
6.2.1	Section 404/NEPA Merger Process	6-2
6.2.2	Concurrence Point 1 (CP1)	6-3
6.2.3	Concurrence Point 2 (CP2)	6-3
6.2.4	Concurrence Point 2A (CP2A)	6-4



6.2.5	Future Section 404/NEPA Merger Process and Concurrence.....	6-4
6.4	Other Coordination	6-4
7	REFERENCES	7-1

TABLES

Table ES-1: Detailed Study Alternatives Environmental Effects Summary.....	iii
Table 2-1: Intersections Within the Study Area.....	2-4
Table 2-2: 2035 No Build Intersection Level of Service (LOS).....	2-5
Table 2-3: Crash Analysis for Midway and Galloway Roads.....	2-6
Table 3-1: Detailed Study Alternatives Environmental Effects Summary	3-5
Table 4-1: Proposed Major Stream Crossing Structures.....	4-5
Table 4-2: 2035 Build Intersection Level of Service (LOS).....	4-7
Table 5-1: Terrestrial Communities in the Study Area.....	5-1
Table 5-2: Impacts to Terrestrial Communities	5-3
Table 5-3: Jurisdictional Streams in the Study Area.....	5-6
Table 5-4: Jurisdictional Stream Characteristics.....	5-7
Table 5-5: Impacts to Jurisdictional Streams.....	5-8
Table 5-6: Jurisdictional Wetlands in the Study Area	5-9
Table 5-7: Impacts to Jurisdictional Wetlands (Acres).....	5-10
Table 5-8: Federally Protected Species listed for Brunswick County	5-13
Table 5-9: Soils in the Study Area.....	5-17
Table 5-10: Relocations	5-23
Table 5-11: Community Services in the Study Area	5-26
Table 5-12: Predicted Traffic Noise Impacts by Alternative.....	5-35
Table 5-13: Hazardous Sites in the Study Area	5-42

FIGURES

Figure 1	Project Vicinity Map
Figure 2	Project Features Map
Figure 3	Typical Sections
Figure 4	Traffic Forecast Map (2011/2035 AADT)



APPENDICES

Appendix A	Figures
Appendix B	Comments from Federal, State, and Local Agencies/Merger Forms
Appendix C	Relocation Report
Appendix D	Farmland Forms



1 DESCRIPTION OF PROPOSED ACTION

1.1 General Description

The North Carolina Department of Transportation (NCDOT), in consultation with the Federal Highway Administration (FHWA), proposes to improve SR 1500 (Midway Road) and SR 1401 (Galloway Road) between US 17 Bypass and NC 211 near Bolivia in Brunswick County. NCDOT initiated studies for this improvement project in accordance with the requirements set forth in the National Environmental Policy Act (NEPA) of 1969, as amended. The project vicinity is shown on **Figure 1** (all referenced figures are included in Appendix A).

NCDOT evaluated four design alternatives for this project including an improved two-lane roadway, a four-lane median divided roadway, expanded two-lane roadway (on four-lane right of way), and three-lane roadway (on four-lane right of way). A No Build Alternative and Alternative Modes of Transportation were also evaluated.

Regardless of the alternative selected, each of the build alternatives will replace two structurally deficient bridges. In addition, approximately 2,500 feet of Midway Road and 1,200 feet of Galloway Road will be relocated to the west to replace the current offset intersection with a single intersection.

The total length of the proposed project is 7.63 miles.

1.2 Schedule and Cost

This project is included in the approved 2012-2018 North Carolina State Transportation Improvement Program (STIP) and in the 2013-2023 Draft STIP. The STIP total budget allocation is \$54,922,000, which includes \$18,725,000 for right of way (ROW) acquisition, \$1,780,000 for utility relocation, \$417,000 for mitigation, and \$34,000,000 for construction costs. ROW acquisition is scheduled for Federal Fiscal Year (FFY) 2019 with construction listed as “post-year” in the 2012-2018 STIP, meaning that these phases will not begin until after FFY 2020.



2 PURPOSE AND NEED FOR PROJECT

2.1 Purpose of Project

The purpose of the proposed project is to “*improve safety and operational characteristics of Midway Road and Galloway Road and to facilitate weather-related evacuations and general emergency response events.*”

2.2 Need for Project

The need for the proposed project is based on the following deficiencies:

Safety

At several locations along this project, the existing horizontal alignment does not meet current standards (e.g., curves with sharp radii that do not meet the statutory speed limits), which contributes to the high number of lane departure crashes along this facility (84 over a 5-year period, or 43% of the total number of crashes).

From May 1, 2009 to April 30, 2011, seven accidents were reported at the intersection of SE 1401 (Galloway Road) with US 17 Business, and six accidents were reported at the intersection of SE 1500 (Midway Road) with US 17/US 17 Business. The intersections of SR 1500 (Midway Road) and SR 1401 (Galloway Road) with US 17 Business are offset from each other.

Two bridges along this facility are structurally deficient and in need of replacement.

Emergency Response & Evacuation

This corridor provides connections to NC 211 and US Highway 17 Bypass, both designated hurricane evacuation routes. As observed during post-hurricane conditions, other similar facilities in the area, such as NC 211, NC 87, and NC 133, have a history of flooding problems, which can hamper emergency response. SR 1500 (Midway Road), on the other hand, is typically found to be one of the least flood-prone roadways in the area, with elevations ranging from 25 to 50 feet above mean sea level, thus providing an ideal route for evacuation traffic, as well as a reliable artery for emergency responders.

Additionally, a plume exposure pathway Emergency Planning Zone (EPZ) for the Brunswick Nuclear Plant has been delineated as a 10-mile radius around the plant for evacuation planning and protection during radiological emergencies. Approximately three-quarters of the subject project is included in the EPZ. Duke Energy operates a shelter in Bolivia near the northern project terminus, as well as an Emergency Operating Facility (EOF) at the Brunswick County Government Center. During events, travel is required on Midway Road between the EOF, the government center, and the power plant.



2.2.1 Study Area

For the purposes of this project, the study area has been defined as a buffer of the project corridor that varies in width from 500 feet near the intersection with NC 211 in the south to nearly 2,300 feet in the vicinity of US 17 Business.

2.2.2 Description of Existing Conditions

2.2.2.1 Functional Classification

Midway Road (SR 1500) and Galloway Road (SR 1401) are classified as major collector roadways, connecting both county and statewide hurricane evacuation routes (NC 211 & US 17) as well as providing access to coastal destinations.

2.2.2.2 Project History

This project was originally identified in the *2001 Brunswick County Thoroughfare Plan* (NCDOT and Brunswick County Planning Department, 2001). The upgrade of Midway Road was identified as a need in that document due to the impact of future traffic volumes resulting from the construction of the second bridge to Oak Island (STIP Project R-2245). The Thoroughfare Plan also discussed the need for safety improvements related to sight distance at several intersections.

The proposed improvements to Midway Road and Galloway Road are included in the NCDOT approved 2012-2020 STIP as Project R-3434. Additionally, this project is listed in the *2010 Brunswick County Comprehensive Transportation Plan* (CTP; NCDOT, 2010) as a “major thoroughfare that needs improvements,” with the recommendation to widen Midway Road and Galloway Road to a multi-lane major thoroughfare from NC 211 to the US 17 Bypass.

2.2.2.3 Physical Description of Existing Facility

Structures

There are seven (7) existing major drainage structures along the existing facility, three (3) bridges (Bridges # 23, 25, and 104) and four (4) culverts.

- Bridge No. 23 was constructed in 1952 and crosses Sarah Hole Creek. This two-lane structure is approximately 37 feet in length (two spans of 18 feet, 6 inches) and is located 0.1 miles south of SR 1501. This bridge has a sufficiency rating of 6 and is structurally deficient.
- Bridge No. 25 was constructed in 1951 and crosses River Swamp (Midway Branch). This two-lane structure is approximately 80 feet in length (four spans of 20 feet, 4 inches) located 0.1 mile south of SR 1506. This bridge was replaced independently from this project as part of a design-build contract under the 17BP State-Funded Bridge Replacement program. This bridge has a sufficiency rating of 95.1.
- Bridge No. 104 was constructed in 1951 and crosses Middle Swamp. This two-lane structure is approximately 55 feet in length (3 spans of approximately 18 feet, 5 inches) and is located approximately 0.7 miles of the intersection with US 17 Business. Replacement of Bridge #104 over Middle Swamp is included in the NCDOT Current State Transportation Improvement



Program (STIP, November 2013) as a separate project (STIP B-5311). This bridge has a sufficiency rating of 5 and is structurally deficient.

Roadway Cross-Section

In 2011, NCDOT Highway Division 3 staff completed some resurfacing and shoulder work along Midway Road, increasing pavement and shoulder widths. Currently, Midway Road and Galloway Road are both two-lane facilities with twelve-foot lanes and variable grass shoulders (1.5 and 2-feet) within a 60-foot right of way. The intersection of the two roads at US 17 Business is offset by approximately 700 feet, with Galloway Road intersecting US 17 Business to the east of its intersection with Midway Road.

Horizontal and Vertical Alignment

Because of the surrounding geography and rural character within the study area, the horizontal alignment of Midway and Galloway roads is primarily straight; however, several curves on Midway Road are currently too sharp for the statutory speed limit of 55 mph. Although yellow warning signs advise travelers of the upcoming curves and post a cautionary speed limit in the approaches, numerous crashes have occurred in the vicinity of these curves. The latest crash rate analysis conducted by NCDOT determined that approximately 43 percent of the overall crashes along the corridor are classified as “lane-departure crashes,” which generally include run-off road, fixed object, head-on, sideswipe opposite direction, and overturn crashes. The presence of curves in combination with narrow shoulders and unsafe operating speeds of the vehicles were the contributors to these crashes.

The vertical alignment for both roads can be classified as level terrain, with mostly flat grades (<2%).

Right of Way and Access Control

The existing right of way along Midway and Galloway roads is 60 feet, with no control of access.

Speed Limit

Midway and Galloway roads do not have posted speed limits; therefore, the statutory maximum speed limit of 55 mph outside of municipal corporate limits (G.S. 20-141) applies to both roads.

Intersections and Interchanges

The seven study intersections included in the study area are shown in **Figure 2** and listed in **Table 2-1** below. No interchanges are located in the project vicinity.



Table 2-1: Intersections Within the Study Area

No.	Intersection Location
1	Midway Road/NC 211
2	Midway Road/Gilbert Road
3	Midway Road/Green Lewis Road
4	Midway Road/Government Center Complex*
5	Midway Road/US 17 Business
6	Galloway Road/US 17 Business
7	Galloway Road/US 17 Bypass

*outside of the study area but included in the capacity analysis

Bicycle and Pedestrian Facilities

No bicycle or pedestrian facilities currently exist along Midway Road or Galloway Road.

Utilities

The following provides a brief summary of the utilities in the study area:

Electric:

Brunswick Electric Membership Corporation (BEMC) provides electrical service to businesses and residences along Midway and Galloway roads through a combination of above ground and below ground distribution lines. Service distribution lines are located primarily along the west side of both Midway and Galloway roads. In addition, a power substation is located in the northeast quadrant of the intersection of Midway Road and NC 211 in the study area.

Telephone, Cable, and Fiber Optics:

Local telephone service and a wide variety of additional services, (including high speed Internet, cable TV, wireless, business communications, and security services for businesses and residences located within the study area) are provided by Atlantic Telephone Membership Corporation, AT&T, Time Warner Cable, and Tele-Media Company.

Water Lines:

Brunswick County Utilities Department operates and maintains Lower Cape Fear Water & Sewer Authority's raw water intake pump station. In addition, the county government processes potable drinking water for county residents and businesses and operates the wastewater facilities for the Brunswick County Complex and Leland Industrial Park. The county maintains a 12-inch water main service line along Midway and Galloway roads.



Sewer Lines:

No sanitary or storm sewer utilities exist within the study area. Residences and businesses use septic systems for waste disposal.

2.2.2.4 School Bus Usage

The wider area surrounding the study area includes one high school, two middle schools, and two elementary schools. Brunswick County Schools has a total of 20 buses that use all or parts of Galloway and Midway roads every day (ten in the morning and ten in the evening).

2.2.2.5 Traffic Volumes and Capacity Analysis

In 2011, average annual daily traffic (AADT) on Midway Road and Galloway Road ranged between 1,700 and 5,000 vehicles per day (vpd) (see Figure 4), with estimated summer peak volumes between 1,955 and 5,750 vpd. The highest volumes are located closer to NC 211.

Traffic volumes for 2035 on Midway and Galloway roads are projected to range from 3,500 vpd to 10,200 vpd (see Figure 4), with estimated summer peak volumes varying between 4,025 and 11,730 vpd.

The 2035 No Build conditions intersection capacity analysis indicates that the projected Level of Service (LOS) along the mainline of this roadway (using a 2-lane analysis) is expected to operate at LOS E in the year 2035 without the proposed improvements. **Table 2-2** below provides greater detail on the current LOS for intersections and those expected in 2035.

Table 2-2: 2035 No Build Intersection Level of Service (LOS)[#]

Mainline	Intersecting Road (Y-line)	2011 LOS* No Build Scenario	2035 LOS* No Build Scenario
Galloway Road	US 17 Bypass	F* [#] (unsignalized)	F* [#] (unsignalized)
Galloway Road	US 17 Business	B* [#] (unsignalized)	F* [#] (unsignalized)
Midway Road	US 17 Business	C* [#] (unsignalized)	F* [#] (unsignalized)
Midway Road	Gov't Center Complex	E* [#] (unsignalized)	F* [#] (unsignalized)
Midway Road	Green Lewis Church Road	B* [#] (unsignalized)	C* [#] (unsignalized)
Midway Road	Gilbert Road	B* [#] (unsignalized)	C* [#] (unsignalized)
Midway Road	NC 211	D (signalized)	E (signalized)

[#] LOS is based on average annual traffic volumes, not summer peak volumes.

* Highway Capacity Software does not provide overall LOS for unsignalized intersections, worst movement reported.

2.2.2.6 Crash Analysis

NCDOT conducted a crash rate analysis for Midway and Galloway roads that compared the number and types of crashes reported for the project corridor between June 1, 2007, and May 31, 2012, with the



statewide averages for a similarly classified roadway (2-lane undivided, rural secondary route). **Table 2-3** shows the results of this comparison for the analyzed section of Midway and Galloway roads versus the 2009-2011 statewide crash rates, as well as the calculated critical rate with a 95% level of confidence for a comparable route type and configuration. The above average accident rates suggest that safety and operational deficiencies may exist along this particular section of these roadways.

From May 1, 2009 to April 30, 2011, seven accidents were reported at the intersection of SR 1401 (Galloway Road) with US 17 Business, and six accidents were reported at the intersection of SR 1500 (Midway Road) with US 17/US 17 Business. The intersections of SR 1500 (Midway Road) and SR 1401 (Galloway Road) with US 17 Business are offset from each other.

Table 2-3: Crash Analysis for Midway and Galloway Roads

Midway Road				
Rate	Crashes	Crashes per 100 MVM	Statewide Rate*	Critical Rate**
Total	168	390.78	362.90	411.86
Fatal	0	0.00	3.13	8.73
Non-Fatal	43	100.02	107.73	134.93
Night	73	169.80	151.35	183.38
Wet	33	76.76	55.80	75.70
Galloway Road				
Rate	Crashes	Crashes per 100 MVM	Statewide Rate*	Critical Rate**
Total	16	492.82	362.90	552.11
Fatal	0	0.00	3.13	34.66
Non-Fatal	6	184.81	107.73	217.82
Night	5	154.01	151.35	278.99
Wet	1	30.80	55.80	139.35

*2009-2011 Statewide Crash rate for 2-Lane Undivided, Rural Secondary Route (SR)

**Rate is based on the statewide crash rate (95% level of confidence). The critical rate is a statistically derived value against which a calculated rate can be compared to see if the rate is above an average far enough to indicate that something other than chance is the cause.

2.2.2.7 Airports

The Brunswick County Airport, also referred to as the Cape Fear Regional Jetport, is a general aviation facility located southeast of the study area along NC 133 (Long Beach Road), 4.3 miles from the intersection of Midway Road and NC 211. The nearest commercial passenger service airport, Wilmington International Airport, is located in Wilmington, NC, approximately thirty miles from the intersection of NC 211 and Midway Road.

2.2.2.8 Other Highway Projects in the Area

The NCDOT 2012-2018 STIP lists two projects within close proximity to the project. STIP Project R-5021 consists of widening NC 211 to multi-lanes from NC 87 to SR 1500 (Midway Road) and STIP Project B-5311 proposes to replace Bridge No. 104 at Middle Swamp. Bridge No. 25 is currently being



replaced independently from this project as part of a design-build contract under the 17BP State-Funded Bridge Replacement program.

In 2011, NCDOT Division 3 staff completed some resurfacing and shoulder work along parts of Midway and Galloway roads, increasing pavement and shoulder widths. No changes were made to the roads' horizontal alignments. Currently, several substandard curves on Midway Road require yellow warning signs advising travelers of the upcoming curves and posting a cautionary speed limit in the approaches.

2.2.3 Transportation and Land Use Plans

2.2.3.1 NCDOT State Transportation Improvement Program

NCDOT's 2012-2018 STIP includes Project R-3434 that proposes improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road), replacement of Bridge Numbers 23 and 25, and improvements of the intersections of Midway Road, Galloway Road, and US 17 Business. This project is referred to as the Midway Road Improvements.

Furthermore, R-3434 is intended to complement STIP R-5021 (improvements to NC 211) and the recently completed Second Bridge to Oak Island in the provision of greater mobility. R-3434 is currently scheduled for ROW acquisition in 2019 and post-year construction.

2.2.3.2 Local Thoroughfare Plans

The *2010 Brunswick County Transportation Plan* (NCDOT, 2010) includes recommendations for multi-modal transportation improvements throughout the county. The plan identifies Galloway and Midway roads for roadway improvements. The plan also recommends Galloway and Midway roads as proposed bike routes.

2.2.3.3 Design Deficiencies

At several locations along the project corridor, the existing horizontal alignment does not meet current design standards, including curves with radii that are too sharp for statutory speed limits. These curves contribute to the high number of lane-departure crashes along this facility (50 over a 5-year period, or 43% of the total number of crashes).

2.2.3.4 Emergency Planning

This corridor connects NC 211 and US Highway 17 Bypass, both designated hurricane evacuation routes. As observed during post-hurricane conditions, similar facilities in the area, such as NC 211, NC 87, and NC 133, have a history of flooding problems, which can hamper emergency response. In contrast, Midway Road is typically one of the least flood-prone roadways in the area, with elevations ranging from 25 to 50 feet above mean sea level, thus providing an ideal exit valve for evacuation traffic, as well as a reliable artery for emergency responders.

Approximately 75% of the study area is located within a plume exposure pathway Emergency Planning Zone (EPZ) for the Brunswick Nuclear Plant. The EPZ has been delineated as a 10-mile radius around the plant for evacuation planning and protection during radiological emergencies. Duke Energy Progress operates a shelter in Bolivia near the northern project terminus, as well as an Emergency Operating



Facility (EOF) at the Brunswick County Government Center. During events, travel is required on Midway Road between the EOF, the government center, and the power plant.

2.2.4 Regional Travel Patterns

Midway Road and Galloway Road serve an important role in regional access to area beach communities, including Southport, Oak Island, and St. James.

With the opening of the Second Bridge to Oak Island, Midway and Galloway roads have experienced an increased role in regional access to the beach, as the northern terminus of the Second Bridge is located directly across NC 211 from Midway Road. The proposed improvements will improve safety travel times along the corridor.

2.3 Benefits of Proposed Project

The proposed widening and realignment of Midway and Galloway roads will address the purpose and need stated above. In summary, the following are the primary benefits of this project:

- Improve safety and operational characteristics of Midway and Galloway roads.
- Better facilitate weather-related evacuations and general emergency response to the study area.
- Enhance access to and from Oak Island for local and seasonal population.



3 ALTERNATIVES

NCDOT evaluated numerous alternatives for this project including a No Build Alternative (including only scheduled maintenance and resurfacing); Alternative Modes of Travel; and multiple Build Alternatives.

Provided below is a summary of the alternatives considered, along with a description of the evaluation process utilized in the selection of the Detailed Study Alternatives. Environmental impacts associated with the Detailed Study Alternatives are presented in Chapter 5 of this document.

3.1 No Build Alternative

The No Build Alternative analysis investigated future conditions if no transportation improvements are realized. During the evaluation of this alternative, NCDOT determined that the No Build Alternative would:

- Not improve the safety or traffic-carrying capacity of Midway and Galloway roads.
- Continue to adversely impact safety regarding weather-related evacuations and general emergency response events.

The result of these findings indicates that this alternative would not address the purpose and need for the project; therefore, it was dropped from further consideration. However, it is used as a basis for comparison to other alternatives.

3.2 Alternative Modes of Transportation

3.2.1 Alternative Modes of Travel

The 2010 Brunswick County CTP includes recommendations for multi-modal transportation improvements throughout the county. The plan identifies Galloway and Midway roads for roadway improvements. The plan also recommends Galloway and Midway roads as proposed bike routes.

Currently, fixed-route transit services do not operate within the project area. However, the Brunswick Transit System (BTS) offers non-emergency, point-to-point transportation services for all Brunswick County residents.

The Brunswick County CTP does not include plans for public transportation or rail improvements. Although the Plan indicates the need to coordinate with the NC Ports Authority on improvements that might result from the proposed international port facility near Southport, the plans for this facility have been abandoned.

While adding or improving existing bike routes, establishing transit services and public transportation services, and expanding existing fixed-route transit service may improve the capacity capability of the existing Midway and Galloway Road corridor, NCDOT determined that it would not address the existing horizontal alignment deficiencies, nor would it provide enough of an improvement to the capacity



capabilities of the road network in order to meet the project purpose; therefore, this Alternative was dropped from further consideration.

3.2.2 Traffic Management Alternative

One of the primary purposes for the proposed project is to improve operational efficiencies in the event of emergencies and weather-related evacuations. At present no traffic management alternatives, including Traffic Demand Management (TDM) or Transportation Systems Management (TSM), exist which would sufficiently address the present and emerging need for improvement of the Midway and Galloway Road corridor.

3.3 Build Alternatives

NCDOT evaluated three “build” alternatives as part of the project, all of which would widen the existing alignment of Midway and Galloway roads with some minimal new location required in areas where the horizontal alignment would be straightened and for the realignment of the Midway Road, Galloway Road, and US 17 Business intersection. All three alternatives include the replacement of two structurally deficient bridges along the corridor. The three alternatives are:

- **Alternative 1** – an improved two-lane section on two lanes of right of way.
- **Alternative 2** – a four-lane, median-divided section on four lanes of right of way.
- **Alternative 3** – an expanded, two-lane section on four lanes of right of way to accommodate hurricane evacuation and potential future widening.

Design speed for all three alternatives is 60 miles per hour (mph), and posted speed for all three alternatives would be 55 mph.

In order to provide safer traffic operations and system linkages between the Second Bridge to Oak Island and US 17 Bypass, the proposed improvements to Midway and Galloway roads would include upgrading both facilities with partial control of access for Alternative 2. Substandard curves would be realigned to improve the design speed of the roadway. Some of the intersecting roads would be realigned to intersect the project closer to 90 degrees to improve sight distances at these locations. In addition, the intersection of Midway and Galloway roads with US 17 Business would be realigned and possibly signalized to provide a single intersection that would improve traffic operation and safety.

This realignment would involve shifting Galloway Road onto a new location to the west from approximately 1,500 feet south of US 17 Bypass to the intersection of US 17 Business; and shifting Midway Road onto new location to the west from approximately 2,500 feet south of its current intersection with US 17 Business. The new intersection would be located approximately 1,200 feet west of the existing Midway Road-US 17 Business intersection.

Further south, the alignment of Midway Road would also shift slightly to the west onto new location from approximately 2,500 feet from the intersection of Lewis Loop to the intersection of Gilbert Road.



3.3.1 *Alternative 1 - Improved Two-Lane Section*

Alternative 1 includes upgrading the existing, two-lane horizontal alignment of Midway and Galloway roads to include eight-foot shoulders, of which four feet would be paved. The proposed ROW for Alternative 1 is 100 feet (see **Figure 2**).

3.3.2 *Alternative 2 - Four-Lane Median-Divided Section*

Alternative 2 includes widening the existing two-lane facility to a four-lane, median-divided facility and upgrading the horizontal alignment to current standards. The proposed cross-section for Alternative 2 would include a 23-foot median. Median cuts allowing left turns would be included; however, the location of these median cuts has not been determined. In order to provide safer traffic operations and system linkages between the Second Bridge to Oak Island and US 17 Bypass, the proposed improvements to Midway and Galloway roads would include upgrading both facilities with partial control of access. The proposed ROW for Alternative 2 is 150 feet (see **Figure 2**).

3.3.3 *Alternative 3 - Expanded Two-Lane Section*

Alternative 3 was added for consideration during the October 11, 2012, Section 404/NEPA Merger Team (Merger Team) meeting and proposes to upgrade the existing, two-lane horizontal alignment of Midway and Galloway roads to include six-foot paved shoulders on four lanes of ROW in order to accommodate emergency vehicles and/or evacuation traffic (setting up temporary cones to allow for two lanes of travel in one direction and one in the other). The proposed ROW for Alternative 3 is 150 feet (see **Figure 2**) to allow for further widening to multi-lanes.

3.3.4 *Alternatives Eliminated*

3-Lane Roadway

A fourth alternative, 3-lanes on 4-lane right-of-way, was initially considered as part of this proposed project. It included widening the existing two-lane roadway to three-lanes, with a dedicated center turn lane, and upgrading the horizontal alignment to current standards.

NCDOT typically utilizes 3-lane sections to address congestion related to a high volume of left turns, which is more prevalent in urban areas rather than rural areas such as this one. Due to the surrounding rural nature of the proposed project area, improving Midway and Galloway roads to a 3-lane roadway section would likely result in the center turn lane being utilized as a high-speed passing lane, which invites misuse and creates safety concerns. Therefore, NCDOT determined that improving Midway and Galloway roads to a 3-lane roadway would not be a suitable design improvement, particularly given the length of the project, the surrounding rural nature of the project area, and the overall concerns about the potential safety hazards related to the center turn lane. For these reasons, NCDOT and the Merger Team eliminated the 3-lane alternative from further consideration.



3.4 Alternatives Evaluation

3.4.1 Alternatives Evaluation Matrix

Table 3-1 shows a list of resources and how they will be impacted by each alternative.

3.5 NCDOT Recommended Alternatives

Currently, NCDOT has not chosen a recommended alternative.

This information will be presented to the community and local project stakeholders at a corridor public hearing, after the completion of the Environmental Assessment. Copies of this EA will also be distributed to federal, state and local project stakeholders. Subsequent to the corridor public hearing, a recommended alternative will be identified. This recommended alternative will be presented to the Merger Team at the CP 3 meeting. At this meeting, the Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative will be chosen.



Table 3-1: Detailed Study Alternatives Environmental Effects Summary

Category	Alternative 1 (2-Lane)	Alternative 2 (4-Lane)	Alternative 3 (2-Lane Enhanced)
Project Description			
Project Length (miles)	7.63	7.63	7.63
Human Environment Effects			
Community Facilities Impacted	0	0	0
Total Residential Relocations (number)	6	14	14
Total Business Relocations (number)	1	2	2
Total Relocations of Places of Worship (number)	1	1	1
Low Income / Minority Populations (Adverse/Disproportionate)	Low	Low	Low
Noise Impacts (number of impacted receptors)	63	87	44
Physical Environment Effects			
Section 4(f) Resources	0	0	0
Impacts to Voluntary Agricultural Districts	0	1	1
Prime Farmland (acres)	TBD*	TBD*	TBD*
Known Potential Hazardous Materials Sites (number)	Low Impact 3 sites	Low Impact 3 sites	Low Impact 3 sites
Natural Environment Effects			
Ponds	0	0	0
Stream Impacts (linear feet) [#]	2,398	3,090	2,389
Wetland Impacts (acres) [#]	3.2	6.3	4.6
FEMA Floodplain Impacts (acres)	3.29	5.05	3.16
Federally Protected Species (Wood Stork)**	MA/NLAA***	MA/NLAA***	MA/NLAA***
Impacts to Forested Acres	20.19	35.76	23.39
Costs (\$ 2013)			
Construction Costs	\$22,500,000	\$46,500,000	\$28,100,000
Utility Relocation Costs (including water and sewer relocation costs)	\$2,149,282	\$2,624,545	\$2,624,545
Right-of-Way Costs	\$10,925,000	\$15,140,000	\$15,140,000
Total	\$35,574,282	\$63,864,545	\$45,864,545

[#] Impacts to streams and wetlands are calculated from slope stake to slope stake, plus an additional 25 feet outside of each limit as determined from preliminary design plans for each alternative.

** * In accordance with FPPA, an NRCS farmland conversion form will be finalized by NCDOT during development of the final environmental document and will be submitted to the NRCS for further analysis

** To be determined based on surveys to be completed after Least Environmentally Damaging Practicable Alternative (LEDPA)/Preferred Alternative is chosen

***MA/NLAA – May Affect/Not Likely to Adversely Affect the Wood stork

All three alternatives would cross the 100-year floodplain in two locations.



4 PROPOSED IMPROVEMENTS

The three Detailed Study Alternatives were described in Chapter 3. Depending on the alternative selected, improvements to Midway and Galloway roads will include widening the existing roadway to improve roadway design deficiencies; realigning the intersection of Midway and Galloway roads and US 17 Business; making improvements to problematic segments and sight lines; and replacing two bridges along the corridor. This chapter provides a summary of the improvements associated with the Detailed Study Alternatives.

4.1 Roadway Cross-Section and Alignment

4.1.1 Roadway Cross-Section

The proposed roadway typical section for Alternative 1 includes two 12-foot travel lanes with eight-foot shoulders, of which four feet would be paved. All typical sections are shown in **Figure 3**.

For Alternative 2, the proposed roadway typical section would include four 12-foot travel lanes (two in each direction) separated by a 23-foot raised median dividing the highway. In addition, 8-foot wide outside shoulders, of which four feet would be paved, are included in the design for this alternative. Breaks in the median allowing left turns would be included; however, the location of these breaks has not been determined.

Alternative 3 would include two 12-foot travel lanes with six-foot paved shoulders in order accommodate emergency vehicles and/or evacuation traffic. The paved roadway section would be wide enough to handle three lanes of traffic, but would only be striped for two lanes.

4.1.2 Roadway Alignment

All three alternatives would primarily be constructed on existing alignment, but some sections on new location would be included in order to improve substandard design. In addition, the realignment of Midway and Galloway roads to create a single intersection with US 17 Business would involve shifting Galloway Road to the west onto new location from approximately 1,500 feet south of US 17 Bypass to the intersection of US 17 Business; and shifting Midway Road to the west onto new location from approximately 2,500 feet south of its current intersection with US 17 Business. The new intersection would be located approximately 1,200 feet west of the existing Midway Road-US 17 Business intersection.

4.2 Right-of-Way and Access Control

The proposed right of way width is as follows:

- *Alternative 1* – 100 feet.
- *Alternative 2* – 150 feet.
- *Alternative 3* – 150 feet.



No change in the existing control of access is proposed under Alternatives 1 and 3; partial control of access is proposed for Alternative 2.

4.3 Speed Limit

Design speed for all three alternatives is 60 mph, and posted speed for all three alternatives is anticipated to be 55 mph.

4.4 Design Exceptions

No design exceptions are anticipated.

4.5 Intersections and Interchanges

Intersection improvements or new intersection facilities will be required for each of the Detailed Study Alternatives. NCDOT's Access Management Group of the Traffic Engineering Safety Systems Branch completed a comprehensive review of the roadway intersections in the project vicinity and recommended that the designs include the following in order to improve traffic operations and efficiency along Midway and Galloway roads:

Alternatives 1 and 3

- Midway Road/NC 211 – Maintain the existing configuration and signalized operation; the typical will reflect improvements made to this intersection under R-5021
- Midway Road/SR 1556 (Hewett Rd SE) – Minor realignment, maintain stop sign control
- Midway Road/SR 1501 (Gilbert Rd) – Minor realignment, maintain stop sign control
- Midway Road/SR 1506 (Lewis Loop Rd SE) - Minor realignment, maintain stop sign control
- Midway Road/SR1538 (Rutland Rd SE) – Minor realignment, maintain stop sign control
- Midway Road/SR 1512 (Green Lewis Rd SE) – Maintain stop sign control
- Midway Road/SR 1507 (Brown Rd SE) – Maintain stop sign control
- Midway Road/Albright Rd SE (SR 1508) – Maintain stop sign control
- Midway Road/Old Brunswick Rd SE – Minor realignment, maintain stop sign control
- Midway Road/SR 1511 (McKay Rd SE) – Minor realignment, maintain stop sign control.
- Midway Road/US 17 Business/Galloway Road – Midway and Galloway roads and US 17 Business would be realigned from their current configuration of off-setting intersections, to a new intersection approximately 1,200 feet south of the existing Midway Road/US 17 Business intersection. This new intersection would be analyzed during the final design phase of this



project to determine the possibility of providing a traffic signal. New right of way would be required at the intersection of Midway/Galloway roads and US 17 Business in order to accommodate this proposed new location intersection.

- Existing Galloway Road/US 17 Bypass – Maintain stop sign control
- Existing Midway Road/US 17 Bypass – Maintain stop sign control.

Alternative 2 has the same recommendations as Alternatives 1 and 3 except as follows:

- Midway Road/SR 1556 (Hewett Rd SE) –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Hewett Road to turn southbound onto Midway Road. Similarly, vehicles traveling northbound on Midway Road would not be able to turn westbound on Hewett Road.
- Midway Road/SR 1501 (Gilbert Rd) –A median opening would be constructed to allow this intersection to maintain its current, full movement access once the proposed improvements were constructed.
- Midway Road/SR 1506 (Lewis Loop Rd SE) - With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Lewis Loop Road to turn southbound onto Midway Road. Vehicles traveling northbound on Midway Road would not be able to turn westbound on Lewis Loop Road.
- Midway Road/SR1538 (Rutland Rd SE) –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Rutland Road to turn southbound onto Midway Road. Vehicles traveling northbound on Midway Road would not be able to turn westbound on Rutland Road.
- Midway Road/SR 1512 (Green Lewis Rd SE) –A median “break” would be constructed to allow this intersection to maintain its current, full movement access once the proposed improvements were constructed. In addition, a southbound left turn lane would be added along Midway Road to accommodate traffic turning eastbound onto Green Lewis Road.
- Midway Road/SR 1507 (Brown Rd SE) –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Brown Road to turn southbound onto Midway Road. Similarly, vehicles traveling northbound on Midway Road would not be able to cross the median to turn westbound on Brown Road.
- Midway Road/Albright Rd SE (SR 1508) –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Albright Road to turn southbound onto Midway Road. Vehicles traveling northbound on Midway Road would not be able to turn westbound on Albright Road.



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- Midway Road/Old Brunswick Rd SE –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on Old Brunswick Road to turn southbound onto Midway Road. Vehicles traveling northbound on Midway Road would not be able to turn westbound on Old Brunswick Road.
 - Midway Road/SR 1511 (McKay Rd SE) –With the inclusion of the 23-foot median in this alternative, this intersection would become a “right in-right out” intersection and would only allow for vehicles on McKay Road to turn southbound onto Midway Road. Vehicles traveling northbound on Midway Road would not be able to turn westbound on McKay Road.

4.6 Structures

Seven major stream crossings are associated with the proposed project. **Table 4-1** provides a summary of the proposed recommendations.



Table 4-1: Proposed Major Stream Crossing Structures

Site	Stream	Location	Drainage Area	Existing Structure	Proposed Structure
1	UT1 to River Swamp	SR 1500 – 0.5 miles north of NC 211	230 ac.	2 @ 60" CMP	2 @ 5'x6' RCBC buried 1' with low flow barrel on east side
2	UT2 to River Swamp	SR 1500 – 0.6 miles south of SR 1501	220 ac.	2 @ 54" CMP	1 @ 10'x6' RCBC buried 1' with baffles
3	Sarah Hole Creek	SR 1500 – 0.1 miles south of SR 1501	1,024 ac.	Bridge # 23; 2 span @ 18'-6", RC Floor on I-beams	70' bridge
4*	River Swamp (Midway Branch FEMA LDS)	SR 1500 – 0.1 miles south of SR 1506	10,432 ac.	Bridge # 25; 4 span @ 20'-4", RC Floor on I-beams	120' bridge SF-090025 under construction
5	Rattlesnake Branch	SR 1500 – 0.1 miles north of SR 1512	1,024 ac.	90" CMP	1 @ 10'x8' RCBC buried 1'
6	Gap Branch/ Half Hell Branch	SR 1500 – 0.5 miles south of SR 1511	704 ac.	110"x84" CAP	1 @ 12'x8' RCBC buried 1' & 1 @ 36" RCP
7**	Middle Swamp (FEMA LDS)	SR 1500 – 0.7 miles south of US 17 Bypass	4,992 ac.	Bridge #104; 3 span @ 18'-5" RC Floor on I-beams	165' bridge

* Bridge #25 is currently being replaced independently from this project as part of a design-build contract under the 17BP State-Funded Bridge Replacement program

**The NCDOT Current State Transportation Improvement Program (STIP, November 2013) includes the replacement of Bridge #104 over Middle Swamp as a separate project (STIP B-5311)

CMP – Corrugated Metal Pipe, RC – Reinforced Concrete, CAP – Corrugated Aluminum Pipe

RCBC – Reinforced Concrete Box Culvert

As part of the Concurrence Point 2A meeting, NCDOT also committed to extending the Middle Swamp Bridge beyond 165 ft, if necessary, to prevent permanent stream impacts to the Middle Swamp Stream in the final design.

The recommendations listed above are preliminary and are subject to change based on a more detailed analysis during the final design phase of the project. Preliminary sizes for bridges are based upon a minimum bridge offset and the preliminary sizes for culverts are based upon equal area conveyance or preliminary inlet control. The sizes and types of structures also reflect environmental stewardship measures agreed to by the project Merger Team during the Concurrence Point 2A meeting.



4.7 Bicycle and Pedestrian Facilities

Pedestrian Facilities

Currently, no sidewalks exist along Midway Road or Galloway Road, and no pedestrian facilities are present within the study area. Therefore, the construction of sidewalks is not included as part of the proposed improvements to Midway and Galloway roads.

Bicycle Facilities

Although the Brunswick County CTP recommends the implementation of on-road bicycle accommodations on Galloway and Midway roads, no bicycle lanes currently exist on these roads. Similarly, NC 211 is designated in the CTP as state bike route NC 3 Ports of Call Route; however, NC 211 does not currently include bicycle facilities. Four-foot paved shoulders are included as part of the proposed improvements to Midway and Galloway roads and will accommodate bicycle traffic on Midway and Galloway roads. The NCDOT Bicycle and Pedestrian Division prefers a five-foot shoulder be included for bicycle use along all thoroughfares. Inclusion of increased shoulder widths in R-3434 is consistent with the Brunswick County CTP. This would also support an anticipated increase in bicycle traffic due to recently improved access to Oak Island.

4.8 Utilities

Major utilities in the vicinity include water, sanitary sewer, electrical power, and fiber optic service. This project will result in some utility relocations as described in the included utility relocation estimate.

4.9 Noise Barriers

No noise abatement measures are proposed as part of this project.

4.10 Work Zone, Traffic Control, and Construction Phasing

Shifting of traffic to provide adequate construction clearance may be required during construction of the roadway approaches and connecting cross-streets. Traffic shifts may require temporary pavement widening and traffic control separation devices, such as temporary barriers or delineators; however, no off-site detours are anticipated.

4.11 Traffic Analysis

Based on the 2011 Capacity Analysis Review, Level of Service was developed for Alternatives 1 and 2. Table 4-2 shows the anticipated LOS for intersections in the study area.



Table 4-2: 2035 Build Intersection Level of Service (LOS)[#]

Mainline	Intersecting Road (Y-line)	2035 LOS* Build Alternative 1	2035 LOS* Build Alternative 2	2035 LOS* No Build Scenario
Galloway Road	US 17 Bypass	B (signalized)	B (signalized)	F* [#] (unsignalized)
Galloway Road	US 17 Business	Removed	Removed	F* [#] (unsignalized)
Midway Road	US 17 Business	C (signalized)	C (signalized)	F* [#] (unsignalized)
Midway Road	Gov't Center Complex	C (signalized)	C (signalized)	F* [#] (unsignalized)
Midway Road	Green Lewis Church Road	C* [#] (unsignalized)	B* [#] (unsignalized)	C* [#] (unsignalized)
Midway Road	Gilbert Road	C* [#] (unsignalized)	C* [#] (unsignalized)	C* [#] (unsignalized)
Midway Road	NC 211	D (signalized)	D (signalized)	E (signalized)

[#] LOS is based on average annual traffic volumes, not summer peak volumes.

* Highway Capacity Software does not provide overall LOS for unsignalized intersections, worst movement reported.



5 ENVIRONMENTAL EFFECTS OF PROPOSED ACTIONS

The environmental effects described below include the potential impacts on the existing human, physical, and natural environments. The inventory of existing conditions are based on information currently available from federal, state, and local agencies; field observations; and meetings with local officials and citizens. Reference is made to the study area, shown in yellow on **Figure 2**, and to the preliminary design plans for the three Detailed Study Alternatives described in Chapter 3.

5.1 Natural Resources

5.1.1 Biotic Resources

5.1.1.1 Terrestrial Communities

The predominant terrestrial areas found in the study area can be characterized as Maintained/ Disturbed, Agriculture, Young and Mixed Pine Forests, Clearcuts, Herb dominated rights-of-ways, a Mixed Pine Savanna, and a defunct lagoon spray field (see **Table 5-1**). The study area consists of a matrix of different community types, oftentimes with small patches scattered in and among one another. As a result, most of the faunal species observed are opportunistic species that will inhabit any and all of the terrestrial areas discussed. Faunal species observed within the study area are discussed following the community descriptions.

Table 5-1: Terrestrial Communities in the Study Area

Terrestrial Community Name	Coverage Area (acres)
Maintained/Disturbed	165.23
Agriculture	153.08
Young Pine Forest	33.6
Mixed Pine Forest	205.29
Clearcuts	57.13
Herb Dominated	2.26
Spray Fields	3.41
Mixed Pine Savanna	4.16
Total	624.16

Maintained/Disturbed

The Maintained/Disturbed areas include road shoulders, maintained yards, and commercial lots. Many plant species are adapted to these disturbed and regularly maintained areas. For purposes of simplifying this report, flora and fauna found in each of the individual components are incorporated into a general Maintained/Disturbed category. The dominant species within these areas include fescue (*Festuca* sp.), blackberry (*Rubus* spp.), goldenrod (*Solidago* sp.), poison ivy (*Toxicodendron radicans*), greenbriar (*Smilax* spp.), Japanese honeysuckle (*Lonicera japonica*), red maple (*Acer rubrum*), pokeweed (*Phytolacca americana*), smartweed (*Polygonum pensylvanicum*), and Asian clover (*Lespedeza* sp.).



Agriculture

Agricultural fields are present throughout the study area. The dominant crops in the study area appear to be corn and soybean.

Young Pine Forest

This community is found throughout much of the uplands within the study area. Typically, the diameter at breast height (dbh) of the pine trees is at or below five inches. Most of the Young Pine Forests appear to be maintained pine plantations that have replaced the natural mixed pine and hardwood forests. The relatively short (less than 50 feet) canopy in these areas is dominated by loblolly pine (*Pinus taeda*) and red maple. A thick, diverse shrub layer is present beneath the sparse canopy. The shrub layer is dominated by Chinese privet, wax myrtle, sweetgum, highbush blueberry (*Vaccinium corymbosum*), sweetbay (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), red bay (*Persea borbonia*), inkberry (*Ilex glabra*), and American holly (*Ilex opaca*). Eastern redcedar (*Juniperus virginiana*) was also observed in some sections of the study area. The understory is dominated by poison ivy, netted chainfern, Japanese honeysuckle, and saw greenbriar (*Smilax bona-nox*).

Mixed Pine Forest

This community is an older version of the Young Pine Forest. In the Mixed Pine Forest areas, the pine trees are larger (dbh five to 10 inches), and there is a stronger presence of sweetgum and red maple in the overstory. The shrub layer is less dense, and horsesugar (*Simplocos tinctoria*) is an important understory species.

Clearcuts

There are a number of clearcuts within the study area. The age of the clearcuts range from very recent (within the past year) to four or five years old. Accordingly, the amount and size of the vegetation in these areas is variable. The most common species observed emerging within the clearcut areas include loblolly pine, sweetgum, red maple, large gallberry (*Ilex coriacea*), inkberry, and various broom sedges (*Andropogon* spp.). In the older clearcuts wax myrtle, horsesugar, Chinese privet, Southern magnolia (*Magnolia grandiflora*), and giant cane (*Arundinaria gigantea*) were also observed.

Herb-dominated

The Herb-dominated areas are present primarily in the mowing-maintained powerline rights-of-way within the study area. This community is dominated by red maple and sweetgum seedlings, various grasses, broomsedge, eastern baccharis (*Baccharis halimifolia*), jasmine (*Jasminium* sp.), meadowbeauty (*Rhexia* sp.), Japanese honeysuckle, dogfennel (*Eupatorium capillifolium*), yellow pitcher plant (*Sarracenia flava*), purple pitcher plant (*Sarracenia purpurea*), spoonleaf sundew (*Drosera intermedia*), pink sundew (*Drosera capillaris*), white-top sedge (*Dichromena colorata*), and goldenrod.



Mixed Pine Savanna

A forested area resembling Pine Savanna is present on the west side of Midway Road, across from the Half Hell Shrine Club. This area is different from all other wooded areas observed within the study area. Dominant species include longleaf pine (*Pinus palustris*), sassafras, sweetgum (*Liquidambar styraciflua*), black cherry (*Prunus serotina*), water oak (*Quercus nigra*), eastern red cedar, southern red oak (*Quercus falcata*), giant cane (*Arundinaria gigantea*), inkberry, highbush blueberry, wiregrass (*Aristida stricta*), and bracken fern (*Pteridium aquilinum*). While a number of these species are not generally associated with this community type, the area has been influenced by adjacent residential areas and Midway Road. Many of the more common ‘savanna’ herbaceous species are present in the small powerline right-of-way that runs through the middle of the wooded area. The powerline is dominated by wiregrass, yellow pitcher plants, purple pitcher plants, inkberry, highbush blueberry, and orange milkwort (*Polygala lutea*).

Lagoon Spray Field

A spray field associated with two defunct wastewater treatment lagoons is located adjacent to the Brunswick County Government Complex in the northern portion of the project corridor. The field consists of an open pine forest (plantation) with sparse fescue and *Carex* sp. in the understory with sprinklers scattered throughout.

5.1.1.2 Terrestrial Community Impacts

Impacts to terrestrial communities, particularly in locations exhibiting slopes, can result in the aquatic community receiving heavy sediment loads as a consequence of erosion. Construction impacts may not be restricted to the communities in which the construction activity occurs. Any construction related activities in or near biotic communities have the potential to impact biological functions.

Table 5-2 summarizes the acreage of terrestrial community impacts under each Detailed Study Alternative.

Table 5-2: Impacts to Terrestrial Communities

Terrestrial Community	Impact Area by Detailed Study Alternative (acres)		
	Alternative 1	Alternative 2	Alternative 3
Maintained/Disturbed	23.72	38.98	22.34
Agriculture	16.48	27.89	20.41
Young Pine Forest	2.98	4.99	1.95
Mixed Pine Forest	17.17	30.27	20.53
Clearcuts	2.06	3.06	1.06
Herb Dominated	0.02	0.09	0.09
Mixed Pine Savanna	0.38	1.32	1.31
Total	62.81	106.61	67.99



5.1.1.3 Terrestrial Wildlife

Most of the animal species present in the study area are opportunistic and capable of surviving on a variety of resources, ranging from vegetation (flowers, leaves, fruits, and seeds) to both living and dead faunal components. Species observed, or likely to use all habitat types, include raccoon (*Procyon lotor*), white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), Virginia opossum (*Didelphis virginiana*), turkey vulture (*Cathartes aura*), mourning dove (*Zenaida macroura*), cattle egret (*Bubulcus ibis*), red-headed woodpecker (*Melanerpes erythrocephalus*), piliated woodpecker (*Dryocopus pileatus*), barred owl (*Strix varia*), American crow (*Corvus brachyrhynchos*), black rat snake (*Elaphe obsoleta*), Southern copperhead (*Agkistrodon contortrix contortrix*), Northern black racer (*Coluber constrictor constrictor*), Carolina anole (*Anolis carolinensis*), and broadheaded skink (*Eumeces laticeps*).

Plant communities found within the study area serve as nesting and sheltering habitat for various wildlife species. The widening and/or relocation of Midway Road may reduce habitat for some faunal species, and will likely reduce habitat for those species specific to the abundant swamp resources within the study area.

Areas modified by construction (but not paved) will become road shoulders and early successional habitat. Reduced habitat may displace some wildlife further from the roadway while attracting other wildlife by the creation of early successional habitat. Animals temporarily displaced by construction activities may repopulate areas suitable for the species.

5.1.1.4 Aquatic Communities

The aquatic communities within the study area consist of streams and ponds, described in Section 5.1.2.1 and 5.1.2.2, and wetlands, discussed in Section 5.1.2.3. Physical characteristics of a water body and the condition of the water resource influence faunal composition of aquatic communities. Water bodies in this region are typically acidic (pH 4.5 to 5.5), thus supporting acid tolerant aquatic species. Terrestrial communities adjacent to a water resource also greatly influence aquatic communities. Vegetation on the banks of the above listed aquatic communities includes species found in all of the listed terrestrial communities.

The streams in the study area can be divided into large blackwater stream/swamp systems such as River Swamp, Sarah Hole, Half Hell Branch, and Middle Swamp. The large stream swamps support a diverse community of flood-tolerant vegetation. These large systems not only provide important aquatic and wetland habitat, but also provide water quality functions through attenuation of flood waters, filtering of pollutants, and the recharge of base flow in the streams.

Some of the smaller streams within the study area provide similar functions as the larger streams, but on a smaller scale. These streams flow through adjacent wetland areas and include UT1 and UT2 Midway Branch, Rattlesnake Branch, and the lower end of UT1 Middle Swamp. The remaining intermittent streams (UT3 Midway Branch, UT2 Middle Swamp, UT1 Lockwoods Folly River) have been channelized in the past and provide very little in the way of aquatic habitat or water quality function. The three small ponds within the study area provide some aquatic habitat as well as a potential water source for wildlife. The aquatic communities within the study area for the respective alternatives are included in **Figure 2**.



Fauna associated with these aquatic communities includes various invertebrate and vertebrate species. Aquatic species observed within and around the aquatic communities in the study area include crayfish (*Cambarus* sp.), Southeastern chorus frog (*Pseudacris feriarum*), white ibis (*Eudocimus albus*), cottonmouth water moccasin (*Agkistrodon piscivorous*), river otter (*Lutra canadensis*), snapping turtle (*Chelydra serpentina serpentina*), mosquitofish (*Gambusia holbrooki*), red fin pickerel (*Esox americanus*), redbreast sunfish (*Lepomis auritus*), spotted sunfish (*Lepomis punctatus*), largemouth bass (*Micropterus salmoides*), brown bullhead catfish (*Ameiurus nebulosus*), American bullfrog (*Rana catesbeiana*), midge fly larva (Suborder Nematocera), water striders (*Gerris remigis*), leech (Order Hirundinea), water beetles (Order Coleoptera), aquatic snails (Class Gastropoda), scud (Order Amphipoda), mayfly (Order Ephemeroptera).

5.1.2 Waters of the United States

5.1.2.1 Ponds

Three ponds are located within the study area:

- Pond A is a small (0.04-acre) pond located in a yard just outside the boundary of the large wetland system associated with River Swamp. Several small fish were observed on the day of the site visit. In addition, common songbirds were also observed in the trees around the pond. Black willow (*Salix nigra*) is growing in the water on the northwest edge of the pond. The pond is surrounded by ornamental azalea bushes, red maple (*Acer rubrum*), and swamp chestnut oak (*Quercus michauxii*).
- Pond B is a 0.22-acre algae covered pond located in the yard of the Buddhist Temple adjacent to River Swamp. The pond is immediately adjacent to the small house near the entrance to the Temple. Vegetation surrounding the pond consists of Chinese privet (*Ligustrum sinense*), red maple, sweetgum (*Liquidambar styraciflua*), netted chainfern (*Woodwardia areolata*), black willow, water oak, and wax myrtle (*Morella cerifera*).
- Pond C is a 0.15-acre pond located adjacent to a trailer park south of Rattlesnake Branch. Several stormwater ditches drain into the pond. Most of the pond edges have been cleared and consist of various weeds and grasses. The northeast portion of the pond has been left wooded and is dominated by Chinese privet, broomsedge (*Andropogon spp.*), wax myrtle, sassafras (*Sassafras albidum*), and sweetgum.

None of the three Detailed Study Alternatives would result in direct impacts to the ponds.

5.1.2.2 Streams

There are 16 jurisdictional streams in the study area (**Table 5-3** and **Table 5-4**). All are located within the Lumber River Basin (USGS Hydrologic Unit 03040207 and NC Division of Water Resources (NCDWR) Subbasin 03-07-59) and have been assigned a best usage classification by the NCDWR. All waters within the study area have been classified as C;Sw waters. Class C designates these waters for aquatic life propagation and maintenance of biological integrity (including fishing and fish), wildlife, secondary recreation, agriculture, and other usage except for primary recreation or as a source of water supply for drinking, culinary or food processing purposes. All freshwaters with this designation shall be classified to



protect these uses at a minimum. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such activities take place in an infrequent, unorganized, or incidental manner. The Sw designates Swamp Waters. These waters are those which are topographically located so as to generally have very low velocities and other characteristics which are different from the adjacent streams draining steeper topography. These waters are naturally more acidic and have lower levels of dissolved oxygen.

Neither Water Supplies (WS-I: undeveloped watersheds or WS-II: predominately undeveloped watersheds) nor Outstanding Resource Waters (ORW) occur within one mile of the study area. Downstream of the study area, Lockwoods Folly River is designated as a shellfish area (SA) and a High Quality Water (HQW). Additionally, the Lower Lockwoods Folly River watershed is designated by the NC Ecosystem Enhancement Program as a targeted watershed for water quality restoration and habitat enhancement.

Table 5-3: Jurisdictional Streams in the Study Area

Stream Name	Map ID	NCDWR Index Number	Best Usage Classification
UT1 Midway Branch	UT1 Midway Branch	15-25-1-6-1	C;Sw
UT2 Midway Branch	UT2 Midway Branch	15-25-1-6-1	C;Sw
UT to Midway Branch	SE	15-25-1-6-1	C;Sw
UT3 Midway Branch	UT3 Midway Branch	15-25-1-6-1	C;Sw
Sarah Hole	Sarah Hole	15-25-1-6-2	C;Sw
River Swamp	River Swamp	15-25-1-6	C;Sw
UT to River Swamp	SF	15-25-1-6	C;Sw
Rattlesnake Branch	Rattlesnake Branch	15-25-1-6-3	C;Sw
Half Hell Branch	Half Hell Branch	15-25-1-6-4-2	C;Sw
UT to Half Hell Branch	SB	15-25-1-6-4-2	C;Sw
Middle Swamp	Middle Swamp	15-25-1-6-4	C;Sw
UT1 Middle Swamp	UT1 Middle Swamp	15-25-1-6-4	C;Sw
UT2 Middle Swamp	UT2 Middle Swamp	15-25-1-6-4	C;Sw
UT to Middle Swamp	SC	15-25-1-6-4	C;Sw
UT1 Lockwoods Folly River	UT1 Lockwoods Folly River	15-25-1-(1)	C;Sw
UT to Lockwoods Folly River	SD	15-25-1-(1)	C;Sw



Table 5-4: Jurisdictional Stream Characteristics

Map ID	Length In Study Area (feet)	Classification	Compensatory Mitigation Required (if impacted)	River Basin Buffer
UT1 Midway Branch	902	Perennial	Yes	Not Subject
UT2 Midway Branch	467	Intermittent	Undetermined	Not Subject
SE	438	Intermittent	Undetermined	Not Subject
UT3 Midway Branch	438	Intermittent	Undetermined	Not Subject
Sarah Hole	501	Perennial	Yes	Not Subject
River Swamp	2,244	Perennial	Yes	Not Subject
SF	886	Intermittent/ Ephemeral*	Undetermined	Not Subject
Rattlesnake Branch	455	Perennial	Yes	Not Subject
Half Hell Branch	772	Perennial	Yes	Not Subject
SB	305	Perennial	Yes	Not Subject
Middle Swamp	667	Perennial	Yes	Not Subject
UT1 Middle Swamp	1,098	Intermittent	Undetermined	Not Subject
UT2 Middle Swamp	1,776	Intermittent	Undetermined	Not Subject
SC	302	Intermittent	Undetermined	Not Subject
UT1 Lockwoods Folly River	472	Intermittent	Undetermined	Not Subject
SD	220	Intermittent	Undetermined	Not Subject
Total	11,943			

*Upper and lower intermittent sections connected by an ephemeral channel

Table 5-5 provides a listing of potential direct impacts to jurisdictional streams for the detailed study alternatives. These impacts are calculated from slope stake to slope stake (the area of disturbance), plus an additional 25 feet outside of each limit as determined from the preliminary designs for each alternative.



Table 5-5: Impacts to Jurisdictional Streams

Map ID	Stream Impacts by Detailed Study Alternative (feet)		
	Alternative 1	Alternative 2	Alternative 3
UT1 Midway Branch	307	400	381
UT2 Midway Branch	131	187	133
SE	53	168	85
UT3 Midway Branch	143	178	136
Sarah Hole	0	0	0
River Swamp	0	0	0
Rattlesnake Branch	146	190	116
SB	28	127	105
Half Hell Branch	273	367	326
Middle Swamp	0	0	0
UT1 Middle Swamp	447	493	311
SC	188	215	154
UT2 Middle Swamp	554	611	509
UT1 Lockwoods Folly River	128	154	133
Total	2,398	3,090	2,389

5.1.2.3 Wetlands

There were 28 wetlands identified in the study area. NC Wetland Assessment Method (NCWAM) wetland classification and NCDWR quality rating are presented in **Table 5-6**. All wetlands are located within the Lumber River Basin (USGS Hydrologic Unit 03040207 and NCDWR Subbasin 03-07-59).



Table 5-6: Jurisdictional Wetlands in the Study Area

Map ID	NCWAM Classification	Hydrologic Classification	NCDWR Wetland Rating	Area (ac.)
WA	Riverine Swamp Forest	Riparian	60*	2.3
WB	Headwater Forest	Riparian	37	0.8
WC	Small Basin Wetland	Non-riparian	26	1.0
WD	Bottomland Hardwood Forest	Riparian	83	2.4
WE1	Riverine Swamp Forest	Non-riparian	36*	2.0
WE3	Small Basin Wetland	Non-riparian	36*	0.3
WF1/2	Riverine Swamp Forest	Riparian	85	22.9
WF1a	Floodplain Pool	Riparian	22	0.01
WF3	Floodplain Pool	Riparian	22	0.1
WF4	Floodplain Pool	Riparian	54	0.02
WF5	Floodplain Pool	Riparian	54	0.3
WF6	Small Basin Wetland	Non-riparian	44	0.3
WF7	Small Basin Wetland	Non-riparian	12	0.1
WF8	Small Basin Wetland	Non-riparian	46	0.4
WG	Small Basin Wetland	Non-riparian	15	1.0
WH1	Hardwood Flat	Non-riparian	15	0.1
WH2	Pine Flat	Non-riparian	15	0.4
WI	Small Basin Wetland	Non-riparian	15	0.1
WJ	Bottomland Hardwood Forest	Riparian	59	1.5
WK	Riverine Swamp Forest	Riparian	64	1.4
WM	Small Basin Wetland	Non-riparian	58	1.1
WN	Riverine Swamp Forest	Riparian	68	4.6
WO complex	Small Basin Wetlands	Non-riparian	27	0.4
WP	Headwater Forest	Riparian	46	0.7
WQ complex	Small Basin Wetlands	Non-riparian	31	1.2
WR complex	Small Basin Wetlands	Non-riparian	35	1.4
WS complex	Headwater Forest	Riparian	24	1.4
WY	Headwater Forest	Riparian	33	0.3
WZ	Headwater Forest	Riparian	25	0.4
*These wetlands had more than one quality rating score that was averaged to produce one score.			Total	49

Table 5-7 provides a listing of potential direct impacts to jurisdictional wetlands for the detailed study alternatives. These impacts are calculated from slope stake to slope stake (the area of disturbance), plus an additional 25 feet outside of each limit as determined from the August 21, 2013, preliminary designs for each alternative.



Table 5-7: Impacts to Jurisdictional Wetlands (Acres)

Map ID	Hydrologic Classification	Alternative 1	Alternative 2	Alternative 3
WA	Riparian	0.72	0.74	0.74
WB	Riparian	0.15	0.25	0.12
WC	Non-riparian	0.26	0.59	0.61
WD	Riparian	0.31	0.62	0.47
WE3	Non-riparian	0.03	0.11	0.06
WF1/2	Riparian	0.75	1.08	0.71
WF4	Riparian	0.01	0	0
WF5	Riparian	0	0	0
WJ	Riparian	0.32	0.60	0.45
WK	Riparian	0.17	0.51	0.48
WM	Non-riparian	0.08	0.35	0.31
WN	Riparian	0.20	0.96	0.41
WO complex	Non-riparian	0.05	0.09	0.07
WP	Riparian	0.12	0.14	0.10
WZ	Riparian	0.06	0.06	0
Totals:	Riparian	2.81	4.96	3.48
	Non-riparian	0.45	1.32	1.08
	Combined	3.26	6.28	4.56

5.1.2.4 Avoidance, Minimization, and Mitigation

Mitigation is defined in NEPA regulations (40 CFR Section 1508.20 and 40 CFR Part 230) as efforts that a) avoid, b) minimize, c) rectify, d) reduce or eliminate, or e) compensate for adverse impacts to the environment. Mitigation of wetland impacts is recommended in accordance with Clean Water Act Section 404(b)(1) Guidelines (40 CFR Part 230); FHWA step down procedures (23 CFR Sections 777.1 et seq.); mitigation policy mandates articulated in the United States Army Corps Engineers (USACE) / United States Environmental Protection Agency (USEPA) Memorandum of Agreement (MOA; Page and Wilcher 1990); Executive Order 11990 (42 FR 26961 [1977]); and US Fish and Wildlife Service (USFWS) mitigation policy directives (46 FR 7644-7663 [1981]).

Section 404(b)(1) Guidelines, the USACE/USEPA MOA, and Executive Order 11990 stress avoidance and minimization as primary considerations for protection of Waters of the United States. Practical avoidance alternatives analyses must be fully evaluated before compensatory mitigation can be discussed.

The FHWA policy stresses that all practicable measures should be taken to avoid or minimize harm to wetlands affected by federally funded highway construction. A sequencing (step-down) procedure is recommended in the event that avoidance is not practicable. Mitigation employed outside of the highway right-of-way must be reviewed and approved on a case-by-case basis.



Avoidance and Minimization

Due to the location of wetlands, streams, and surface waters within the study area and both sides of the existing roadway, avoidance of all jurisdictional impacts is not possible. During preliminary design, NCDOT has implemented best efforts to avoid and minimize impacts to several wetlands. A best fit alignment was used to minimize impacts. In addition, alignments were shifted to minimize impacts (particularly wetlands impacts) where possible.

During the CP2a (Bridging Decisions and Alignment Review) field meeting with regulatory agencies, NCDOT agreed to additional avoidance and minimizations for crossing structures (see Appendix B). NCDOT agreed to install a double barreled culvert at the crossing of UT1 to Midway Branch. This would allow one culvert to conduct normal flows while a second culvert would convey overbank flow. NCDOT agreed to bridging the crossing over Sarah Hole (Bridge No. 23) and that offsets would be provided to allow for wildlife passage. In addition, during the field review, NCDOT agreed to examine moving the crossing of Rattlesnake Branch slightly to the east and the crossing of Half Hell Branch slightly to the west during final design to minimize wetland impacts. Further avoidance and minimization efforts will be made following the selection of a LEDPA.

The approved jurisdictional delineation will be utilized to minimize wetland impacts of the preferred alternative during final design. Utilization of BMP will be coordinated in an effort to minimize impacts, including avoidance of construction staging areas within wetlands.

Compensatory Mitigation of Impacts

The purpose of compensatory mitigation is to replace the lost functions and values to Waters of the United States. Mitigation could include restoration, creation, enhancement or preservation of Jurisdictional Waters. A specific mitigation plan would be dependent upon the LEDPA/Preferred Alternative selected by the NCDOT and the reviewing agencies.

If on-site opportunities are not sufficient to mitigate for potential wetland and stream impacts, or are not available for mitigation, off-site compensatory mitigation would be accomplished through coordination with the North Carolina Ecosystem Enhancement Program (NCEEP). In accordance with the “Memorandum of Agreement, agreed to by the USACE, USEPA, USFWS, North Carolina Wildlife Resource Commission (NCWRC), and North Carolina Department of Environment and Natural Resources (NCDENR),” NCEEP, upon request, will provide off-site mitigation to satisfy the federal Clean Water Act compensatory mitigation requirements.

5.1.2.5 Anticipated Permit Requirements

For this project, a USACE Individual Permit in accordance with Section 404 of the Clean Water Act will be required; however, the USACE holds the final discretion as to which permit will be required to authorize project construction. If a Section 404 permit is required, then a Section 401 Water Quality Certification from the NCDWR will also be needed. A CAMA permit may also be required if impacts occur in Areas of Environmental Concern (AEC).



The proposed project primarily involves improving an existing road, which crosses streams. Wetlands are adjacent to the existing road, as well. Total avoidance of streams and wetlands by the project is not feasible. NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable when choosing a preferred alternative and during project design. At this time, no final decisions have been made with regard to the location or design of the preferred alternative. Once a final decision has been rendered on the location of the preferred alternative, NCDOT will investigate potential on-site stream and wetland mitigation opportunities. If on-site mitigation is not feasible, mitigation will be provided by the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP).

In addition to the permits listed above, it is possible that the project will also require a State General Permit for impacts to isolated wetlands and isolated waters (Permit Number: IWGP100000). There are wetlands within the study area that have been deemed isolated by the USACE and NCDWR. If these wetlands are not avoided by the final design of the project an additional permit may be needed. Impacts to isolated wetlands greater or equal to 1/3 of an acre east of I-95 and 1/10 of an acre west of I-95 require written notification to and approval by the NCDWR. Any activity that results in a loss of use and wetland functions including but not limited to filling, excavating, draining, and flooding shall be considered wetland impacts. Impacts to wetlands also include activities that change the hydrology of a wetland.

NCDOT will comply with all state stormwater regulations through their National Pollutant Discharge Elimination System (NPDES) Permit, NCS 000250.

5.1.3 Rare and Protected Species

5.1.3.1 Federally Protected Species

As of July 2, 2014, the United States Fish and Wildlife Service (USFWS) website lists 15 federally protected species for Brunswick County. A brief description of each species' habitat requirements, along with the Biological Conclusion rendered based on the study area survey results is provided below. Habitat requirements for each species are based on the current best available information as per referenced literature and USFWS correspondence. **Table 5-8** lists the 15 federally protected species and the associated survey results.



Table 5-8: Federally Protected Species listed for Brunswick County

Common Name	Scientific Name	Federal Status	Habitat	Biological Conclusion
American alligator	<i>Alligator mississippiensis</i>	T (S/A)	Yes	N/A
Atlantic Sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	E	No	No Effect
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	E	No	No Effect
Leatherback sea turtle	<i>Dermochelys coriacea</i>	E	No	No Effect
Green sea turtle	<i>Chelonia mydas</i>	T	No	No Effect
Loggerhead sea turtle	<i>Caretta caretta</i>	T	No	No Effect
Piping plover	<i>Charadrius melodus</i>	T	No	No Effect
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	No	No Effect
Red knot	<i>Calidris canutus rufa,</i>	P	No	N/A
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	No	No Effect
West Indian manatee	<i>Trichechus manatus</i>	E	No	No Effect
Wood stork	<i>Mycteria americana</i>	T	Yes	May Affect, Not Likely to Adversely Affect
Cooley's meadowrue	<i>Thalictrum cooleyi</i>	E	Yes	No Effect
Rough-leaved loosestrife	<i>Lysimachia asperulaefolia</i>	E	Yes	No Effect
Seabeach amaranth	<i>Amaranthus pumilus</i>	T	No	No Effect

- Notes:
- E Endangered - A species that is threatened with extinction throughout all or a significant portion of its range.
 - T Threatened - A species likely to become endangered in the foreseeable future throughout all or a significant portion of its range.
 - T S/A Similarity of Appearance - A species that is listed as threatened due to similarity of appearance with other rare species.
 - P Proposed.

American alligator

The American alligator is listed as Threatened due to Similarity of Appearance (T S/A). This is due to its similarity of appearance to another rare species that is listed for protection. T S/A species are not subject to Section 7 consultation and a biological conclusion for this species is not required.

Two large freshwater swamp systems (River Swamp and Middle Swamp) that could provide suitable habitat for the alligator are present within the study area. The NCNHP has record of an alligator near Bolivia, likely in Middle Swamp, from 1982. The NCNHP states 'nonetheless, because this species moves up and down streams and rivers, including tidal waters to an extent, one should assume that alligators are found in the project area, such as Middle Swamp and River Swamp'.

Biological Conclusion: No Survey Required



Atlantic sturgeon

There are no marine habitats present within the study area, and the closest large stream, Lockwoods Folly River, is several miles downstream of the project. **Biological Conclusion: No Effect**

Kemp's ridley sea turtle

There is no marine habitat present within the study area.

Biological Conclusion: No Effect

Leatherback sea turtle

There is no marine habitat present within the study area.

Biological Conclusion: No Effect

Green sea turtle

There is no marine habitat present within the study area.

Biological Conclusion: No Effect

Loggerhead sea turtle

There is no marine habitat present within the study area.

Biological Conclusion: No Effect

Piping plover

The study area does not include beach habitat. The area is too far inland for the birds to travel.

Biological Conclusion: No Effect

Red-cockaded woodpecker

Based on input from the NCDOT Natural Environment Section (NES), there was no evidence of RCW activity in the study area. A helicopter survey of the area was conducted on June 10, 2004, and only marginal breeding and foraging habitat was found for the red-cockaded woodpecker. All stands of pines large enough to be suitable nesting trees were either located within residential areas and/or also contain hardwood species in the canopy and understory making them undesirable for nesting.

Biological Conclusion: No Effect



Red knot

The study area does not include shoreline habitat. The area is too far inland for the birds to travel.

Biological Conclusion: No Survey Required

Shortnose sturgeon

There are no marine habitats present within the study area, and the closest large stream, Lockwoods Folly River, is several miles downstream of the project.

Biological Conclusion: No Effect

West Indian manatee

Streams within the study area are not large or deep enough for manatees. The study area is also too far inland to expect manatees to travel.

Biological Conclusion: No Effect

Wood stork

Suitable breeding and feeding habitat is present for wood stork within the study area. There are a number of freshwater swamps and gum ponds that could be used for feeding. The large River Swamp system could provide adequate breeding habitat, though no birds or nests were observed during site visits. While habitat does exist within the study area, the wood stork is not known to travel any farther north than Sunset Beach, which is 20 miles away. The swamp systems were evaluated for wood stork at the time of the red-cockaded woodpecker surveys. While no wood stork have been observed within the study area, the U.S. Fish and Wildlife Service (USFWS) recommends that NCDOT wait until the selection of the Least Environmentally Damaging Practicable Alternative (LEDPA) and then conduct the necessary surveys, if needed. Concurrence with the USFWS will be required prior to approval of the final environmental document in order to comply with the Endangered Species Act.

Biological Conclusion: May Affect – Not Likely to Adversely Affect

Cooley's meadowrue

NCDOT staff conducted surveys for Cooley's meadowrue on June 22, 2011. No individuals were found.

Biological Conclusion: No Effect

Rough-leaved loosestrife

NCDOT staff conducted surveys for rough-leaved loosestrife on June 22, 2011. No individuals were found.

Biological Conclusion: No Effect



Seabeach amaranth

There is no beach habitat within the study area.

Biological Conclusion: No Effect

5.1.3.2 Bald and Golden Eagle Protection Act

Bald and golden eagles are not listed as a federally protected species; however, they are afforded protection under the Bald and Golden Eagle Protection Act. Golden eagles are not present in North Carolina. Habitat for the bald eagle primarily consists of mature forest in close proximity to large bodies of water for foraging. Large, dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

Potential habitat for bald eagle is present within the study area. Two large coastal swamps are located along the proposed widening. Large trees adjacent to these swamps may be used for roosting by bald eagles. However, the canopy within the swamps is dense, and may not provide enough sight distance to provide suitable nesting habitat. The swamps also attract smaller mammals and birds that could provide prey for eagles. Due to the close proximity of the existing roadway and the amount of residential and other development within the study area it is unlikely that bald eagles would inhabit the project area.

5.1.3.3 Endangered Species Act Candidate Species

As of September 23, 2013, the USFWS lists no candidate species for Brunswick County.

5.1.4 Topography and Soils

The study area lies in the coastal plain physiographic region of North Carolina. Topography in the project vicinity is characterized by broad, gently undulating to nearly flat plains and beach ridges. Elevations in the study area do not exceed 46 feet above sea level. Land use in the project vicinity is primarily low-density and rural in character, containing a large proportion of farmland, forest, and wetlands with a mixture of residential, commercial, civic, and religious uses scattered throughout. As shown in **Table 5-9**, the Brunswick County Soil Survey identifies ten soil types within the study area.



Table 5-9: Soils in the Study Area

Soil Series	Mapping Unit	Drainage Class	Hydric Status
Grifton fine sandy	Gt	Poorly drained	Hydric
Muckalee	Mk	Poorly drained	Hydric
Rains fine sandy	Ra	Poorly drained	Hydric
Woodington fine sandy	Wo	Poorly drained	Hydric
Baymeade fine sand	BaB	Well-drained	Hydric*
Blanton fine sand	BnB	Moderately well-drained	Hydric*
Foreston loamy fine sand	Fo	Moderately well-drained	Hydric*
Lynchburg fine sandy	Ly	Poorly drained	Hydric*
Norfolk loamy fine sand	NoB	Well-drained	Hydric*
Onslow fine sandy	On	Moderately well-drained	Hydric*
Tomahawk loamy fine sand	Tm	Moderately well-drained/somewhat poorly drained	Hydric*
Goldsboro fine sandy loam	GoA	Moderately well-drained	Non-Hydric

* Soils which are primarily non-hydric, but which contain hydric inclusions

5.2 Cultural Resources

5.2.1 Compliance

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

5.2.2 Historic Architectural Resources

There are no historic properties listed in or eligible for the NRHP within the area of potential effect (APE) of the project. One resource that was previously determined eligible for the NRHP in 2005, the Antioch Crossroads Store, was subsequently demolished. The North Carolina Department of Cultural Resources (NCDCCR) State Historic Preservation Office concurred with these findings in a letter dated August 19, 2011 (see Appendix B).

5.2.3 Archaeological Resources

In a letter dated December 23, 2002, the North Carolina Department of Cultural Resources (NCDCCR) stated that there were no known archaeological sites within the study area and, therefore, recommended



that no archaeological investigation be conducted (see Appendix B). Therefore, no archaeological investigations were conducted for this project.

5.3 Section 4(f) and Section 6(f) Resources

Section 4(f) of the Department of Transportation Act of 1966, as amended, (23 U.S.C. 138) states that the United States Department of Transportation (USDOT) “may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site unless a determination is made that: (1) there is no feasible and prudent alternative to the use of land from the property and (2) the action includes all possible planning to minimize harm to the property resulting from such use.”

For Section 4(f), a “use” is defined as one of the following:

- A direct use – property is permanently incorporated into the right-of-way of the transportation project.
- A temporary use – property is temporarily occupied in a way that is adverse to the property’s purpose.
- A constructive use – a use that occurs when “the transportation project does not incorporate land from a Section 4(f) property, but the project’s proximity impacts are so severe that the property activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs only when the protected activities, features, or attributes of the property are substantially diminished.” (23 CFR 774.15(a))

Section 6(f) of the Land and Water Conservation Act applies to the conversion of recreation lands that have received Land and Water Conservation Fund (LWCF) funds to non-recreation purposes.

There are no Section 4(f) or Section 6(f) resources within the study area.

5.4 Farmland

Brunswick County has an adopted Voluntary Agricultural District Ordinance pursuant to North Carolina General Statute, Chapter 106, Article 61. This Voluntary Agricultural District (VAD) program encourages the preservation and protection of farmland from non-farm development.

Several active farms operate within the study area. One farm designated as a VAD located at the intersection of Midway Road and Zachary’s Path (see **Figure 2** sheet 6 of 9) is within the 150-foot right of way that would result from either Alternative 2 or 3. As per the Brunswick County VAD ordinance NCDOT will hold a public hearing with the VAD Advisory Board if any property is obtained through eminent domain from farms participating in the VAD program.

North Carolina Executive Order Number 96, Preservation of Prime Agricultural and Forest Lands requires all state agencies to consider the impact of land acquisition and construction projects on prime farmland soils, as designated by the Natural Resources Conservation Service (NRCS) and to ensure that



actions taken by those agencies will minimize the loss of prime agricultural and forest lands. These soils are determined by the Soil Conservation Service and based on criteria, such as crop yield and level of input of economic resources. The Farmland Protection Policy Act (FPPA) requires that applicable environmental documents evaluate farmland impacts and comply with FPPA impact minimization guidelines.

FPPA-eligible soils are present throughout the study area. A preliminary screening of farmland conversion impacts in the project area has been completed (NRCS Form CPA-106, Part VI only) and a total score of 76 out of 160 points was calculated for the R-3434 project site (see Appendix D). Since the total site assessment score for farmland soil exceeds the threshold established by the Natural Resources Conservation Service (NRCS), notable project impacts to eligible soils may be anticipated. Therefore, NCDOT Community Studies will complete the NRCS CPA-106 farmland conversion form for linear projects prior to development of the final environmental document. A map showing the preliminary/functional design and impacted acreage will be included in the submission. The NCDOT will also coordinate with local farmers to address the potential agricultural impacts and impacts to movement of farm vehicles along and across the facility associated with the project.

5.5 Social Effects

5.5.1 Neighborhoods/Communities

The Demographic Study Area (DSA) is defined to provide demographic characteristics for the community surrounding the project and contains the smallest statistical area of the 2010 U.S. Census that includes the study area. This area falls entirely within Brunswick County and is composed of the following Block Groups:

- Census Tract 202.04, Block Group 2.
- Census Tract 203.03, Block Group 2.
- Census Tract 203.04, Block Group 1.
- Census Tract 206.02, Block Group 4.
- Census Tract 206.03, Block Group 1.

Located in Brunswick County in proximity to several coastal communities, the R-3434 project falls primarily in the unincorporated areas of Antioch and Half Hell; however, sections of the project are within the Extra Territorial Jurisdictions (ETJ) of the Towns of Oak Island (in the vicinity of the southern terminus) and Bolivia (in the vicinity of the northern terminus). Brunswick County has experienced substantial growth and development over the past two decades due to the attraction of beach communities to retirees and vacationers, which has fostered the region's tourism industry.

However, land in the vicinity of the project remains primarily low density and rural in character, containing a large proportion of farmland, forest, and wetlands with a mixture of residential, commercial, civic, and religious uses scattered throughout. The corridor provides connections to NC 211 and US 17 Bypass, both important highways and designated hurricane evacuation routes. Midway and Galloway



roads serve an important role in regional access to area beach communities, including Southport and Oak Island.

5.5.2 Community Demographics

A summary of the DSA's demographic data is provided below. Additional demographic details are provided in the project's Community Impact Assessment Report, dated June 2013:

- Brunswick County has grown considerably over the past two decades. During the 1990s, the county's population grew by 43.5 percent, compared to a 21 percent growth rate for the State of North Carolina as a whole. This trend continued between 2000 and 2010, as the population of Brunswick County grew by 46.9 percent while the state population grew by only 18.5 percent.
- Growth rates within the DSA have been similar to Brunswick County, with a 54.6 percent increase in population between 1990 and 2000 and a 41.9 percent increase between 2000 and 2010. A notable portion of this increase can be attributed to the growth experienced in Census Tract 203.03, Block Group 2 and Census Tract 203.04 Block Group 1 which, along with Census Tract 203.03, Block Group 1 made up one single Block Group in 2000 and experienced 143.8 percent growth rate. Although Census Tract 203.03, Block Group 1 is no longer a part of the DSA because it is located too far to the west to be included, the two remaining block groups within the DSA experienced 73.3 percent of the total growth between the 2000 Census geography and the combined 2010 Census geography. Both of these Block Groups have experienced substantial beach-related growth, and Census Tract 203.04, Block Group 1 contains the Town of St. James, which was incorporated in 1999 and continues to be developed. The growth rates observed for the remaining three block groups in the study area were moderate and below Brunswick County levels (14.5 percent, 26.5 percent, and 23.8 percent).
- The racial composition of the overall DSA is similar to that of Brunswick County as a whole. According to the 2007-2011 American Community Survey (ACS) 5-year Estimates, 79.5 percent of the DSA population is white, representing a figure slightly lower than that for Brunswick County (83.0 percent white). Among the non-white population, the percentage of black residents in the study area is 16.7 percent, which is higher than the percentage for Brunswick County (11.4 percent). Alternatively, the percentage of DSA residents who were neither white nor black (3.9 percent) was lower than that for the county (5.6 percent).
- Although the DSA as a whole is similar to Brunswick County, two Block Groups have a greater percentage of non-white residents than the county. The total non-white population in Census Tract 206.02, Block Group 4 and Census Tract 206.03, Block Group 1 (27.3 percent and 41.6 percent, respectively) exceeds the proportion of non-white residents for Brunswick County as a whole (17.0 percent) by more than ten percentage points. In both of these Block Groups, the minority population is primarily black with some residents having two or more races.



- The proportion of residents of the DSA who described themselves as Hispanic or Latino as of the 2011 ACS was 1.5 percent. This figure is considerably lower than that recorded at the county level (18.9 percent). Although this proportion is highest in Census Tract 206.03, Block Group 1, it is still fairly low (4.3 percent) and does not deviate greatly from the low proportions recorded in the remaining four Block Groups (which range from 0.0 percent to 1.3 percent).
- Based on the ACS data, there is a notable presence of minority populations meeting the criteria for Environmental Justice within the DSA. This occurs in Census Tract 206.02, Block Group 4 and Census Tract 206.03, Block Group 1, where the proportion of the population that is of a minority race exceeds the Brunswick County average by more than 10 percentage points.
- According to the 2011 ACS, the DSA had a 2011 median income of \$46,092, which is comparable to the median incomes recorded at both the county and state levels (\$45,132 and \$46,291, respectively). However, it is important to recognize that these figures are likely skewed by the inclusion of the Town of St. James in the DSA. This area, located in Census Tract 203.04, Block Group 1, exhibited a notably higher median income (\$79,013). The lowest median income (\$17,402) was recorded for Census Tract 202.04, Block Group 2.
- With respect to poverty status, 16.3 percent of the DSA population lives below the poverty level, as compared to 13.5 percent of Brunswick County residents and 16.1 percent across North Carolina. At the individual Block Group level, a greater disparity is evident. However, the overall DSA poverty level is skewed by Census Tract 203.04, Block Group 1 and Census Tract 206.02, Block Group 4, where only 1.8 and 2.4 percent of the population are below the poverty line, respectively. These figures suggest that wealth in the DSA is skewed toward the Town of St. James.
- In contrast, in Census Tract 202.04, Block Group 2, and Census Tract 206.03, Block Group 1, the percentage of the population that is below the poverty level exceeds 25 percent (32.6 percent and 30.3 percent, respectively). Additionally, the poverty rate in Census Tract 203.03, Block Group 2 (23.8 percent) is more than five percentage points greater than the Brunswick County average (13.5 percent). Based on this review, Census data indicates a notable presence of low-income populations meeting the criteria for Environmental Justice within the DSA. However, no indications of low-income communities were observed within the DCIA during the site visit.
- Housing in the project area primarily consists of single-family, ranch-style units, with some trailer homes interspersed. Two residential developments, Summerwood (currently under construction) and Old Brunswick Estates, are also present in the project area.

5.5.3 Transportation and Land Use Plans

5.5.3.1 NCDOT State Transportation Improvement Program

NCDOT's 2012-2018 STIP includes Project R-3434 that proposes improvements to Midway Road and Galloway Road, replacement of Bridge Numbers 23 and 25, and improvements of the intersections of



Midway Road, Galloway Road, and US 17 Business. This project is referred to as the Midway Road Improvements.

Furthermore, R-3434 is intended to complement STIP R-5021 (improvements to NC 211) and the recently completed Second Bridge to Oak Island in the provision of greater mobility. R-3434 is currently scheduled for ROW acquisition in 2019, and construction is currently scheduled for post-year.

5.5.3.2 Local Thoroughfare Plans

The *2010 Brunswick County Transportation Plan* (NCDOT, 2010) was adopted in 2010 and includes recommendations for multi-modal transportation improvements throughout the county. The plan identifies Galloway and Midway roads for roadway improvements. The plan also recommends Galloway and Midway roads as proposed bike routes.

5.5.3.3 Land Use Plans

Oak Island

The southern terminus of the project (the intersection of Midway Road and NC 211) and a number of parcels within the approximately two-mile segment to the north of this terminus fall within the jurisdiction of the Town of Oak Island.

Brunswick County

According to the *Brunswick County CAMA* (County Coastal Area Management Act) *Core Land Use Plan* (Holland Consulting Planners, Inc., 2007), adopted in 2007, multiple land use designations exist within the project area. The area to the west of Midway Road within the study area is designated for medium-density residential development; the land within the northeastern portion of the study area is reserved for low-density residential use with interspersed conservation areas; and the southeastern portion of the study area is designated for mixed-use development. Similarly, mixed-use and commercial areas are planned for several major intersections within Brunswick County, including the intersection of Midway Road and NC 211, as well as the parcels across US 17 Bypass from the northern terminus of the project.

Zoning & Development Ordinances

Oak Island

Land within the portion of the study area belonging to the Town of Oak Island is almost exclusively zoned C-LD – Commercial Low Density. Zoning in this category is intended to serve requirements of residential neighborhoods for commercial facilities and the requirements of highway-oriented tourist businesses. They are primarily located in outlying areas, adjacent to a major thoroughfare, with substantial setbacks, yards, and other provisions for reducing conflicts with adjacent residential uses.

Bolivia

Most of the Bolivia portion of the study area is zoned for agriculture/forestry uses, although a pocket of R-10 zoning (moderate density residential) is located on the north side of Galloway Road for the Summerwoods residential community. Areas within 200 feet of US 17 Business/US 17 Bypass, as well as



Galloway and Midway roads, are zoned for heavy commercial uses, primarily associated with retail trade and professional office. The Town of Bolivia has no land use, growth management, or transportation plans.

Brunswick County

According to the Brunswick County zoning map, the majority of the land adjacent to and surrounding Midway Road north of NC 211 is zoned for R-7500, or suburban-style residential development, with minimal commercial uses permitted.

Further north in the study area, several other zoning districts are present. Approximately 1 mile south of the Galloway Road/Midway Road/US 17 Business intersection are two parcels zoned NC – Neighborhood Commercial, which is intended to accommodate very low-intensity office, retail, and personal service uses within and adjoining residential areas. A small pocket of RR, or Rural Low Density Residential, zoning is just west of the Galloway Road/Midway Road/US 17 Business intersection.

Other Small Area, Master, or Comprehensive Plans

Based on ongoing research and coordination with local officials, no additional small area, master, or comprehensive plans are in effect in the study area.

5.5.4 Relocation of Residences and Businesses

As shown in **Table 5-10**, if Alternative 2 or 3 is chosen, the 150-foot right of way that would be required would result in approximately seventeen relocations, including fourteen residences, one church (Rutland Chapel AME Church), and two businesses. According to local planners, any relocation would result in community concerns. Alternative 1 would have seven relocations, including six residences and one business. The NCDOT Relocation Program policies and the Relocation Report for this project are included in Appendix C.

Table 5-10: Relocations

Detailed Study Alternative	Residential Relocations	Business Relocations	Places of Worship Relocations	Low Income and/or Minority (Residential / Business) Relocations
Alternative 1	06	1	0	1/0
Alternative 2	14	2	1	1/0
Alternative 3	14	2	1	1/0

5.5.5 Environmental Justice

Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” provides that each federal agency shall make achieving environmental justice part of its mission by identifying and



addressing, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations. Special populations may include the elderly, children, the disabled, low-income areas, American Indians, and other minority groups. Executive Order 12898 requires that Environmental Justice principles be incorporated into all transportation studies, programs, policies, and activities. The three environmental principles are:

- Ensure the full and fair participation of all potentially affected communities in the transportation decision-making process.
- Avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low income populations.
- Fully evaluate the benefits and burdens of transportation programs, policies, and activities upon low-income and minority populations.

5.5.5.1 Environmental Justice Populations in the Study Area

As defined by NCDOT, an Environmental Justice population is present whenever EITHER of the following criteria are met:

- The non-white population or low-income population is 10 percentage points higher than the county average.
- Either the non-white population or the low-income population exceeds 50 percent.

Census data indicates a notable presence of populations meeting the criteria for Environmental Justice within the Demographic Study Area (DSA) but no minority or low income communities were observed within the DSA during the site visit. Minority populations meeting the criteria for Environmental Justice are present in Census Tract 206.02, Block Group 4 (27.3 percent) and Census Tract 206.03, Block Group 1 (41.6 percent); while those meeting the criteria for Environmental Justice based on low income are located in Census Tract 202.04, Block Group 2 (32.6 percent), Census Tract 206.03, Block Group 1 (30.3 percent), and Census Tract 203.03, Block Group 2 (23.8 percent).

5.5.5.2 Environmental Justice Impacts

While minority and low-income populations are present in the study area, no notable community impacts are anticipated with this project; thus, impacts to minority and low income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community, and no denial of benefit is expected. Public involvement and outreach activities will ensure full and fair participation of all potentially affected communities in the transportation decision-making process.

5.5.6 Limited English Proficiency

Linguistic isolation results when a person or population has limited proficiency in English. The Census Bureau defines a linguistically isolated household as one in which no one 14 years old or older speaks only English or speaks a non-English language and speaks English “very well.” In other words, all members of the household 14 years old and over have at least some difficulty with English. Census data



do not indicate the presence of Limited English Proficiency (LEP) populations meeting the U.S. Department of Justice Safe Harbor threshold.

However, there is a notable Asian/Pacific language population that may require language assistance located within the DSA in Census Tract 202.04 Block Group 2. The identified population can likely be attributed to the Wat Carolina Buddhajakra Vanaram, a Thai Buddhist Monastery located approximately 1,500 feet south of Lewis Loop Road on the east side of Midway Road.

5.5.7 Bicycle and Pedestrian Facilities

No bicycle or pedestrian activities were observed in the DSA during development of the EA. No bicycle lanes or pedestrian facilities exist along Galloway or Midway roads.

According to the *Brunswick County CAMA Core Land Use Plan* and the *Brunswick Tomorrow Plan*, the county supports the development of a safe, connected bicycle network and will encourage the implementation of bike lanes along appropriate state-maintained thoroughfares as they are planned and expanded. These plans also support pedestrian-oriented development and the implementation of a safe, coordinated network of pedestrian trails throughout Brunswick County, but do not identify specific geographic areas for pedestrian improvements.

The NCDOT Division of Bicycle and Pedestrian Transportation recommends five-foot, paved shoulders that will accommodate bicycle use be included for this project. The project will include four-foot, paved outside shoulders for all three Detailed Study Alternatives, which is considered to be consistent with the Brunswick County CTP. This also supports an anticipated increase in bicycle traffic due to recently improved access to Oak Island.

5.5.8 Parks and Recreational Facilities

There are no parks or recreational facilities in the DSA. The two parks closest to the project are located more than five miles away (Smithville Township District Park and Lockwood Folly Township Park).

5.5.9 Other Public Facilities and Services

Several of these types of public facilities and service facilities are located throughout the DSA, as indicated in **Table 5-11** and shown in **Figure 2**.



Table 5-11: Community Services in the Study Area

Facility	Name	Location
Places of Worship	New Creations Gospel Fellowship	2365 Midway Rd., Bolivia
	St. James Baptist Church	2065 Midway Rd. SE, Bolivia
	Antioch Baptist Church	1700 Midway Rd., Bolivia
	Wat Carolina Buddhajakra Vanaram	1610 Midway Rd., Bolivia
	Rutland Chapel AME Church	1095 Midway Rd., SE, Bolivia
Medical Facility	Novant Health, Brunswick Medical Center	240 Hospital Drive, NE, Bolivia
Emergency Services	Brunswick County Emergency Services	3325 Old Ocean Hwy, Bldg C, Bolivia
Fire Station	Bolivia Volunteer Fire Department	119 Green Lewis Rd., Bolivia
Law Enforcement	Brunswick County Sheriff's Office	70 Stamp Act Drive, Bolivia
Government Facility	Brunswick County Government Center	30 Government Center Drive, NE, Bolivia

Alternative 2 or 3 would result in the relocation of the Rutland Chapel AME Church. Alternative 1 would not impact any community facilities.

5.6 Economic Effects

Due to the proximity to the coast, Brunswick County is a prime tourist destination. The proposed project would support the tourism-related traffic in the area, as the proposed improvements would allow Midway Road to more safely and efficiently accommodate automobile travelers. Particularly with the recent opening of the Second Bridge to Oak Island, the proposed project would support the increased role Midway and Galloway roads are anticipated to take in the provision of regional beach access.

Through the accommodation of projected increases in seasonal traffic along this route, the proposed project is anticipated to provide benefits for the local economy as a whole. However, local businesses located along the corridor could face negative access impacts, particularly in the short term and during construction. The nature of long-term impacts will depend upon whether a two-lane option or the four-lane, median-divided alternative is selected.

If the Alternative 1 or Alternative 3 is chosen for the project, the impacts experienced by local businesses would likely be limited to short-term mobility and access issues associated with construction. Alternative 2 would result in access impacts from the implementation of a median, but the additional safety and overall mobility improvements with the alternative would likely minimize the impacts. Business activity along the corridor is limited and is mainly concentrated at the Midway Road/NC 211 intersection and from Antenna Farm Road north to US 17 Business.

The proposed developments at the southern end of the project (the Lowes Food shopping center and Midway Landing) would likely have access from both Midway Road and NC 211. The businesses north of Antenna Farm Road are primarily destination-type businesses and include a custom boat builder, a salvage yard, and an animal boarding operation. Alternative 2 would include median cuts at certain locations; therefore, access to these businesses would diminish only slightly.



5.7 Land Use

5.7.1 Existing Land Use and Zoning

The project falls primarily in the unincorporated areas of Antioch and Half Hell; however, sections of the project are within the ETJ of the Towns of Oak Island and Bolivia. Brunswick County has experienced substantial growth and development over the past two decades due to the presence of beach communities, the arrival of retirees and vacationers, and the success of the region's tourism industry. However, land in the vicinity of the project remains primarily low-density and rural in character, containing a large proportion of farmland, forest, and wetlands with a mixture of residential, commercial, civic, and religious uses scattered throughout.

5.7.2 Future Land Use and Planning

Development activity along Midway Road within the study area is sparse, with most of the activity occurring near the project termini at the Midway Road/NC 211 intersection and the Galloway Road/US 17 Business/Midway Road area. Existing retail development along Midway Road is dispersed, although this is expected to change with the new Lowes Foods at the Midway Road/ NC 211 intersection. The realigned, four-point Galloway Road/Midway Road intersection with US 17 Business should generate commercial development pressure due to its close proximity to the Brunswick County Government Center and available water/sewer infrastructure.

Beyond potential commercial growth at the two main intersections, most of the future growth along the project length should be of a residential nature.

Development activity organized by jurisdiction is provided below:

St. James

According to the Town Administrator, there are future plans to put in more entrances to the St. James community from NC 211, including the one under construction near the Midway Road/ NC 211 intersection. This new entrance is tied to a planned commercial development along NC 211. Preliminary paving work for this development has been completed, but the area has not been platted yet.

According to local planners, the entire community has approval for an additional 4,444 residential units.

Oak Island

According to discussions with local planners, residential and commercial development activity has stalled recently due to the economic recession. The approved, 13-acre Midway Landing commercial project at the northeast quadrant of the intersection of NC 211 and Midway Road has not started construction, and the 98-acre Midway Station project in the southwest quadrant has yet to begin development. Only the NC 211/Midway Road project in the northwest quadrant of NC 211/Midway Road (including Lowe's Foods) has started construction. At this junction of Midway Road, nearly all of the surrounding land on either side of NC 211 has been zoned for commercial use by Brunswick County.



In terms of residential development, construction on the approved Williamson Tract Planned Unit Development (PUD) and Pine Grove Plantation PUD has been tabled. However, the developers on the Williamson Tract project signed a 20-year agreement with the Town of Oak Island, so construction is expected in the future as the economy improves. The project contains approximately 3,323 acres and is zoned as R-20, a low-density zoning designation that allows a maximum of approximately two dwelling units per acre. The development will be a mixed use community west of the new Oak Island Bridge route with areas for commercial, residential, civic uses, schools, and a town center. There will be an overall residential density cap of 7,238 residential units, which is based on an average of 2.2 units per acre.

Bolivia

Summerwoods, a single-family home community, is being constructed within the Town of Bolivia's ETJ along Galloway Road, approximately 1,200 feet from its intersection with US 17 Business. A total of 107 homes are planned for development; however, construction of homes has recently slowed down. According to the Mayor of Bolivia, there are no plans for further residential or commercial development within the vicinity of the proposed project.

Brunswick County

Several residential subdivisions have been approved in unincorporated Brunswick County in the vicinity of the project. A subdivision called Queens Landing was approved in 2007 on a 47-acre site along Midway Road (between Brown Road and Rutland Road). It will contain 121 single-family homes. Construction has not yet begun, and according to local planners, the developer has not been in recent contact with Brunswick County regarding permitting. The Cypress Creek PUD was approved by the County in 2006, although construction appears to be on hold due to the economic recession. The 588-acre Cypress Creek PUD is located outside of the study area west of Midway Road off Gilbert Road SE. It allows for up to 917 single-family and 492 multi-family residential units, as well as a 3.8 acre commercial site. Old Brunswick Estates, a neighborhood of nine homes and five vacant subdivided lots, is located immediately west of the McKay and Midway roads intersection. There has been no recent movement on the vacant lots. Homes in Old Brunswick Estates are larger than most other homes along the proposed project length, and nearly all lots are greater than two acres in size. The three communities have a combined total of 1,535 approved but un-built residential units. No commercial development, other than the 3.8-acre site approved as part of the Cypress Creek PUD, is approved within the unincorporated area west of the study area.

5.7.3 Community Cohesion

On an area-wide level, little cohesion currently exists between the communities within and in proximity to the project corridor (Oak Island, Bolivia, Southport, and St. James). This limited cohesion can be attributed to geography and natural features, land use configurations, urban design features, and the existing transportation infrastructure, which offers limited automobile and multimodal connections between these communities.

At the project level, little physical cohesion exists between residential areas due to fragmentation of residential land uses and the predominance of large-lot, single-family homes. Additionally, the presence



of farms and wetlands along the corridor has led to scattered development resulting in a lack of connectivity between land uses for motorists, bicyclists, and pedestrians. The proposed project is not expected to increase or decrease this lack of connectivity, as local communities have planned primarily for large-scale, automobile-dependent development.

5.7.4 Project Compatibility with Local Plans

NCDOT's Transportation Planning Branch developed the Brunswick County CTP. The CTP, published in March 2013, lists the R-3434 project as an important element in meeting transportation needs for the area residents. Roadway improvement projects shown in the CTP do not conflict with any of the three Detailed Study Alternatives under study.

The proposed project is also consistent with Brunswick County's and the Town of Oak Island's land use and development plans.

5.8 Indirect and Cumulative Effects

The indirect effects of the proposed project on future land use were determined using NCDOT prescreening methodology. The categories listed in the Indirect and Cumulative Effects (ICE) Screening Tool have been shown to influence land development decisions in numerous areas statewide and nationally. Each characteristic is assessed individually and the results are reviewed collectively to determine the potential indirect and cumulative effects of the proposed project. Each of the following categories is weighted according to its importance in affecting land use changes: project scope and changes in accessibility are highly influential; public policy and environmental features moderately influential; and population and employment growth, available land, water/sewer availability and market for development have the least influence.

5.8.1 Indirect Summary Statement

Based on the results of the Indirect Effects Screening Matrix, the need for an Indirect Land Use Scenario Assessment ranges from "not likely" for the two-lane alternative (Alternative 1) to "possible" for the four-lane alternative (Alternative 2). Alternative 3 was developed after the completion of the ICE screening, but its potential indirect effects are most similar to Alternative 1.

Land use effects are tempered by the fact that the project is not providing any new access to land and will result in minimal time savings. In addition, although water service is provided along the project length, there are no existing or planned sewer lines other than along intersecting roadways near the project termini.

The development of already approved/planned projects in the Future Land Use Study Area (FLUSA) is more likely to accelerate due to improvements in the overall economy as opposed to the completion of R-3434. The location of anticipated growth resulting from the project, particularly commercial development, will be more attracted to the project termini where infrastructure is already in place and land use nodes are already taking shape. Low-density residential development is more likely to take place within the project



horizon along the project length and at intersecting roadways such as Gilbert Road and Green Lewis Road, where turn lanes providing additional capacity are proposed.

5.8.2 Indirect Effects Screening

The follow categories assessed in the Indirect Screening Matrix have been shown to influence land development decisions in numerous areas statewide and nationally.

5.8.2.1 Scope of Project

This project will involve improvements to Midway and Galloway roads; realigning the intersection of Midway and Galloway roads and US 17 Business; making improvements to problematic segments and sight lines; and replacing two bridges along the corridor.

Depending on the selection of design alternatives, the project may make improvements to the two existing lanes of Midway Road, or a widening to a four-lane, median-divided configuration. The two-lane and four-lane alternatives would result in different indirect effects as described below.

5.8.2.2 Change in Accessibility

The four-lane alternative is expected to have higher travel time savings compared to the two-lane alternative. Therefore, the “concern” rating for the four-lane alternative is higher than the two-lane alternative.

5.8.2.3 Available Land

A parcel-based GIS analysis was conducted using data obtained from Brunswick County in October 2010 to determine the amount of available land for development within the FLUSA. From the parcel data, parcels designated as “Vacant Land” were selected. Added to these parcels were properties in all land use categories with less than \$20,000 of improvement values (aside from mobile homes). The \$20,000 threshold allowed vacant properties with small buildings (i.e., sheds) to be included in the developable land category. Also added to the parcels were properties in excess of five acres with one house on them. These parcels were considered likely to be subdivided and therefore developable in the future. The resulting file was the preliminary total developable area, which amounted to 7,705.3 acres (or 89.2 percent of the FLUSA).

Once the preliminary total developable area was established, parcels were removed that, based on field visits, had either experienced or were experiencing development. The file was also spot checked with aerial imagery throughout the FLUSA, to identify parcels that may have inadvertently been captured. The presence of development restrictions was analyzed to determine any additional constraints. Based on GIS data and local ordinances, land needed for R-3434 and R-5021 right-of-way was removed, as was 82 acres for water bodies that included 25 foot buffers on either side of the seven creeks within the FLUSA. There are no floodways or estuarine wetlands within the FLUSA. However, there is a 229-acre conservation easement in the southeastern quadrant of the Midway Road/NC 211 intersection. A total of 7,571 acres remains as total developable area, or 87.6 percent of the FLUSA land area.

Because the amount of available land is greater than 5,000 acres for both alternatives, they received the same high “concern” rating.



5.8.2.4 Water/Sewer Availability

The project area is located within the West Regional Wastewater Service Area and already receives water services from Brunswick County. Within this service boundary, the West Brunswick Regional Water Reclamation Facility is under construction and will provide service to the project area. According to the Future Land Use Map presented in the Brunswick County Land Use Plan, trunk lines for this facility will run along Old Ocean Highway (US 17) and NC 211. An additional line, planned for the short term but not designated as a trunk line of the facility under construction, will be implemented between the Town of St. James and the intersection of Midway Road and NC 211.

According to the Assistant Town Manager of Oak Island, no infrastructure or public facilities expansions are planned for the project area on behalf of Oak Island. The Brunswick County Planning Director indicated that although no specific infrastructure expansions are planned in the area, upcoming revisions to the Capital Improvement Plan (CIP) will account for the effects of the R-3434 improvements beyond a three-year time horizon.

5.8.2.5 Market for Development

Due to the proximity to several coastal communities, Brunswick County is a prime tourist destination. The project will support the tourism-related traffic in the area, as the planned improvements will allow Midway Road to more safely and efficiently accommodate automobile travelers. Particularly with the recent opening of the Second Bridge to Oak Island, the improvements will support the increased role Midway and Galloway roads are anticipated to take in the provision of regional beach access.

If a four-lane alternative is chosen, the project may result in the development of commercial nodes at median cuts, with residential uses filling in the gaps between these nodes. Under this scenario, frontage and backage roads or cross access agreements may help to increase accessibility and connections between commercial developments and major intersections. Although such improvements are unlikely to be needed in the short term given the current nature of development along the corridor, future growth patterns and the likely spread of commercial development may warrant consideration of these measures in the future. Indeed, as the project proceeds, there will be more pressure to develop the corridor with commercial uses, particularly at intersections and median breaks. As this form of growth occurs, off-corridor facilities offering increased connectivity and accessibility between commercial uses may be appropriate.

Regardless of the design alternative selected, the R-3434 improvements are likely to result in increased economic and commercial activity to the southeastern portion of the FLUSA, which is zoned for mixed-use development. This attraction may be greater with the implementation of a four-lane roadway due to the potential for greater traffic volumes, provided that adequate median cuts are offered in this area.

5.8.2.6 Public Policy

All of the jurisdictions within the FLUSA have some level of land development regulations, most of which are enforced by zoning and/or unified development ordinances, which will be described in the section below. As with any jurisdiction, there are standard regulations regarding floodplain/floodway development and best management practices related to stormwater runoff.



These include but are not limited to: elevation thresholds, setback requirements, detention ponds, and riparian buffers.

In addition, being located in a Coastal Area Management Act (CAMA) county, Brunswick County and its jurisdictions must abide by regulations in the 2007 Core CAMA Land Use Plan. These regulations refer to land use development controls, as well as the protection of environmental features such as various types of wetlands, estuarine waters/shoreline, outstanding resource waters, and other protected lands. Other than Brunswick County's CAMA Land Use Plan, long-range plans and policies consulted to determine applicability to the FLUSA include:

- Brunswick Tomorrow – Our County, Our Vision, Our Decision, 2004.
- Brunswick County Comprehensive Transportation Plan, 2008.
- NC 211 Corridor Study Future Build Out, 2008.
- CAMA Handbook for Development in Coastal North Carolina, specifically the CAMA Wetlands Development Guidelines.
- Brunswick County Unified Development Ordinance, 2007 and updated 2011.
- Town of Oak Island, CAMA Land Use Plan Update, 2009.
- Town of St. James Unified Development Ordinance, 2010.
- Town of St. James CAMA Land Use Plan, date unknown.

5.8.3 Indirect Effects Screening Results

The results of the indirect effects screening for the two-lane alternative indicated that an indirect land use scenario assessment for R-3434 is not likely needed. Being a widening project only, without the addition of two new lanes, it ranks only moderately in terms of the level of concern for the scope of project. Although some intersections will be upgraded to include turn lanes, no new land access will be created, and the current lack of sewer service along Midway Road should limit the intensity of development. In addition, travel time savings is expected to be minimal for the 7-mile stretch of roadway, particularly with the addition of traffic signals at US 17 Business.

The results of the indirect effects screening for the four-lane, median divided alternative indicated that an indirect land use scenario assessment was possibly needed. The additional right-of-way needed for this alternative, in addition to the design changes, increases the scope of the project. Also, the four-lane alternative is expected to have higher travel time savings compared to the two-lane alternative, and will include a median limiting full access to parcels. Median break locations have not been identified. Other factors in the matrix should not differ between the two alternatives. Based on additional coordination with the NCDOT Human Environment Section, it was determined that an indirect land use scenario assessment was not required.

Based on the demographic analysis, future population growth through the horizon year within the Demographic Study Area is expected to range between 2 percent to 3 percent annually, with much of the growth expected outside of the FLUSA. In terms of future employment growth, Brunswick County as a whole is expected to add somewhere less than 6,900 employees between 2010 and 2016, or no more than 1,100 employees per year (4.0 percent per year). Most of this employment growth, however, is expected



to be outside of the FLUSA within beachfront communities (Southport, Oak Island, Ocean Isle, Holden Beach, Sunset Beach) and along the US 17 Bypass corridor (Calabash, Shallotte, Supply).

In terms of the availability of land within the FLUSA, more than 5,000 acres exist for new development. Also, as mentioned previously, there is a 12-inch water main along Midway Road and Galloway Road, but no sewer line. There is sewer service, however, along NC 211 and US 17 Business within the FLUSA. Thus, most, if not all of the FLUSA has water service, but sewer service is only provided near project termini.

As a result of the lingering economic recession, the development of approved/planned commercial and residential projects within the FLUSA has been delayed. However, these projects are expected to be developed as the market continues to improve. For this reason, the market for development is ranked as a moderate concern related to indirect effects associated with R-3434.

Based on conversations with local government staff, local public policy makers are neither discouraging nor encouraging development along Galloway/Midway roads. Much of the most intense development identified on Brunswick County's future build-out map is located along NC 211 closer to Southport and in pockets along the US 17 Bypass. Zoning controls and subdivision regulations are in place throughout the FLUSA to help manage growth. Lastly, a large portion of the FLUSA is designated as riverine swamp forest and pine flat wetlands, which makes development slightly more restrictive. The FLUSA also contains suitable habitat for a number of different protected species, although no adopted plans are in place to protect these areas from development other than low-density zoning.

5.8.4 Water Quality Statement

The lack of unprotected natural resources and induced growth and development as a result of R-3434 suggest that water quality effects are not anticipated. Although R-3434 crosses seven streams, none are on the NCDWR's 2012 Clean Water Act Section 303(d) list. All are classified as Class C, swamp waters (SW). Accordingly, they are designated for secondary recreation, fishing, agriculture, and wildlife, fish, and aquatic life propagation and survival. However, any potential direct impacts to water quality associated with the bridge replacements needed for R-3434 should be taken into account. In addition, there are no water supply watersheds (WSW), Outstanding Resource Waters (ORW), or High Quality Waters (HQW) within the FLUSA.

Furthermore, in addition to general development regulations to protect the natural environment, the Coastal Area Management Act, administered by the Coastal Resources Commission, requires permitting for any development within designated Areas of Environmental Concern (AEC) of its corresponding 20 counties, of which Brunswick is one. Based on the definition of what constitutes an AEC, there are none located within the FLUSA. These conditions suggest that R-3434 itself should have no measurable water quality effects.

5.8.5 Cumulative Effects Summary Statement

The currently identified project alternatives, a widened two-lane cross section or a two- to four-lane widening, should not notably affect any environmental resources within the FLUSA. However, it is



possible that when combined with other recent activity, effects upon land development and eventually water quality could arise.

Notable past public and private actions with the FLUSA include:

- The construction of the Brunswick County Government Center.
- The completion of the US 17 Bypass.
- The more recent completion of the Oak Island bridge route (Midway Road south of NC 211)
- Lowes Foods currently under construction.

There are also some notable present and future actions within the FLUSA, including:

- The future widening of NC 211 (R-5021) scheduled for construction in 2015.
- Approved housing within the St. James community and the Summerwoods development near Bolivia.
- Approved commercial development within the Cypress Creek PUD, Midway Landing and Midway Station projects.

When combined with the Midway Road Improvements, all of these actions could potentially have land development and eventually water quality effects within both the FLUSA and the immediate region. However, there are currently no impaired water bodies within the FLUSA, and the wetlands that are present (swamp forest and pine flat) are suitable for protected species habitat although no populations have been currently identified. Thus, it is anticipated that any adverse cumulative effects could be avoided with proper development controls and regulations.

5.9 Flood Hazard Evaluation

The state of North Carolina, through the Federal Emergency Management Agency's (FEMA's) Cooperating Technical Community partnership initiative, was designated as the first cooperating Technical State (CTS). As a CTS, the state has assumed primary ownership and responsibility of the Flood Insurance Rate Maps (FIRM) for all North Carolina communities (except Mecklenburg County) as part of the National Flood Insurance Program (NFIP). This effort includes conducting flood hazard analyses and producing updated, digital FIRMs (DFIRM).

Brunswick County is a participant in the NFIP, administered by the FEMA. Based on the most current information available from the NC Floodplain Mapping Program (FMP), Midway Branch and Middle Swamp are in a designated flood hazard zone. This zone is within a limited detailed flood study reach, having a regulated 100-year nonencroachment width regulated as a floodway. The proposed structure replacements will provide equivalent or greater conveyance than that of the existing structures. The Hydraulics Unit will coordinate with the FMP, the delegated state agency for administering FEMA's NFIP, to determine the status of the project with regard to applicability of NCDOT'S Memorandum of Agreement with FMP or to approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, Division 3 staff shall submit sealed, as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and



roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

5.10 Traffic Noise Analysis

5.10.1 Title 23 Code of Federal Regulations Part 772 (23 CFR 22)

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM) approved by FHWA and following procedures detailed in Title 23 CFR 772, the NCDOT Traffic Noise Abatement Policy and the NCDOT Traffic Noise Analysis and Abatement Manual. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Temporary and localized noise impacts will likely occur as a result of project construction activities. Construction noise control measures will be incorporated into the project plans and specifications.

A copy of the unabridged version of the full technical report entitled *Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211 Traffic Noise Report in Brunswick County* can be viewed in the Project Development & Environmental Analysis Unit, Century Center Building A, 1000 Birch Ridge Drive, Raleigh.

5.10.2 Traffic Noise Impacts and Noise Contours

The maximum number of receptors in each project alternative predicted to become impacted by future traffic noise is shown in **Table 5-12** below. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria or by a substantial increase in exterior noise levels.

The maximum extent of the 71- and 66- dB(A) noise level contours measured from the center of the proposed roadway is 93 feet and 189 feet, respectively.

Table 5-12: Predicted Traffic Noise Impacts by Alternative*

Alternative	Impact Type			Total Impacts
	Residential (NAC B)	Places of Worship, Schools, Parks, etc. (NAC C&D)	Businesses (NAC E)	
Alternative 1	60	3	0	63
Alternative 2	83	4	0	87
Alternative 3	42	2	0	44

*Per TNM2.5 and in accordance with 23 CFR Part 772

5.10.3 No Build Alternative

The Traffic Noise Analysis also considered traffic noise impacts for the No Build alternative. If the proposed project does not occur, 56 receptors are predicted to experience traffic noise impacts and the future traffic noise levels will increase by approximately 2 dBA. Based upon research, humans barely detect noise level changes of 2-3 dBA. A 5-dBA change is more readily noticeable. Therefore, most people working and living near the roadway will not notice this predicted increase.



5.10.4 Traffic Noise Abatement Measures

Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors in each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, establishment of buffer zones, noise barriers and noise insulation (NAC D only). For each of these measures, benefits versus costs (reasonableness), engineering feasibility, effectiveness and practicability and other factors were included in the noise abatement considerations.

Substantially changing the highway alignment to minimize noise impacts is not considered to be a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT base dollar value of \$37,500 plus an incremental increase of \$525 (as defined in the NCDOT Policy) per benefited receptor, causing this abatement measure to be unreasonable.

5.10.5 Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb, and reflect highway traffic noise.

This project will maintain uncontrolled or partial control of right of way access, meaning that most noise-sensitive land uses will have direct access connections to the proposed project, and most intersections will adjoin the project at grade. The Traffic Noise Analysis for this project confirmed that the physical breaks in potential noise barriers that would occur due to the uncontrolled right of way access would prohibit any noise barrier from providing the minimum required traffic noise level reductions at all predicted traffic noise impacts, as defined by the noise abatement measure feasibility criteria of the NCDOT Traffic Noise Abatement Policy.

5.10.6 Traffic Noise Analysis Summary

Based on this preliminary study, traffic noise abatement is not recommended and no noise abatement measures are proposed. This evaluation completes the highway traffic noise requirements of Title 23 CFR Part 772. No additional noise analysis will be performed for this project unless warranted by a substantial change in the project's design concept or scope.

In accordance with NCDOT Traffic Noise Abatement Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the final environmental document – anticipated to be a Finding of No Significant Impact (FONSI). For development occurring after this date, local governing bodies are responsible to insure that noise compatible designs are utilized along the proposed facility.



5.11 Air Quality Analysis

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility.

The Federal Clean Air Act of 1970 established the National Ambient Air Quality Standards (NAAQS). These standards were established to protect the public from known or anticipated effects of air pollutants. The most recent amendments to the NAAQS contain criteria for sulfur dioxide (SO₂), particulate matter (PM), carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb).

The primary pollutants from motor vehicles are unburned hydrocarbons, nitrous oxides, carbon monoxide, and particulates. Hydrocarbons and nitrogen oxides can combine in a complex series of reactions catalyzed by sunlight to produce photochemical oxidants such as ozone and NO₂. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources.

A project-level qualitative air quality analysis was prepared for this project. A copy of the unabridged version of the full technical report entitled *Revised Air Quality Analysis*, dated April 22, 2014 can be viewed at the Project Development & Environmental Analysis Unit, Century Center Building A, 1010 Birch Ridge Drive, Raleigh.

5.11.1 Attainment Status

The project is located in Brunswick County, which complies with the National Ambient Air Quality Standards. This project will not add substantial new capacity or create a facility that is likely to meaningfully increase emissions. Therefore, it is not anticipated to create any adverse effects on the air quality of this attainment area.

5.11.2 Mobile Source Air Toxics (MSAT)

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the U.S. Environmental Protection Agency (EPA) regulate 188 air toxics, also known as hazardous air pollutants. The EPA has assessed this expansive list in their latest rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007), and identified a group of 93 compounds emitted from mobile sources that are listed in their Integrated Risk Information System (IRIS) (<http://www.epa.gov/iris/>). In addition, EPA identified seven compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (NATA) (<http://www.epa.gov/ttn/atw/nata1999/>). These are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future EPA



rules. The 2007 EPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. According to an FHWA analysis using EPA's MOBILE6.2 model, even if vehicle activity (vehicle-miles travelled, VMT) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority MSAT is projected from 1999 to 2050, as shown in Exhibit 1 in the unabridged Technical Report.

5.11.2.1 Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES improves upon the previous MOBILE model in several key aspects: MOVES is based on a vast amount of in-use vehicle data collected and analyzed since the latest release of MOBILE, including millions of emissions measurements from light-duty vehicles. Analysis of this data enhanced EPA's understanding of how mobile sources contribute to emissions inventories and the relative effectiveness of various control strategies. In addition, MOVES accounts for the effects that vehicle speed and temperature have on PM emissions estimates, whereas MOBILE did not. MOVES2010b includes all air toxic pollutants in NATA that are emitted by mobile sources. EPA has incorporated more recent data into MOVES2010b to update and enhance the quality of MSAT emission estimates. These data reflect advanced emission control technology and modern fuels, plus additional data for older technology vehicles.

Based on an FHWA analysis using EPA's MOVES2010b model, even if vehicle-miles travelled (VMT) increases by 102 percent as assumed from 2010 to 2050, a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

The implications of MOVES on MSAT emissions estimates compared to MOBILE are: lower estimates of total MSAT emissions; lower benzene emissions; higher diesel PM emissions, especially for lower speeds. Consequently, diesel PM is projected to be the dominant component of the emissions total.

5.11.2.2 MSAT Research

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how potential public health risks posed by MSAT exposure should be factored into project-level decision-making within the context of NEPA.

Nonetheless, air toxics concerns continue to be raised on highway projects during the NEPA process. Even as the science emerges, we are duly expected by the public and other agencies to address MSAT impacts in our environmental documents. The FHWA, EPA, the Health Effects Institute, and others have funded and conducted research studies to try to more clearly define potential risks from MSAT emissions associated with highway projects. The FHWA will continue to monitor the developing research in this field.

5.11.2.3 Analysis of MSAT in NEPA Documents

The FHWA developed a tiered approach for analyzing MSAT in NEPA documents, depending on specific project circumstances. The FHWA has identified three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects.



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- Qualitative analysis for projects with low potential MSAT effects.
 - Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

For projects warranting MSAT analysis, the seven priority MSAT should be analyzed. This project is included in level 2 above.

5.11.2.4 NEPA Context

NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals. The NEPA also requires Federal agencies to use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment. The NEPA requires, and FHWA is committed to, the examination and avoidance of potential impacts to the natural and human environment when considering approval of proposed transportation projects. In addition to evaluating the potential environmental effects, we must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest. The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

5.11.2.5 Consideration of MSAT in NEPA Documents

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

1. No analysis for projects with no potential for meaningful MSAT effects.
2. Qualitative analysis for projects with low potential MSAT effects.
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

For projects warranting MSAT analysis, the seven priority MSAT should be analyzed.

This project falls under Category (2) because it is intended to improve the operations of a highway, transit or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions, and the Design Year traffic is not projected to meet or exceed the 140,000 to 150,000 AADT criterion.

5.11.2.6 Qualitative MSAT Analysis

For each alternative in this EA, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMTs, assuming that other variables such as fleet mix are the same for the alternative. The VMT estimated within the project area is projected to be the same for the 2035 Build alternatives as compared to the 2035 No Build alternative.

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year 2035 as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future for all Build Alternatives.



The additional travel lanes contemplated as part of the 4-lane widening alternative will have the effect of moving some traffic closer to nearby homes and businesses; therefore, there may be localized areas where ambient concentrations of MSAT could be higher under the Build Alternative than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced where any additional lanes are built along the selected alternative near the proposed intersection of Midway Road/ Galloway Road and US 17 Business. However, the magnitude and the duration of these potential increases compared to the No Build alternative cannot be reliably quantified due to incomplete or unavailable information in forecasting project-specific MSAT health impacts. In sum, when a highway is widened, the localized level of MSAT emissions for the Build Alternative could be higher relative to the No Build Alternative, but this could be offset due to increases in speeds and reductions in congestion (which are associated with lower MSAT emissions). Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will over time cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than today.

In sum, under the Build Alternatives in the design year it is expected that MSAT emissions in the study area would be equal to the No Build Alternative due to no increase in VMT. In addition, EPA's vehicle and fuel regulations will bring about lower MSAT levels for the area in the future than today.

5.11.2.7 Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful



to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response, that are better suited for quantitative analysis.

5.11.2.8 MSAT Conclusion

What we know about mobile source air toxics is still evolving. As the science progresses FHWA will continue to revise and update this guidance. FHWA is working with Stakeholders, EPA and others to better understand the strengths and weaknesses of developing analysis tools and the applicability on the project level decision documentation process.

5.11.3 Summary

The project is located in Brunswick County, which complies with the National Ambient Air Quality Standards. This project will not add substantial new capacity or create a facility that is likely to meaningfully increase emissions. Therefore, it is not anticipated to create any adverse effects on the air quality of this attainment area. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process, and no additional reports are necessary.

5.12 Utilities

Based on updated cost estimates prepared by NCDOT on October 30, 2013, Alternative 2 (4-lanes) and Alternative 3 (2-lanes enhanced) would have the highest utility relocation and construction costs (\$3,234,544.60). NCDOT estimates that Alternative 1 (2-lanes) would have the least utility relocation and construction costs (\$2,759,282.00).

5.13 Hazardous Materials

NCDOT identified properties within the study area that are or may be contaminated by hazardous materials or waste, thus resulting in increased project costs and possible future liability if acquired by NCDOT. Hazardous areas of concern may include, but are not limited to, active and abandoned underground storage tank (UST)/above ground storage tank (AST) sites, hazardous waste sites, regulated landfills, and unregulated dumpsites. Based on a field survey and Geographic Information System (GIS) information, NCDOT identified one known UST site, one former UST/AST site, and one automotive and marine repair business in the study area, as shown in **Table 5-13**.

Through this evaluation, NCDOT concluded that the monetary and scheduling impacts resulting from these sites to be low. More detailed information about this is provided in the project's GeoEnvironmental Report.



Table 5-13: Hazardous Sites in the Study Area

No.	UST Facility ID	Property Type and Location	UST Owner	Anticipated Impacts	Anticipated Severity
1	0-022965	Active gas station; NC 211 & SR 1500 (Midway Rd)	M.M. Fowler, Inc.	This property is currently being investigated as an advance acquisition under the R-5021 project. The two known USTs, dispensers and fuel lines will be removed after the preliminary site assessment is completed.	Low
2	0-002374	Former grocery store and gas station; 1094 Midway Road	M.M. Fowler, Inc.	The UST Section Registry shows that two USTs were removed from this parcel in 1987. In 2009 the abandoned structures were razed and the two ASTs were removed from this location. There is no ground water incident associated with this parcel	Low
3	None	Former engine repair facility; 550 Midway Road	George Lockamy, Jr.	The entire 3-acre parcel is covered with junk cars and fiberglass boats. The project will impact the entrance way, which is relatively clear of debris.	Low

5.14 Summary of Environmental Effects

Table 3-1 provides a summary of the environmental effects discussed in this section. This information will be presented to the community, as well as federal, state, and local project stakeholders at the corridor public hearing. Subsequent to the corridor public hearing, a recommended alternative will be identified based on the design information prepared and public outreach comments received. This recommended alternative will be presented to the Merger Team at the CP 3 meeting. At this meeting, the LEDPA/Preferred Alternative will be chosen.



6 PUBLIC INVOLVEMENT AND AGENCY COORDINATION

6.1 Public Involvement

6.1.1 Citizens Informational Workshop

NCDOT held a Local Officials Meeting and the first Citizens' Informational Workshop in the Commissioner's Chambers of the Public Assembly Building (Building D) at the Brunswick County Government Complex on Thursday, November 13, 2003. During the 30-day comment period, 46 individuals and 1 group submitted comments on the project. These comments are summarized below:

- Forty-five of the forty-seven comments received were positive. The other two comments favored a new facility in a new location.
- Commenters agreed that Midway Road should be widened to a four-lane facility.
- Concerns were raised that, if the road remains unimproved, traffic coming from the Second Bridge to Oak Island will back up during emergency evacuations.
- Citizens were also concerned about safety on the unimproved facility.
- The remaining comments were suggestions about how to connect Midway Road to other facilities.

NCDOT held a Local Officials Meeting followed by a second Citizens' Informational Workshop in the Council Chambers of the David R. Sandifer Administration Building at the Brunswick County Government Complex on Monday, October 24, 2011. Approximately 85 citizens and local officials attended to learn about the project and express their comments and concerns. The comments expressed during this meeting are summarized below:

- One citizen expressed concern that a 4-lane road will lead to increased congestion and crashes.
- There is a need for protected left turn movements and a median at SR 1556 (Hewett Road) and SR 1507 (Brown Road) in order to increase safety.
- Support was expressed for widening SR 1500 (Midway Road) and SR 1401 (Galloway Road) to four lanes, smoothing curves and replacing bridges.
- The improvements proposed to SR 1500 (Midway Road) are critical for Oak Island EMS response to medical emergencies.
- Widening SR 1500 (Midway Road) to four lanes would substantially increase safety and traffic flow on this facility.
- Many citizens were in support of the project and expressed satisfaction that several sharp curves would be smoothed out.
- The project should be accelerated so that this facility will be improved prior to the opening of the rest of I-140.
- A citizen expressed concern about the addition of an interchange at the existing intersection of SR 1500 (Midway Road) and NC 211.
- Accessibility to residential and commercial developments is crucial.
- It was suggested that a roundabout at SR 1501 (Gilbert Road) and SR 1500 (Midway Road) or at US 17 Business and SR 1500 (Midway Road) should be investigated.



6.1.2 Public Hearing

NCDOT will conduct a corridor public hearing following public circulation of the EA document. During this meeting, NCDOT will present the detailed designs and associated impacts for the three Detailed Study Alternatives. The attendees will be invited to provide oral or written comments regarding the proposed project.

6.2 Agency Coordination

During project initiation, NCDOT provided “start of study” letters to the following state, federal, and local agencies. Written comments were received and considered from agencies noted with an asterisk (*) during the preparation of this EA:

- FHWA
- USACE*
- US Environmental Protection Agency
- US Fish and Wildlife Service*
- National Marine Fisheries*
- NC Division of Water Resources
- NC Division of Marine Fisheries
- NC Division of Coastal Management
- NC Natural Heritage Program*
- NC Division of Soil and Water Conservation*
- NC Division of Forest Resources*
- NC Division of Environmental Health*
- NC Wildlife Resource Commission*
- NC Department of Crime Control and Public Safety*
- State Historic Preservation Office*
- Cape Fear Rural Planning Organization

6.2.1 Section 404/NEPA Merger Process

For many NCDOT projects, the Section 404/NEPA Merger Process (Merger Process) is initiated to streamline the project development and permitting process, agreed to by the USACE, NCDENR-DWR, FHWA, and NCDOT, and supported by other stakeholder agencies and local units of government. To this effect, the Merger Process provides a forum for appropriate agency representatives to discuss and reach consensus on ways to facilitate meeting the regulatory requirements of Section 404 of the Clean Water Act during the NEPA decision-making phase of transportation projects. Cooperating agencies included in the Merger Process of this project are as follows:



-
- FHWA
 - USACE
 - U.S. Environmental Protection Agency
 - U.S. Fish and Wildlife Service
 - National Marine Fisheries Service
 - NC Division Water Resources
 - NC Division of Marine Fisheries
 - NC Division of Coastal Management
 - NC Wildlife Resource Commission
 - State Historic Preservation Office
 - Cape Fear Rural Planning Organization
 - NCDOT

6.2.2 Concurrence Point 1 (CP1)

On September 19, 2012, the Merger Team met to discuss concurrence on Purpose and Need and Study Area Defined – CP 1. During the meeting, NCDOT presented the existing conditions, study area, project need, and project purpose to the participating environmental agencies. Subsequent to the presentation and discussion, the Merger Team reached a consensus and signed the formal Concurrence Point 1 form – Purpose and Need and Study Area Defined. The project purpose and need along with the study area, are described in Chapter 1 of this document. A copy of the CP 1 signature form is included in Appendix B.

6.2.3 Concurrence Point 2 (CP2)

At the October 11, 2012, Concurrence Point 2 meeting of the Merger Team, the regulatory and resource agencies suggested replacing the 3-lane widening alternative with a 2-lane alternative on 4 lanes of right of way that would have extra wide (5 or 6-foot) paved shoulders in order to accommodate emergency vehicles and/or evacuation traffic (Alternative 3). The paved section would be wide enough to handle three lanes of traffic, but would only be striped for two lanes. NC Department of Natural Environment (DENR) noted that if Alternative 3 is chosen as the LEDPA, the only impacts that would be authorized at the time of permitting would be those which are within the footprint required to build the expanded 2-lane roadway, unless the justification for 4-lane widening is strengthened. The US Environmental Protection Agency (EPA) noted that NCDOT could propose a phased approach to the project by upgrading only 2-lanes initially, and then constructing the remaining two lanes and the median at a later date. The US Army Corps of Engineers (USACE) added that under this phased approach, NCDOT could also come back at a later date to request a permit modification or a new permit for the ultimate 4-lane section.

The FHWA noted that since the environmental document is a disclosure document, and the federal action describes the entire footprint, including the impacts associated with the acquisition of right of way, the document must include impacts associated with the ultimate footprint of construction. However, EPA stated that the document should also show the impacts associated with the initial construction that will be covered under the first phase of permitting. Based on this input, NCDOT is calculating impacts within the right of way (i.e., slopestakes plus a buffered 25 feet) but effects such as noise impacts are calculated for



only the portion of the alternative constructed during the first phase of permitting (i.e., the 2-lane version of Alternative 3 and not the possible future 4-lane version of Alternative 3).

Based on this information, the Merger Team members eliminated one alternative and replaced it with a new alternative. The Merger Team selected the following three alternatives as the Detailed Study Alternatives to be carried forward:

- **Alternative 1** – an improved two-lane section on two lanes of right of way.
- **Alternative 2** – a four-lane median-divided section on four lanes of right of way.
- **Alternative 3** – an expanded two-lane section on four lanes of right of way to accommodate hurricane evacuation and potential future widening.

A copy of the CP 2 signature form is included in Appendix B.

6.2.4 Concurrence Point 2A (CP2A)

Functional design plans and associated impact analyses were updated for the 3 alternatives developed during the CP 2 meeting. In addition, proposed structures for the 7 major stream crossings in the study area were presented to the Merger Team members on March 11, 2014, at the CP 2A field meeting. Based on this information, the Merger Team members agreed on crossing structures for the major crossings, and a subsequent formal CP 2A meeting proved unnecessary.

A copy of the CP 2A signature form is included in Appendix B.

6.2.5 Future Section 404/NEPA Merger Process and Concurrence

As project development continues, further Merger Team meetings will be held with subsequent concurrence on the following:

- CP 3: LEDPA/Preferred Alternative Selection
- CP 4A: Avoidance and Minimization of Jurisdictional Waters
- CP 4B: 30% Hydraulic Review (Drainage System Layout and Cross Conveyance)
- CP 4C: Permit Drawings Review.

6.4 Other Coordination

Several small group meetings were held with various businesses and communities during the project planning process.

On October 30, 2008, NCDOT staff met with representatives of Brunswick County to discuss the project. The county officials discussed their vision for the improvements to Midway and Galloway roads. Based on anticipated growth in the area, evacuation routes, and EMS response times, the county felt that a four-



lane facility would best suit the county's needs. After the meeting, the county issued a resolution in support of a four-lane facility in this location. This resolution is included in Appendix B.



7 REFERENCES

Brunswick County Government. 2004. *Brunswick Tomorrow: Our County, Our Vision, Our Decision*. Bolivia, NC.

Holland Consulting Planners, Inc. 2007. *Brunswick County CAMA Core Land Use Plan*. Wilmington, NC.

NCDOT (North Carolina Department of Transportation). 2010. *2010 Brunswick County Comprehensive Transportation Plan*. Raleigh, NC.

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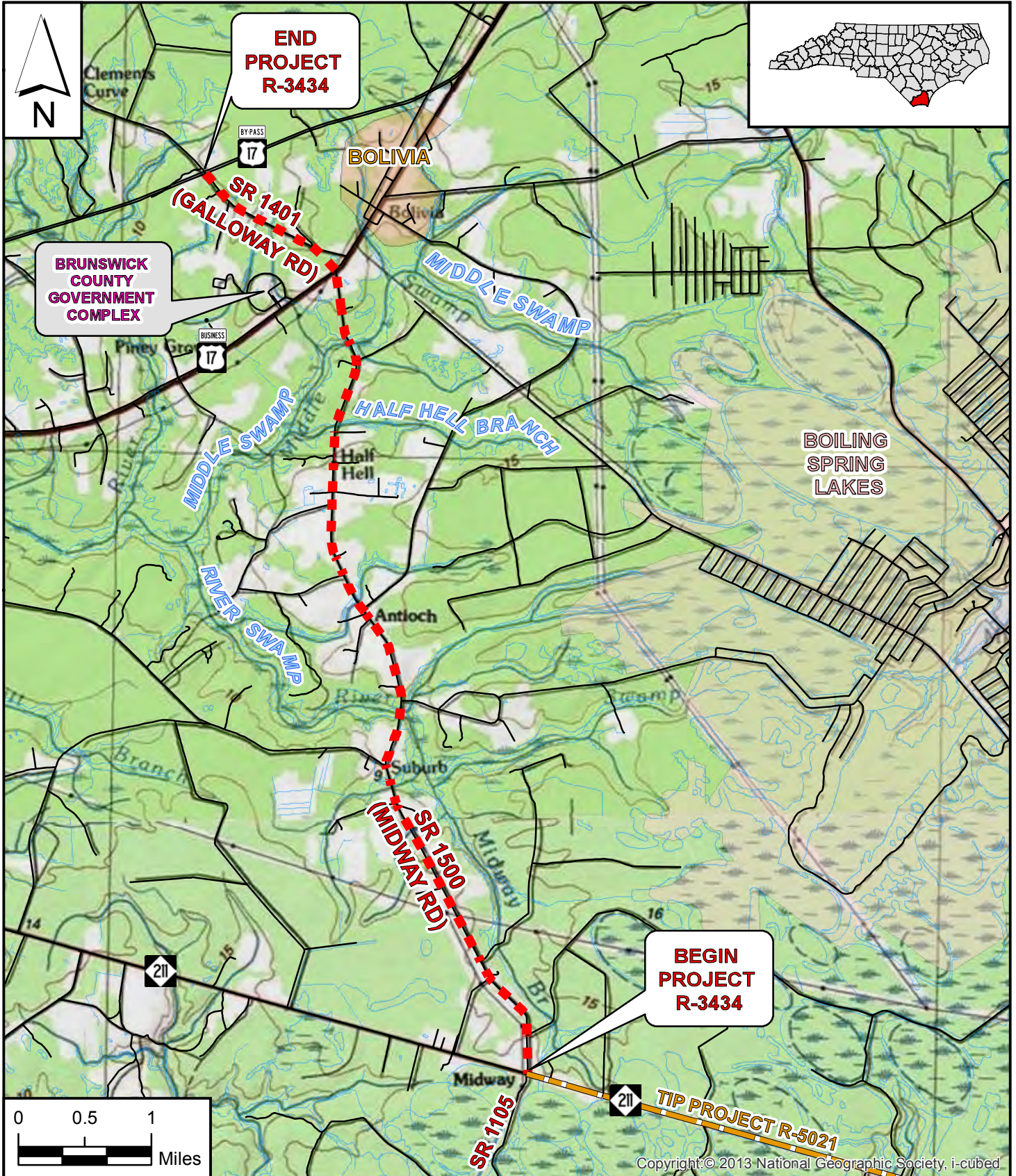



Appendix A

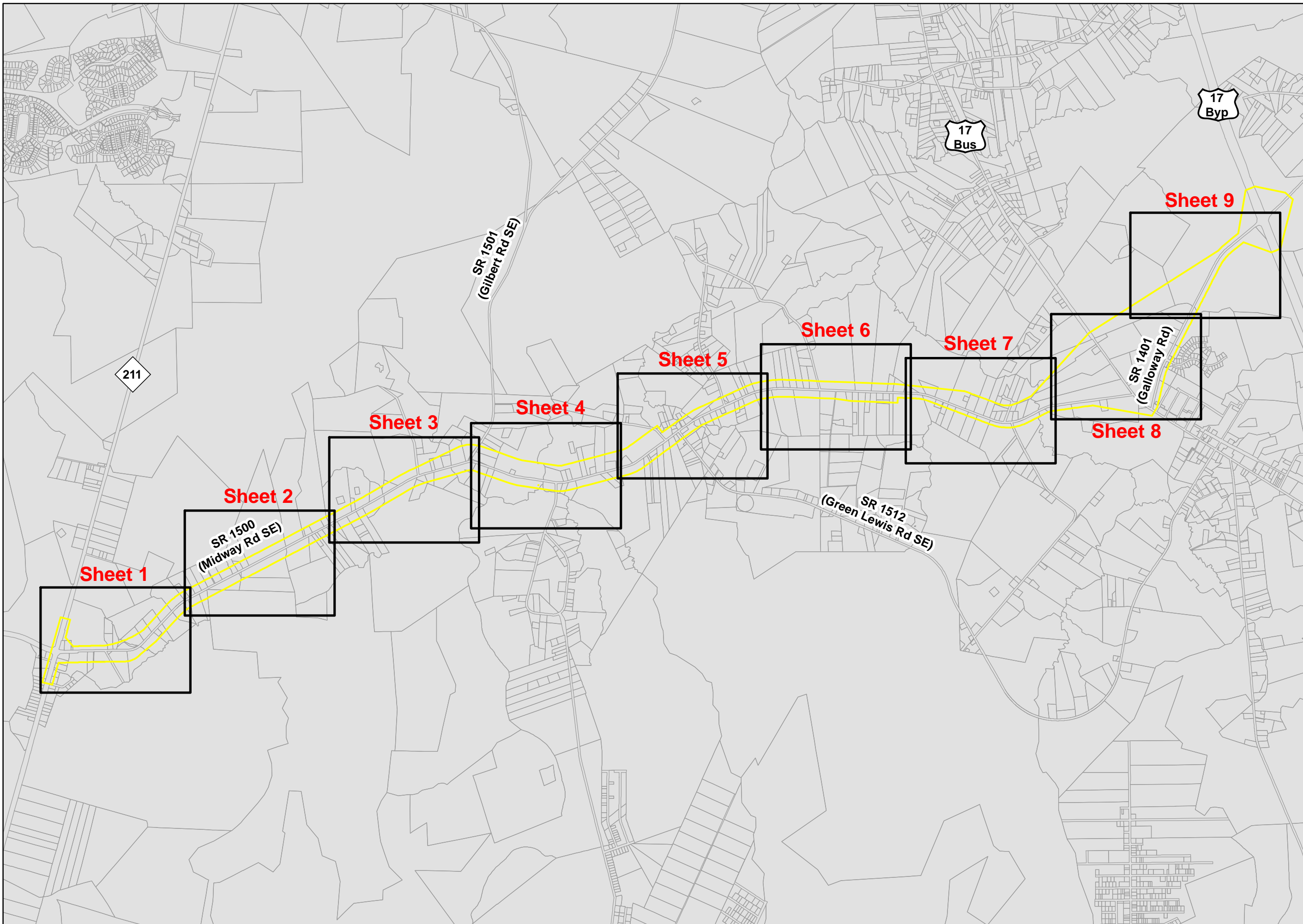
Figures

Contents:

Figure 1	Project Vicinity Map
Figure 2	Project Features Map
Figure 3	Typical Sections
Figure 4	Traffic Forecast Map (2011/2035 AADT)



	<p>VICINITY MAP SR 1500 (MIDWAY ROAD) AND SR 1401 (GALLOWAY ROAD) FROM NC 211 TO US 17 BYPASS</p> <p>BRUNSWICK COUNTY STIP PROJECT R-3434</p>	County: BRUNSWICK Div: 3 STIP R-3434 WBS: 34545.1.1 Date: September 2013	<p>Figure 1</p>
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Legend

- Environmental Study Area
- 2012 Parcels

ENVIRONMENTAL MAP
 MAP SHEET INDEX
 SR 1500 (MIDWAY ROAD)
 AND SR 1401 (GALLOWAY ROAD)
 FROM NC 211 TO US 17 BYPASS
 BRUNSWICK COUNTY
 STIP PROJECT R-3434



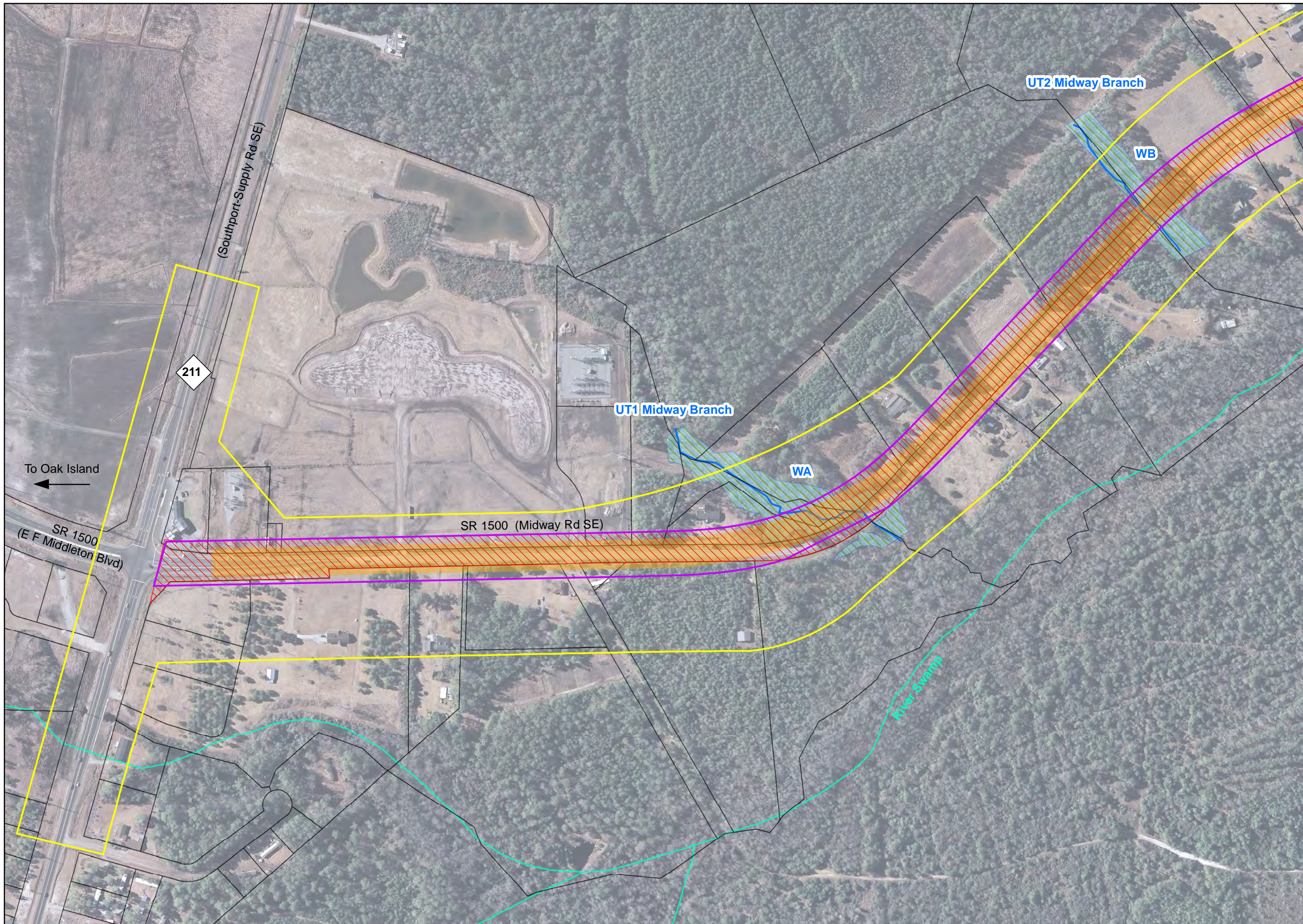
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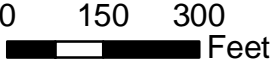
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**Map Sheet
 Index For
 Figure 2**

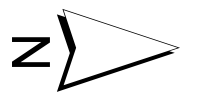


Legend

- Environmental Study Area
- Alternative 1 Right of Way
- Alternative 2 Right of Way
- Alternative 3 Right of Way
- NHD Streams
- Streams
- Wetlands
- Ponds
- 2012 Parcels
- + Churches
- + Cemetery



ENVIRONMENTAL MAP
SR 1500 (MIDWAY ROAD)
AND SR 1401 (GALLOWAY ROAD)
FROM NC 211 TO US 17 BYPASS
BRUNSWICK COUNTY
STIP PROJECT R-3434



By:
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County:
BRUNSWICK

Div: 3	STIP# R-3434
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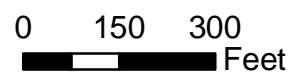
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SEPTEMBER 2014

Figure
2
 Sheet 1 of 9



Legend

- Environmental Study Area
- Alternative 1 Right of Way
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ENVIRONMENTAL MAP
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FROM NC 211 TO US 17 BYPASS
BRUNSWICK COUNTY
STIP PROJECT R-3434



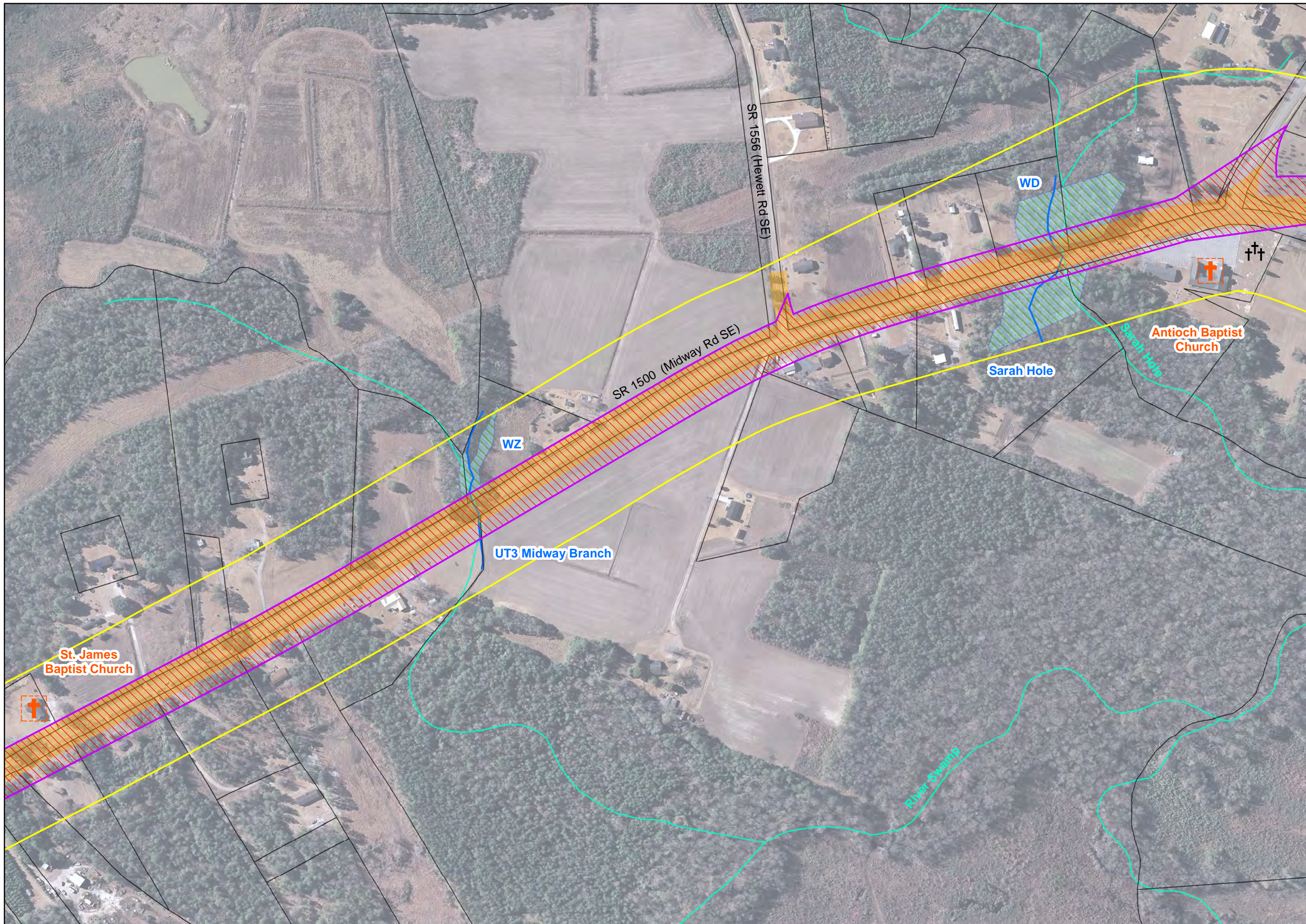
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Div: 3	STIP# R-3434
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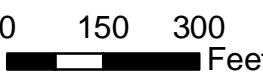
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Figure
2
 Sheet 2 of 9

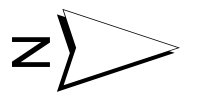


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FROM NC 211 TO US 17 BYPASS
BRUNSWICK COUNTY
STIP PROJECT R-3434



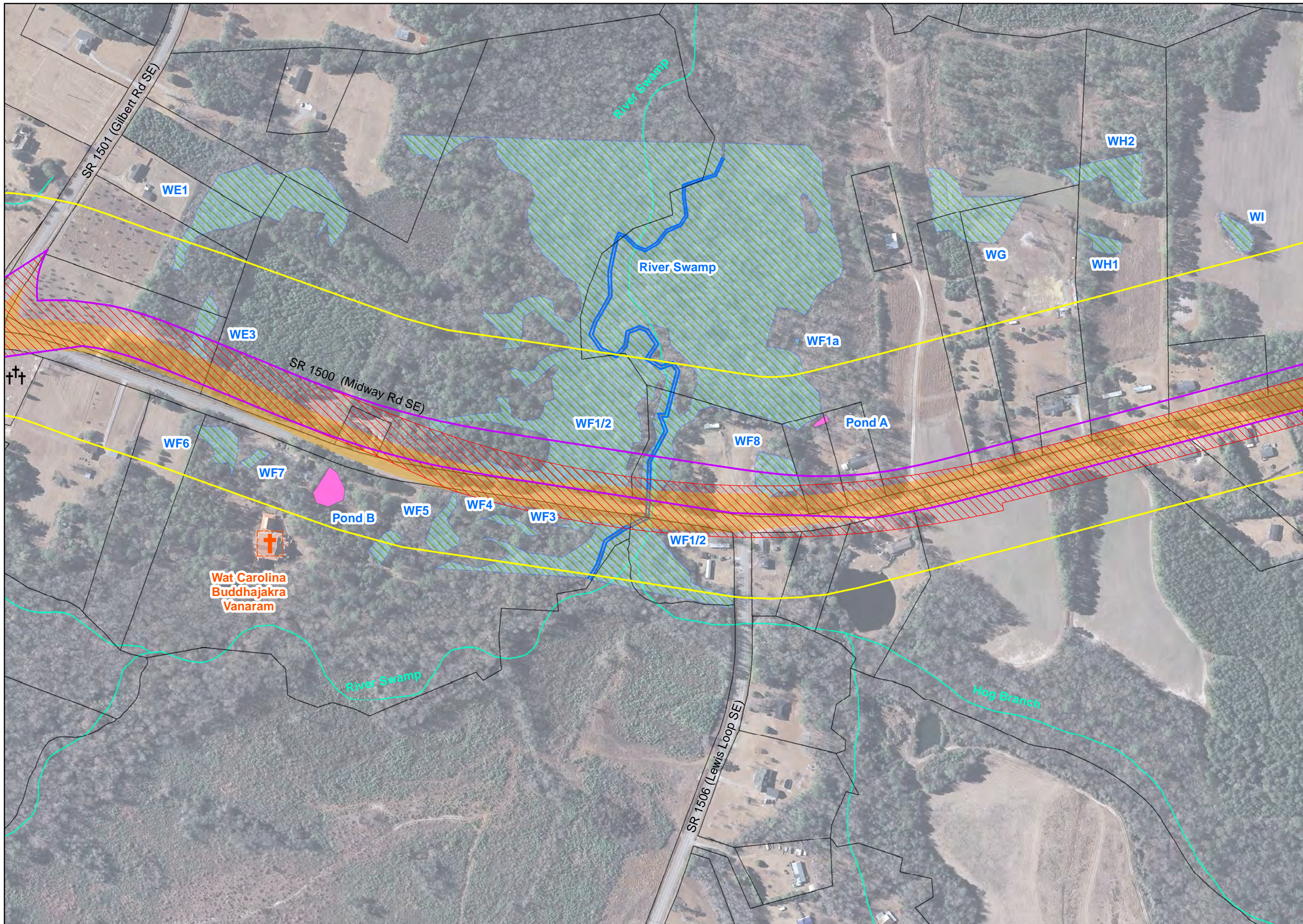
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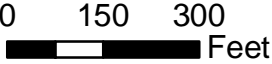
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Figure
2
 Sheet 3 of 9

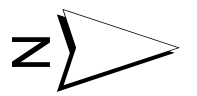


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BRUNSWICK COUNTY
STIP PROJECT R-3434



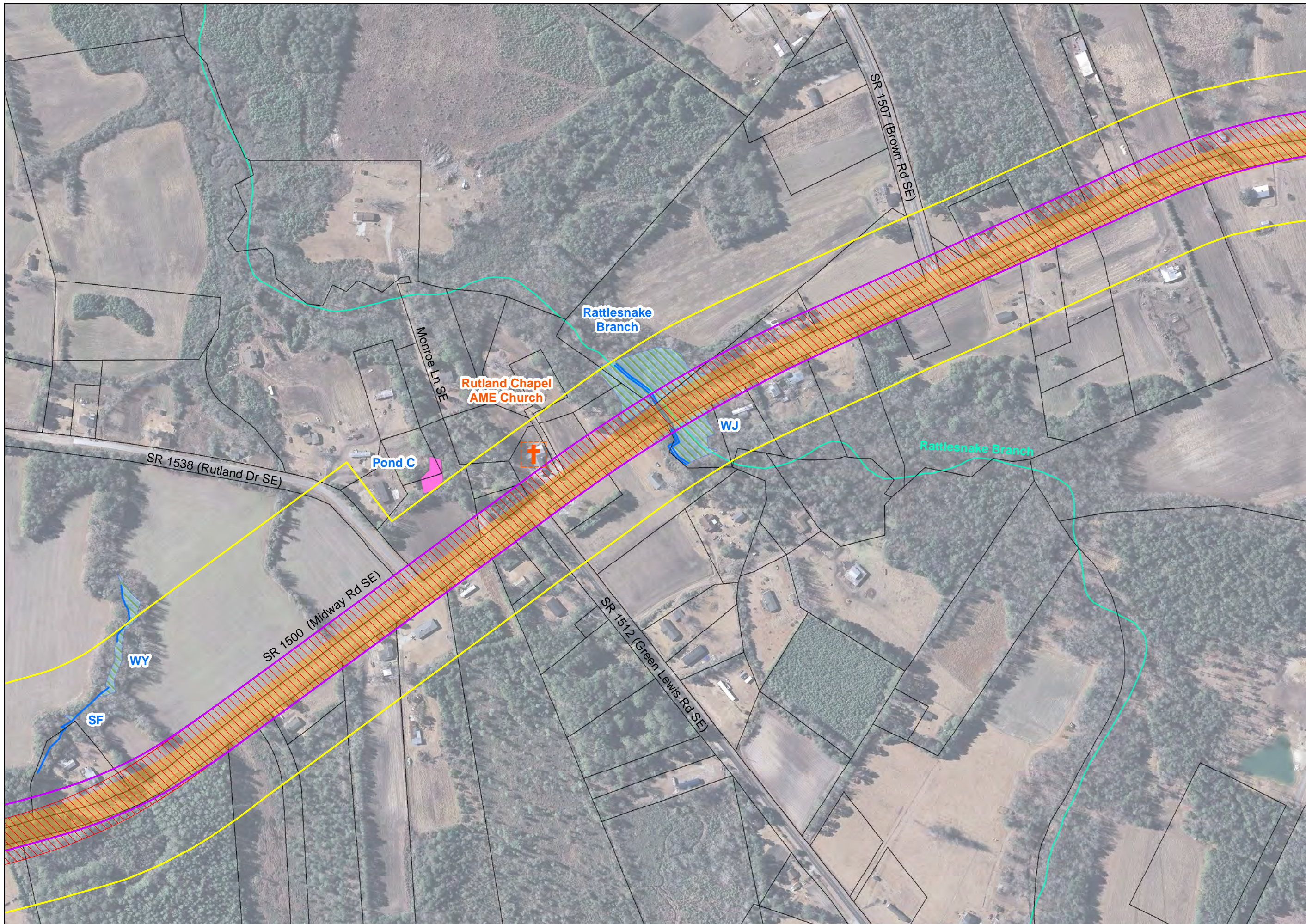
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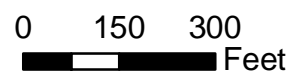
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Figure
2
 Sheet 4 of 9



Legend

- Environmental Study Area
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ENVIRONMENTAL MAP
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AND SR 1401 (GALLOWAY ROAD)
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BRUNSWICK COUNTY
STIP PROJECT R-3434



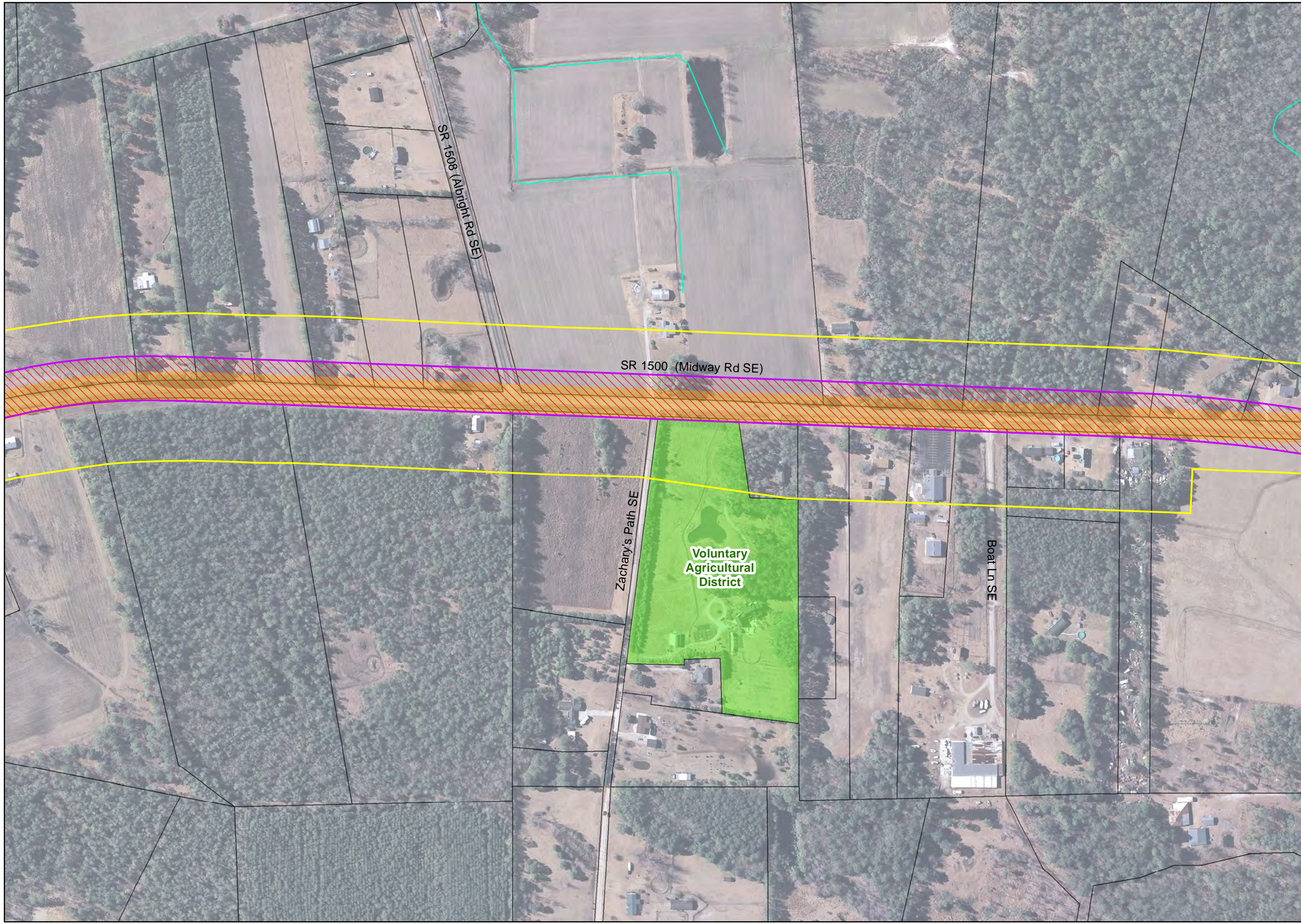
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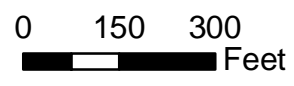
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Figure
2
 Sheet 5 of 9



Legend

- Environmental Study Area
- Alternative 1 Right of Way
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ENVIRONMENTAL MAP
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FROM NC 211 TO US 17 BYPASS
BRUNSWICK COUNTY
STIP PROJECT R-3434



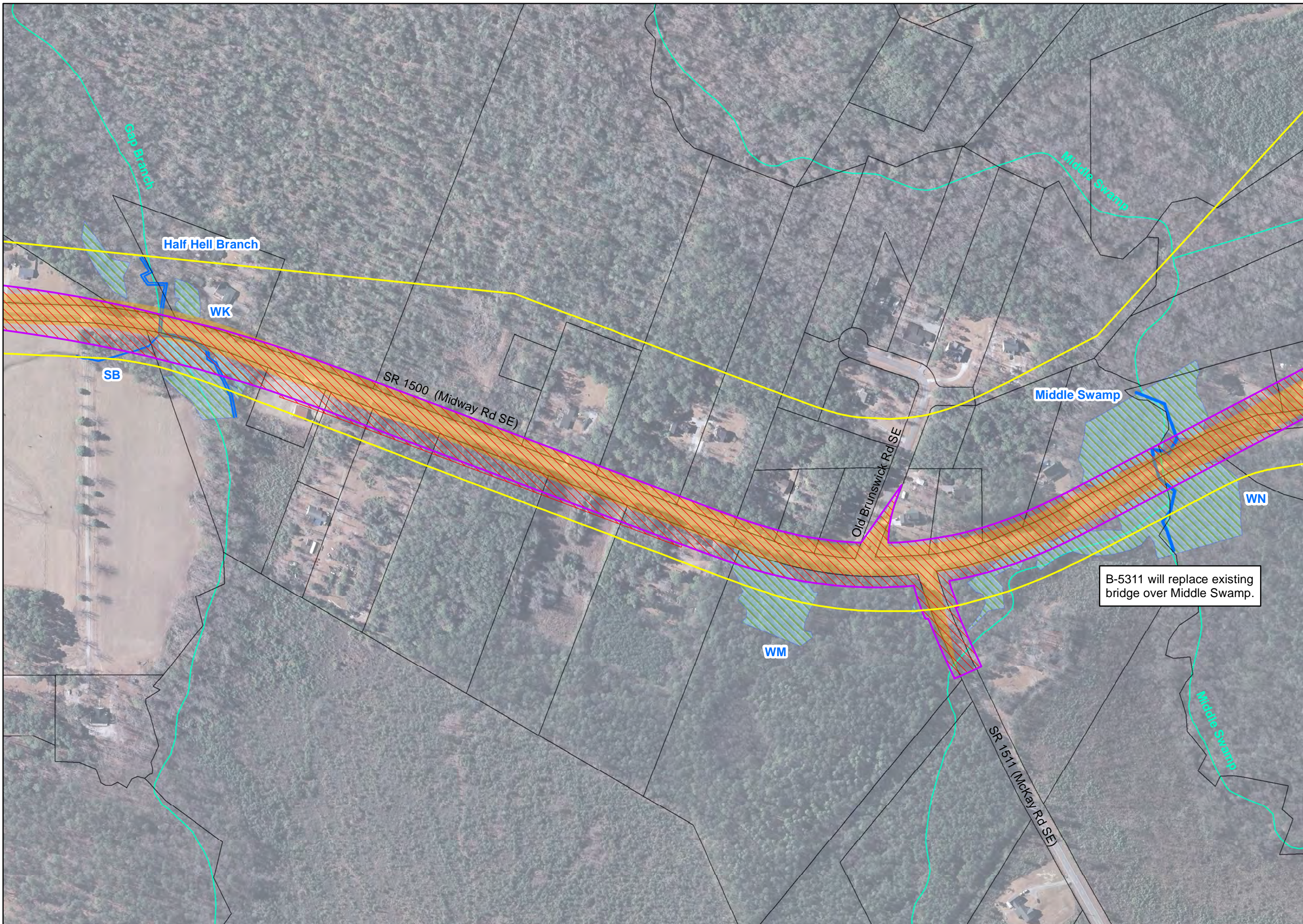
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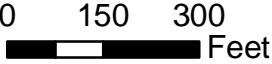
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Figure
2
 Sheet 6 of 9



Legend

- Environmental Study Area
- Alternative 1 Right of Way
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ENVIRONMENTAL MAP
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BRUNSWICK COUNTY
STIP PROJECT R-3434

B-5311 will replace existing bridge over Middle Swamp.



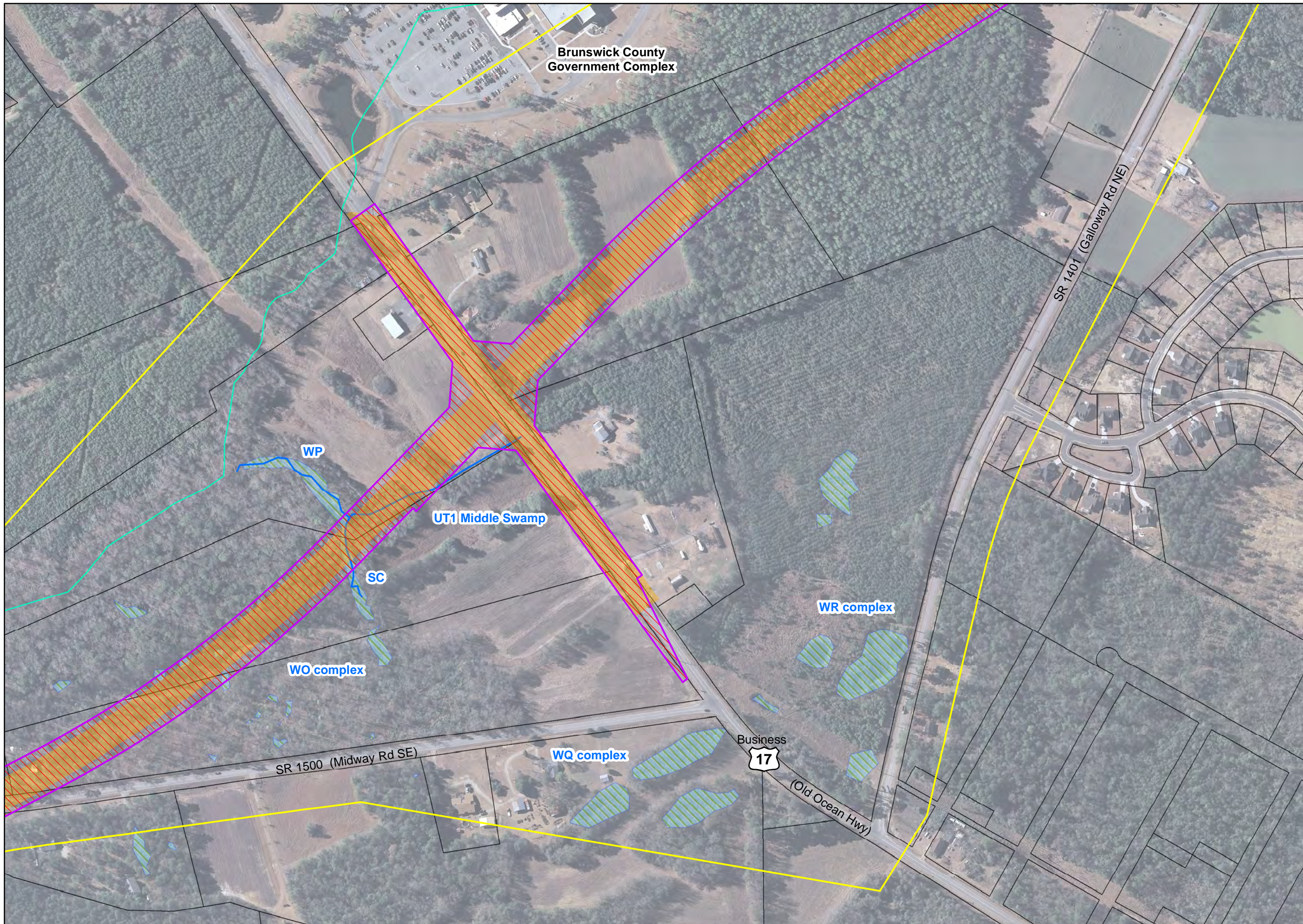
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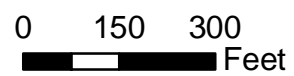
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Figure
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 Sheet 7 of 9



Legend

- Environmental Study Area
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County:
BRUNSWICK

Div: 3	STIP# R-3434
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Date:
SEPTEMBER 2014

Figure
2
 Sheet 8 of 9

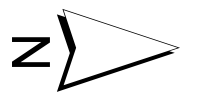


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0 150 300 Feet

ENVIRONMENTAL MAP
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BRUNSWICK COUNTY
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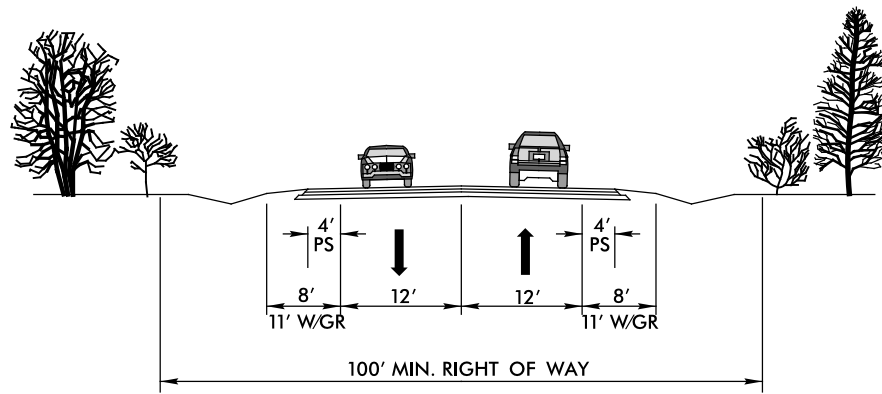
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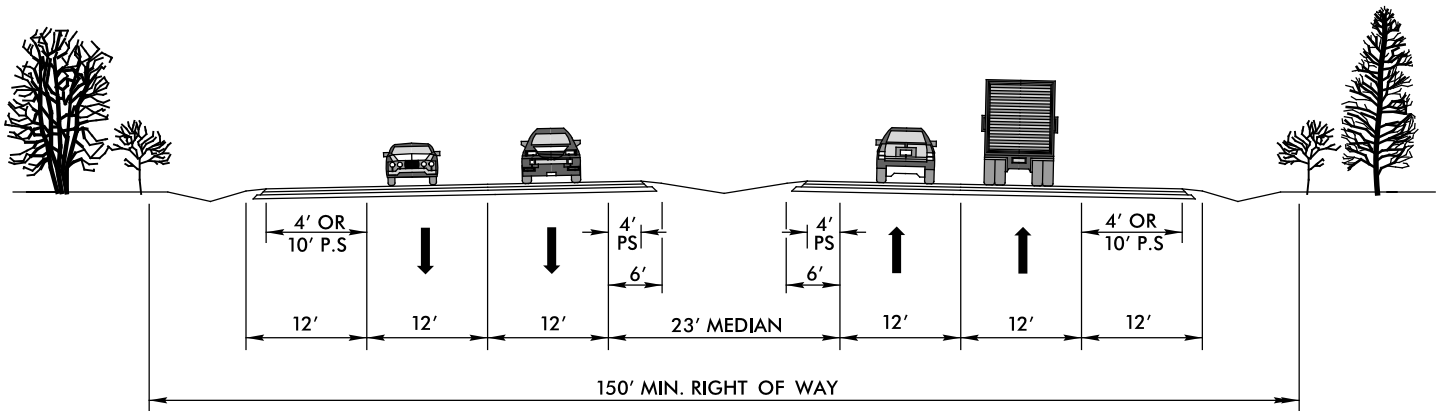
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Figure
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 Sheet 9 of 9

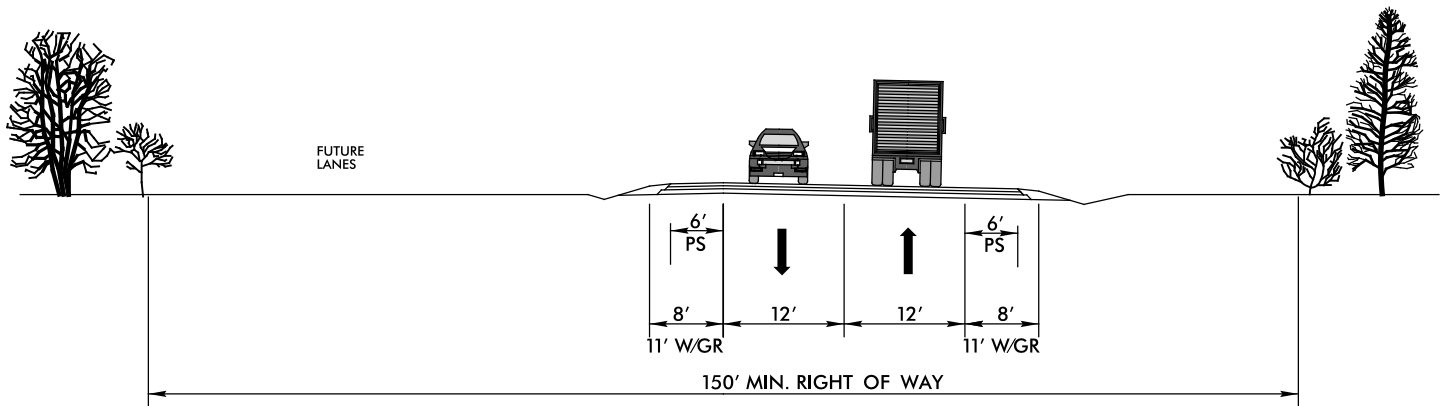
FIGURE 3



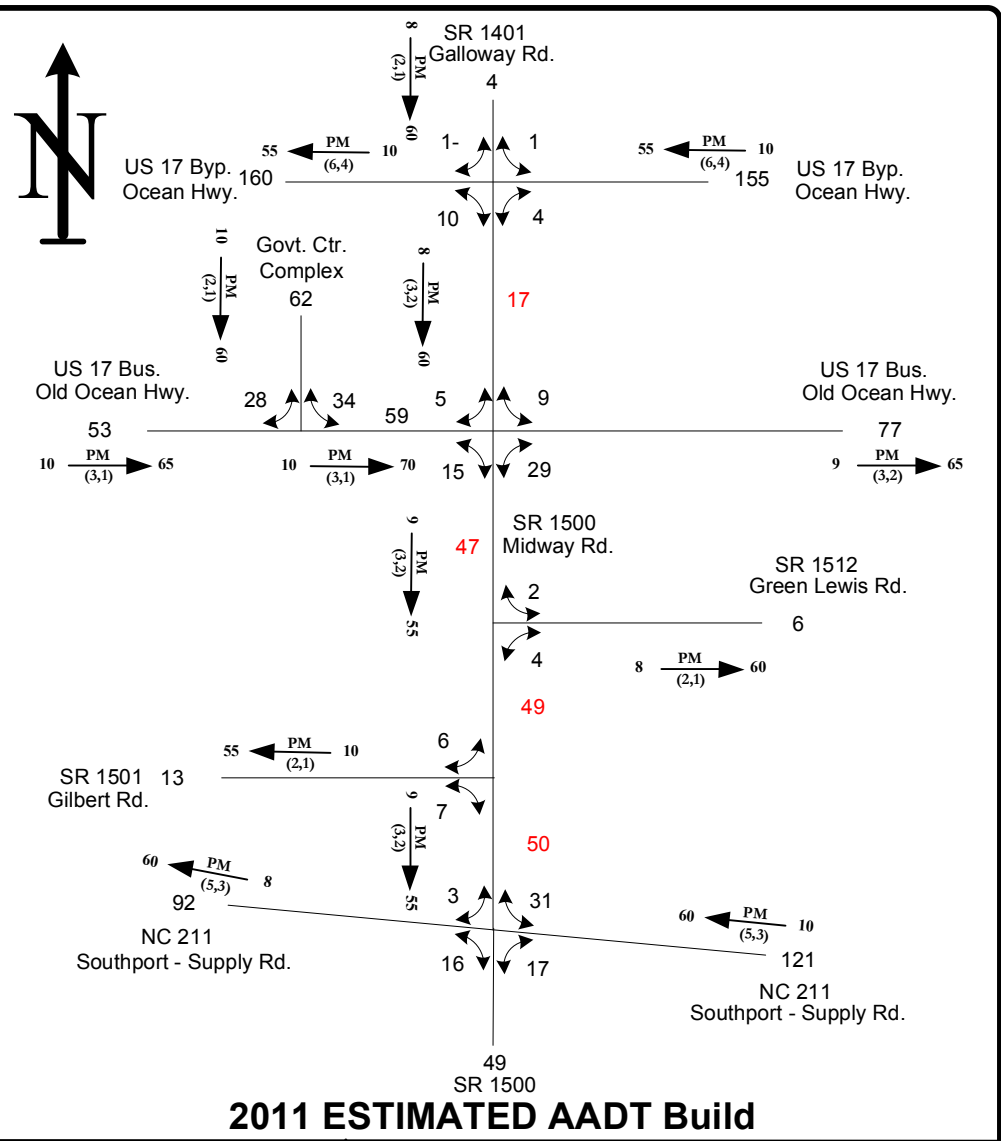
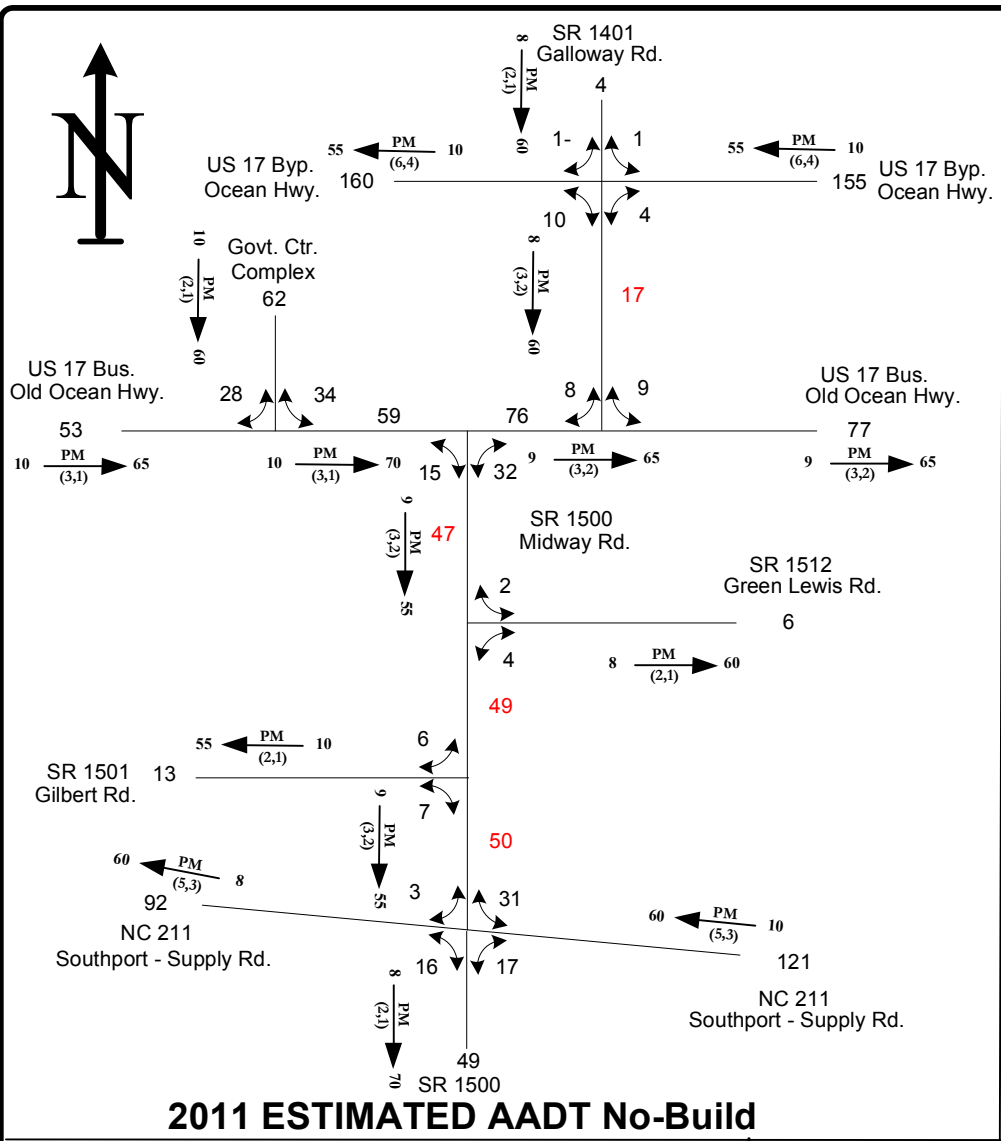
ALTERNATIVE 1 TYPICAL SECTION



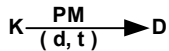
ALTERNATIVE 2 TYPICAL SECTION



ALTERNATIVE 3 TYPICAL SECTION

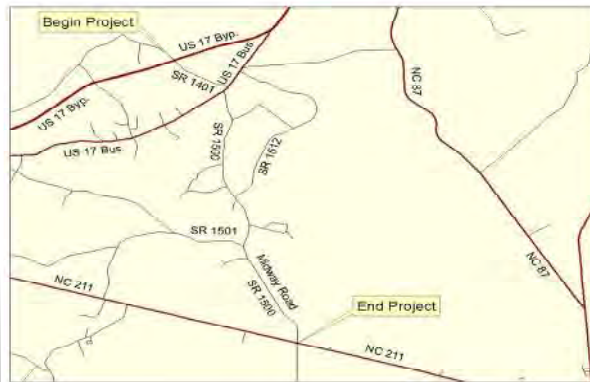


LEGEND



- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Proposed Roadway
- K Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- > Indicates Direction of D
- (d, t) Duals, TT-STs (%)

Drawing not to scale



LOCATION:
SR 1401 from US 17 Bypass to US 17 Bus. and SR 1500 from US 17 Bus. To NC 211

PROJECT:
Improvements to SR 1500 and SR 1401 from US 17 Bypass to NC 211

COUNTY: Brunswick

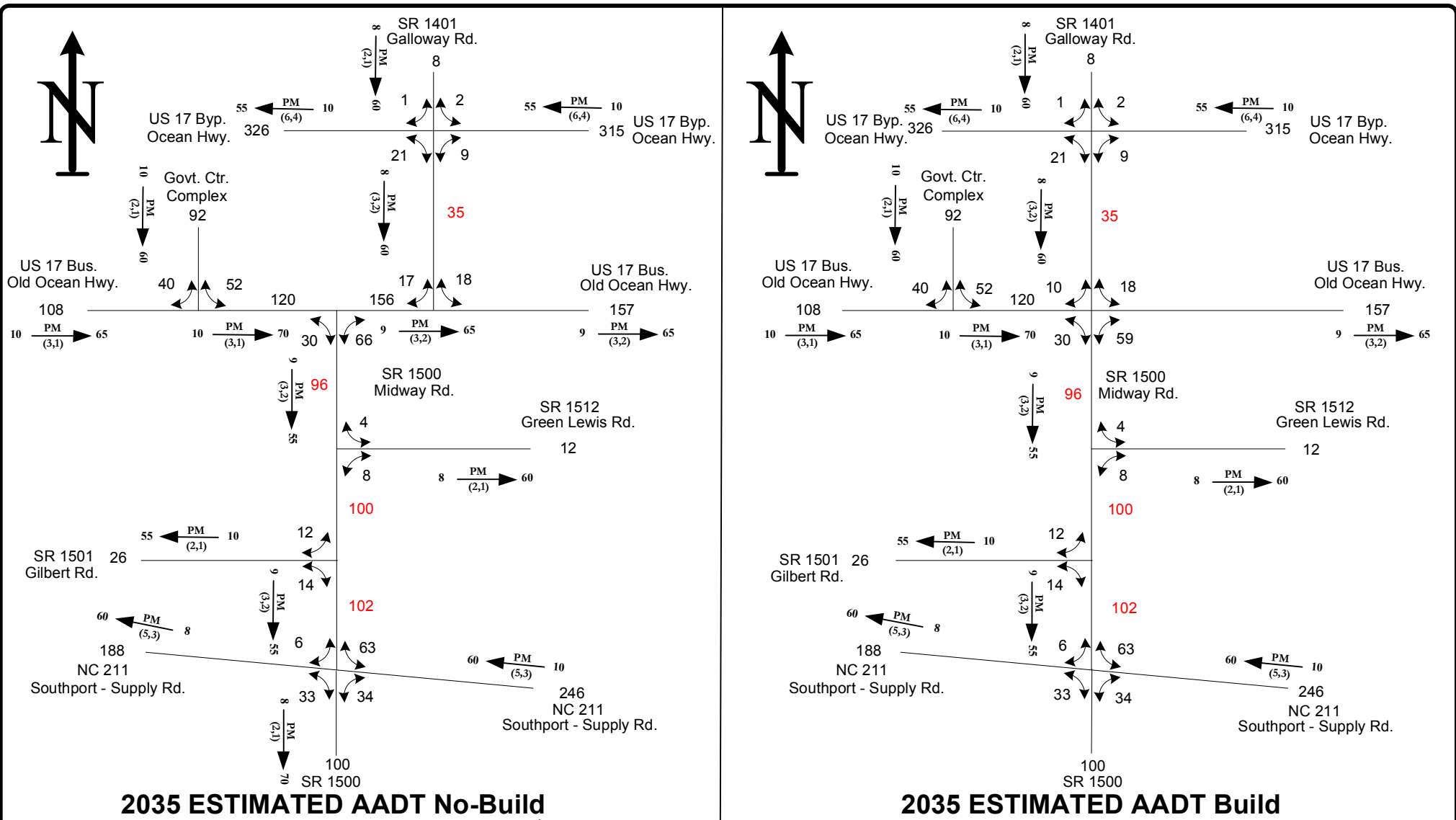
DIV.: 03

DATE: August 22, 2011

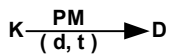
TIP # R-3434

WBS# 34545.1.1

Figure 4a. 2011 Estimated AADT for No-Build and Build Scenarios

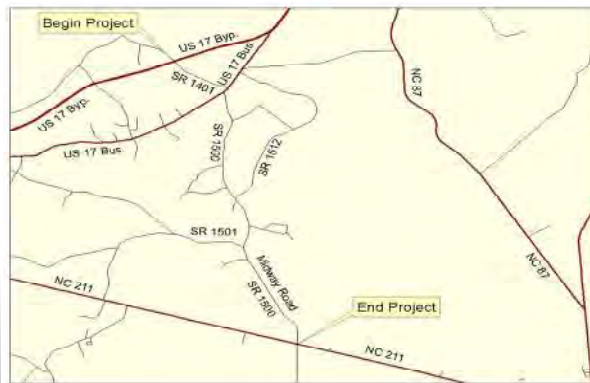


LEGEND



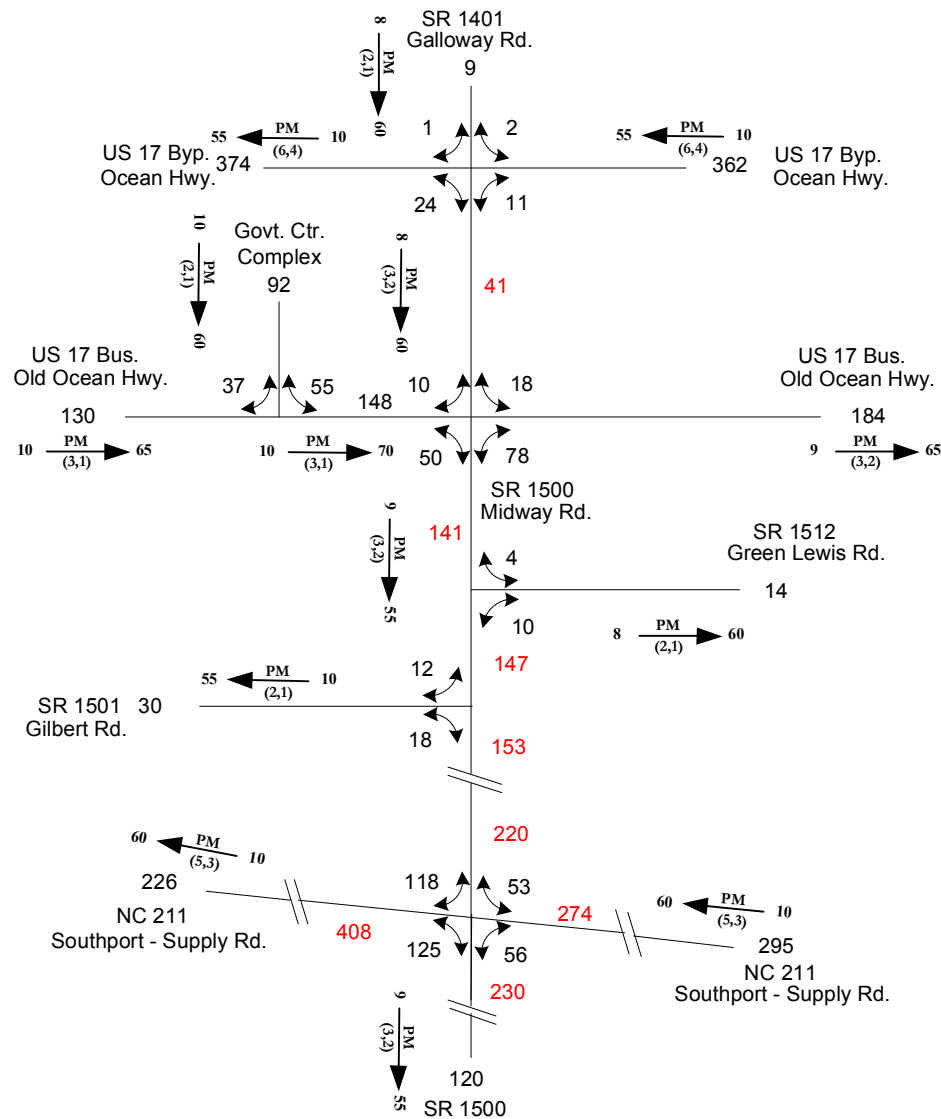
- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Proposed Roadway
- K Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- > Indicates Direction of D
- (d, t) Duals, TT-STs (%)

Drawing not to scale



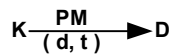
LOCATION: SR 1401 from US 17 Bypass to US 17 Bus. and SR 1500 from US 17 Bus. To NC 211	
PROJECT: Improvements to SR 1500 and SR 1401 from US 17 Bypass to NC 211	
COUNTY: Brunswick	
DIV. : 03	DATE: August 22, 2011
TIP # R-3434	WBS# 34545.1.1

Figure 4b. 2035 Estimated AADT for No-Build and Build Scenarios



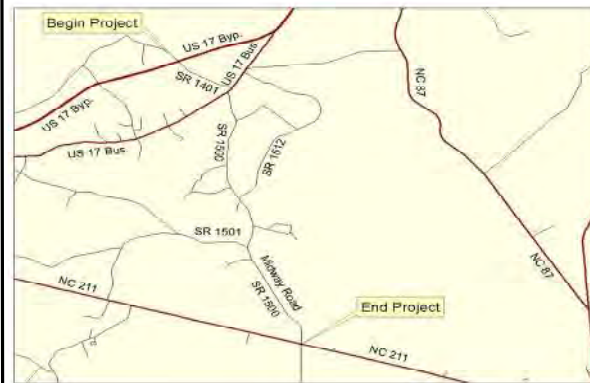
**2035 ESTIMATED AADT
Complete Build Out**

LEGEND



- ### No. of Vehicles Per Day (VPD) in 100s
- 1- Less than 50 VPD
- X Movement Prohibited
- Proposed Roadway
- K Design Hour Factor (%)
- PM PM Peak Period
- D Peak Hour Directional Split (%)
- > Indicates Direction of D
- (d, t) Duals, TT-STs (%)

Drawing not to scale



LOCATION:

SR 1401 from US 17 Bypass to US 17 Bus.
and SR 1500 from US 17 Bus. To NC 211

PROJECT:

Improvements to SR 1500 and SR 1401
from US 17 Bypass to NC 211

COUNTY: Brunswick

DIV. : 03

DATE: August 22, 2011

TIP # R-3434

WBS# 34545.1.1

Figure 4c. 2035 Estimated AADT for Four-Lane Facility



Appendix B

Agency Comments

Contents:

Federal Comments

State Comments

Local Comments

NEPA/404 Merger Team



Federal Comments

Contents:

Correspondence with the U.S. Army Corps of Engineers

Correspondence with the National Oceanic and Atmospheric Administration

Correspondence with U.S. Fish and Wildlife Service

OCT 14 2004

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200300073

County: Brunswick

Notification of Jurisdictional Determination

Property Owner:

Gregory J. Thorpe, Ph.D.
Environmental Management Director, PDEA
N.C. Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Authorized Agent:

Ms. Susan Shelingosky ✓
Stantec Consulting
801 Jones Franklin Road, Suite 300
Raleigh, NC 27606

Size and Location of Property (waterbody, Highway name/number, town, etc.): TIP Project No. R-3434, Midway Road Improvements, Brunswick County, North Carolina.

Basis for Determination: Type 328.3(a)(7) wetlands based on positive identification of hydric soils, dominant hydrophytic vegetation (Greater than 50% FAC) and hydrology (numerous primary indicators) and Type 328.3(a)(5) waters of the United States.

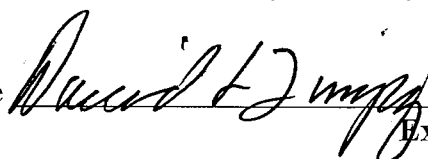
Indicate Which of the Following apply:

- There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.
- On 7/08/04, 7/09/04, and 8/31/04, the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and its representatives for the subject NCDOT project. A select number of wetland sites were inspected along the proposed project and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation as depicted in the NCDOT wetland maps and wetland data sheets received by this office on June 1 from Stantec Consulting can be relied on for planning purposes and impact assessment. Our letter dated September 14, 2004 describing the identified isolated wetlands along the subject project is attached for informational purposes.
- The wetlands on your lot have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

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

Project Manager Signature

Date October 13, 2004



Expiration Date October 13, 2009

Subject: Re: R-3434: MergerProcessTeamMembers

Date: Thu, 15 Jul 2004 10:53:09 -0400

From: "Ron Sechler" <ron.sechler@noaa.gov>

To: Mark Pierce <mspierce@dot.state.nc.us>

Mark,

These subject roads cross the upper reaches of the Lockwood Folly River. Since we have estuarine and anadromous resources in the downstream portion of the project area, I do want to participate on the Merger Team for R-3434. A determination should be made whether an essential fish habitat (EFH) assessment should be prepared for this project. Please contact me further if you need assistance in in this matter.

NOAA Fisheries appreciates your assistance in bring this project to our attention.

Sincerely,

Ron Sechler
Fishery Biologist
NOAA Fisheries
Habitat Conservation Division
101 Pivers Island Road
Beaufort, North Carolina 28516

Phone: 252-728-5090
Fax: 252-728-8728
Email: ron.sechler@noaa.gov

Pierce wrote:

> Ron,
>
> I am assembling the Merger Process Team for R-3434 (SR 1500 & SR
> 1401 Improvements Project in Brunswick County) in anticipation
> that this project will follow the Section 404 - NEPA Merger
> Process.
>
> I noticed that your name is listed on the agenda for the 7/21/04
> Hydraulic Design / Permit Drawings Review for R-2245 (Second
> Bridge to Oak Island in Brunswick County).
>
> R-3434 and R-2245 have a common terminus at NC 211 in Smith.
>
> Will you be involved with R-3434 ? Should you be a member on the
> Merger Process Team ? If so, are you a signatory member ?
>
> I appreciate your time and look forward to your response.
>
> Sincerely,
> Mark Pierce, P.E.
> Project Development Engineer
> (919) 733-7844 x214

FILE COPY



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

December 2, 2002

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

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed upgrading of SR 1500 (Midway Road) and SR 1401 (Galloway Road) from NC 211 to US 17 Bypass in Brunswick County, North Carolina (TIP No. R-3434). Upgrades include widening, constructing paved shoulders, intersection improvements and replacement of Bridges 23, 25 and 104. These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

Recent aerial photography of the land along SR 1500 and SR 1401 in the project area shows a mixture of agricultural, rural residential and forest lands. The forest lands, both upland and bottomland, juxtaposed with agricultural lands likely provide excellent habitat for a variety of wildlife species. U.S. Geological Survey 7.5 minute quadrangle maps show that several stream crossings are involved in the project. National Wetlands Inventory (NWI) maps also indicate substantial palustrine wetland resources in and along the project area. However, while NWI maps are useful for providing an overview of a given area, they should not be relied upon in lieu of a detailed determination and delineation by trained personnel.

For road improvement projects such as widening, realignment, bridge replacement and culvert replacement, the Service recommends the following general conservation measures to avoid or minimize environmental impacts to fish and wildlife resources:

1. Wetland and forest impacts should be avoided and minimized to the maximum extent practical. Areas exhibiting high biodiversity or ecological value important to the watershed or region should be avoided. Proposed highway projects should be aligned along or adjacent to existing roadways, utility corridors or other previously disturbed areas in order to minimize habitat loss and fragmentation. Highway shoulder and median widths should be reduced through wetland areas;

2. Crossings of streams and associated wetland systems should use existing crossings and/or occur on a bridge structure wherever feasible. Bridges should be long enough to allow for sufficient wildlife passage along stream corridors. Where bridging is not feasible, culvert structures that maintain natural water flow and hydraulic regimes without scouring or impeding fish and wildlife passage should be employed;
3. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area;
4. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;
5. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;
6. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity via conservation easements, land trusts or by other means should be explored at the outset;
7. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;
8. Best Management Practices (BMP) for Protection of Surface Waters should be implemented; and
9. Activities within designated riparian buffers should be avoided or minimized.

Enclosed is a list of species from Brunswick County that are on the *Federal List of Endangered and Threatened Wildlife and Plants*, as well as federal species of concern. Federal species of concern are not legally protected under the ESA and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as endangered or threatened.

We are including these species in our response to give you advance notification and to request your assistance in protecting them if any are found in the vicinity of your project. Although the North Carolina Natural Heritage Program (NCNHP) database does not indicate any known occurrences of these species near the project vicinity, use of the NCNHP data should not be substituted for actual field surveys if suitable habitat occurs near the project site. Information about the habitats in which these species is often found is provided on our web site, <http://endangered.fws.gov>. All survey documentation must include survey methodologies and results.

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

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

8. If unavoidable wetland or stream impacts are proposed, project planning should include a detailed compensatory mitigation plan for offsetting the unavoidable impacts.

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

Sincerely,



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

Enclosure

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

09/25/08
cc: L. Williams

James
RECEIVED
SEP 24 2008
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT



United States Department of the Interior

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

September 22, 2008

Gregory J. Thorpe, Ph.D.
North Carolina Department of Transportation
Project Development and Environmental Analysis
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Dr. Thorpe:

This letter is in response to your letter of September 5, 2008 which provided the U.S. Fish and Wildlife Service (Service) with the biological determination of the North Carolina Department of Transportation (NCDOT) that the proposed improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from NC 211 to US 17 Bypass in Brunswick County (TIP No. R-3434) may affect, but are not likely to adversely affect the federally endangered wood stork (*Mycteria americana*). In addition, NCDOT has determined that the project would have no effect on all other federally listed species. These comments are provided in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543).

It is our understanding that this project may be placed in the Merger 01 Process, with a Concurrence Point 1 meeting tentatively scheduled for January 2009. The biological determinations for this project are based on a preliminary study area. It is also our understanding that some portion(s) of the project could be on new location. If the project does go through the Merger Process, it is possible that the study area could change, and an alternative could be developed which occurs outside of the area previously studied for federally listed species. Therefore, the Service believes that it is premature for NCDOT to request concurrence at this time. In addition, some of the no effect determinations may need to be reconsidered if a Merger Team develops an alternative outside of the previously studied area.

Although the Service cannot concur with your biological determinations at this time, we recommend that NCDOT wait until the study area is finalized and the range of alternatives are developed, and then conduct appropriate surveys, if needed. The Service would then reconsider concurrence based on more refined project information. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Gary Jordan
for Pete Benjamin
Field Supervisor

cc: Brad Shaver, USACE, Wilmington, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC
John Sullivan, FHWA, Raleigh, NC



State Comments

Contents:

Correspondence with North Carolina Department of Crime Control and Public Safety

Correspondence with North Carolina Department of Environment and Natural Resources

Correspondence with North Carolina Wildlife Resources Commission

Correspondence with North Carolina State Historic Preservation Office (SHPO)



RECEIVED
BY MSP | DATE 8/2/04
R-3434

North Carolina Department of Crime Control and Public Safety
Division of Emergency Management
4713 Mail Service Center • Raleigh, NC 27699-4713

Michael F. Easley
Governor

Bryan E. Beatty
Secretary

July 27, 2004

Mr. Mark S. Pierce, P.E.
NC Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Mr. Pierce:

In response to your letter of June 24, regarding the potential use of Midway Road and Galloway Road in Brunswick County as emergency evacuation routes, I would defer to the local Emergency Management Director and other decision-makers in Brunswick County who are better prepared to answer the questions: are the two-lane roads in question meeting their needs, should they be identified as evacuation routes, and if so, should these roads be widened?

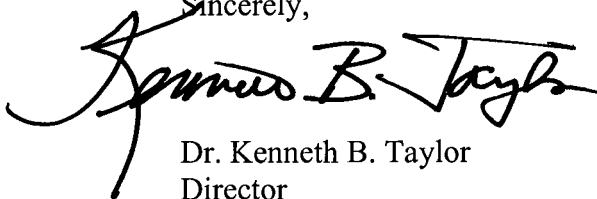
Your correspondence notes that Randy Thompson, Brunswick County Director of Emergency Services and Mr. Scott Garner, the Brunswick County Fire Marshal, both recommend improvements to those roadways. I would further recommend, if not already accomplished, discussions with all law enforcement agencies (state, county, and local) charged with the execution of traffic control during evacuations. We will support the recommendation of the three key agencies; County EM, DOT Division Office, and local law enforcement agencies if in fact they identify the requirement to add to the evacuation network and the subsequent widening of the subject roadways.

The supporting argument of growth trends for the area, residential population and seasonal traffic congestion, and the completion of the second bridge to Oak Island all point to the logical conclusion of widening the roads in question. This assertion, coupled with recent history of other county evacuation routes being impassable due to flooding, supports the need to have additional evacuation routes.

The enclosed excerpt, from the North Carolina Hurricane Evacuation Study, provides general guidance for total time required to move all evacuees, not one individual vehicle, through the road network for Brunswick County. The study is an evaluation of the major factors that must be considered in hurricane preparedness; volume, response, road network, etc., so as to provide officials timely, state of the art information for making sound evacuation decisions. The complete technical Data Report for North Carolina is available on CD if you desire a copy.

If we can be of further assistance, please contact Mr. Gary Faltinowski, the Planning Support Branch Manager, at (919) 715-9204.

Sincerely,

A handwritten signature in black ink, appearing to read "Kenneth B. Taylor". The signature is fluid and cursive, with a large initial "K" and a long, sweeping underline.

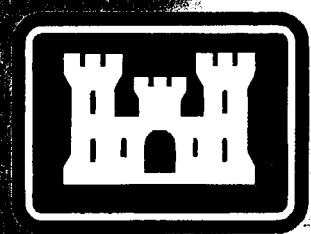
Dr. Kenneth B. Taylor
Director

KBT; grf
Enclosure

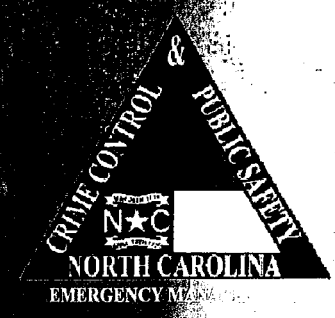
cc: Doug Hoell
Tom Collins
Paula Brown
Gary Faltinowski
Randy Thompson

NORTH CAROLINA HURRICANE EVACUATION RESTUDY TECHNICAL DATA REPORT

Prepared By



Wilmington District



Prepared By



DECEMBER 2002

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Please Note: Clearance times do not reflect how long it will take one individual vehicle to go from home to their destination, but reflect the total time required to move all evacuees through the road network for certain storm intensity and response characteristics. Times in parentheses are for clearing US17 of all the potential coastal traffic that may come through each county. Rapid response means evacuees enter the road network over a 5 hour period of time, medium response over an 8 hour period , and long response over an 11 hour period. Where appropriate, different levels of background traffic are assumed-high background traffic reflects a portion of the evacuees having to go from work to home before evacuating. Worst household commute time reflects the longest time any one vehicle will spend on the road network. All times reflect the effect of neighboring counties and states evacuation traffic.

Table 6-10 Pamlico North (Hyde and Beaufort Counties)

Please Note: Clearance times do not reflect how long it will take one individual vehicle to go from home to their destination, but reflect the total time required to move all evacuees through the road network for certain storm intensity and response characteristics. Times in parentheses are for clearing US64 of all the potential coastal traffic that may come through each county. Rapid response means evacuees enter the road network over a 5 hour period of time, medium response over an 8 hour period , and long response over an 11 hour period. Where appropriate, different levels of background traffic are assumed-high background traffic reflects a portion of the evacuees having to go from work to home before evacuating. Worst household commute time reflects the longest time any one vehicle will spend on the road network. All times reflect the effect of neighboring counties and states evacuation traffic.

Table 6-11 Pamlico South (Pamlico, Craven, Carteret and Jones Counties)

Please Note: Clearance times do not reflect how long it will take one individual vehicle to go from home to their destination, but reflect the total time required to move all evacuees through the road network for certain storm intensity and response characteristics. Clearance times in parentheses are for Ocracoke Island and reflect evacuation by ferry. Rapid response means evacuees enter the road network over a 5 hour period of time, medium response over an 8 hour period , and long response over an 11 hour period. Where appropriate, different levels of background traffic are assumed-high background traffic reflects a portion of the evacuees having to go from work to home before evacuating. Worst household commute time reflects the longest time any one vehicle will spend on the road network. All times reflect the effect of neighboring counties and states evacuation traffic.

Table 6-12 Brunswick County

Please Note: Clearance times do not reflect how long it will take one individual vehicle to go from home to their destination, but reflect the total time required to move all evacuees through the road network for certain storm intensity and response characteristics. Rapid response means evacuees enter the road network over a 5 hour period of time, medium response over an 8 hour period , and long response over an 11 hour period. Where appropriate, different levels of background traffic are assumed-high background traffic reflects a portion of the evacuees having to go from work to home before evacuating. Worst household commute time reflects the longest time any one vehicle will spend on the road network. All times reflect the effect of neighboring counties and states evacuation traffic.

Table 6-13 New Hanover County

Please Note: Clearance times do not reflect how long it will take one individual vehicle to go from home to their destination, but reflect the total time required to move all evacuees through the road network for certain storm intensity and

**Table 6-12 Brunswick
County Year 2000
Clearance Times (in
hours)**

| [Go back](#) |



	Low Seasonal Occupancy	Medium Tourist Occupancy	High Seasonal Occupancy
Category 1-2			
Rapid Response	7 1/4	9 1/2	12 3/4
Medium Response	8	10 1/4	14 1/2
Long Response	9 1/2	11 1/2	16 1/2
Category 3-5			
Rapid Response	7 1/2	10 1/4	13 1/2
Medium Response	8 1/4	11	15
Long Response	9 1/2	12 1/4	17 1/4

| [Go back](#) |



RECEIVED
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R-3434

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary



MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee
Project Review Coordinator

RE: 03-0187 Scoping for Improvements to SR 1500 & SR 1401,
Brunswick County

DATE: February 5, 2003

The Department of Environment and Natural Resources has reviewed the proposed project. The attached comments are a result of this review. More specific comments will be provided during the environmental review process.

Thank you for the opportunity to respond. If during the preparation of the environmental document, additional information is needed, the applicant is encouraged to notify our respective divisions.

Attachments



RECEIVED

BY MSP | DATE 2/14/03
R-3434

Reviewing Office: Wilmington
Project Number: 03-E-0187 Due Date: 1/28/03

INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

After review of this project it has been determined that the DENR permit(s) and/or approvals indicated may need to be obtained in order for this project to comply with North Carolina Law. Questions regarding these permits should be addressed to the Regional Office indicated on the reverse of this form. All applications, information and guidelines relative to these plans and permits are available from the same Regional Office.

PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (Statutory Time Limit)
<input type="checkbox"/> Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
<input type="checkbox"/> NPDES-permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection preapplication conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90 - 120 days (N/A)
<input type="checkbox"/> Water Use Permit	Preapplication technical conference usually necessary	30 days (N/A)
<input type="checkbox"/> Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
<input type="checkbox"/> Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Preapplication conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
<input type="checkbox"/> Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100, 2Q.0300, 2H.0600)	N/A	60 days
<input checked="" type="checkbox"/> Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900		
<input type="checkbox"/> Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-733-0820.	N/A	60 days (90 days)
<input type="checkbox"/> Complex Source Permit required under 15 A NCAC 2D.0800		
<input type="checkbox"/> The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) at least 30 days before beginning activity. A fee of \$40 for the first acre or any part of an acre.		20 days (30 days)
<input type="checkbox"/> The Sedimentation Pollution Control Act of 1973 must be addressed with respect to the referenced Local Ordinance.		30 days
<input type="checkbox"/> Mining Permit	On-site inspection usual. Surety bond filed with DENR. Bond amount varies with type mine and number of acres of affected land. Any are mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
<input type="checkbox"/> North Carolina Burning permit	On-site inspection by N.C. Division of Forest Resources if permit exceeds 4 days	1 day (N/A)
<input type="checkbox"/> Special Ground Clearance Burning Permit-22 counties in coastal N.C.. with organic soils.	On-site inspection by N.C. Division of Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
<input type="checkbox"/> Oil Refining Facilities	N/A	90 - 120 days (N/A)
<input type="checkbox"/> Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to DENR approved plans. May also require permit under mosquito control program, and a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of \$200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)

PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (Statutory Time Limit)
<input type="checkbox"/> Permit to drill exploratory oil or gas well	File surety bond of \$5,000 with DENR running to State of N.C. conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DENR rules and regulations.	10 days (N/A)
<input type="checkbox"/> Geophysical Exploration Permit	Application filed with DENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days (N/A)
<input type="checkbox"/> State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15 - 20 days (N/A)
<input checked="" type="checkbox"/> 401 Water Quality Certification	N/A	55 days (130 days)
<input type="checkbox"/> CAMA Permit for MAJOR development	\$250.00 fee must accompany application	60 days (130 days)
<input type="checkbox"/> CAMA Permit for MINOR development	\$50.00 fee must accompany application	22 days (25 days)
<input type="checkbox"/> Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, N.C. 27611		
<input checked="" type="checkbox"/> Abandonment of any wells, if required must be in accordance with Title 15A, Subchapter 2C.0100.		
<input checked="" type="checkbox"/> Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
<input type="checkbox"/> Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
* Other comments (attach additional pages as necessary, being certain to cite comment authority)		

REGIONAL OFFICES

Questions regarding these permits should be addressed to the Regional Office marked below.

Asheville Regional Office
59 Woodfin Place
Asheville, N.C. 28801
(828) 251-6208

Mooresville Regional Office
919 North Main Street
Mooresville, N.C. 28115
(704) 663-1699

Wilmington Regional Office
127 Cardinal Drive Extension
Wilmington, N.C. 28405
(910) 395-3900

Fayetteville Regional Office
225 Green Street, Suite 714
Fayetteville, N.C. 28301
(910) 486-1541

Raleigh Regional Office
3800 Barrett Drive, P.O. Box 27687
Raleigh, N.C. 27611
(919) 571-4700

Winston-Salem Regional Office
585 Woughtown Street
Winston-Salem, N.C. 27107
(336) 771-4600

Washington Regional Office
943 Washington Square Mall
Washington, N.C. 27889
(252) 946-6481



North Carolina Department of Environment and Natural Resources

RECEIVED
BY MSP | DATE 3/3/03
R-3434

Michael F. Easley, Governor

William G. Ross Jr., Secretary

MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee *W*
Project Review Coordinator

RE: 0eE0187 Scoping for proposed SR 1500 & 1401 Improvements in
Brunswick County

DATE: February 25, 2003



**NOTHING IS
ATTACHED**

The attached comments were received by this office after the response due date. These comments should be forwarded to the applicant and made a part of our previous comment package.

Thank you for the opportunity to respond.

Attachment

DEPARTMENT OF ENVIRONMENT AND
NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Project Number	03-E-0187
County	Brunswick

Inter-Agency Project Review Response

Project Name NC DOT Type of Project Improvements to SR1500 & SR1401.

- The applicant should be advised that plans and specifications for all water system improvements must be approved by the Division of Environmental Health prior to the award of a contract or the initiation of construction (as required by 15A NCAC 18C .0300et. seq.). For information, contact the Public Water Supply Section, (919) 733-2321.
- This project will be classified as a non-community public water supply and must comply with state and federal drinking water monitoring requirements. For more information the applicant should contact the Public Water Supply Section, (919) 733-2321.
- If this project is constructed as proposed, we will recommend closure of _____ feet of adjacent waters to the harvest of shellfish. For information regarding the shellfish sanitation program, the applicant should contact the Shellfish Sanitation Section at (252) 726-6827.
- The soil disposal area(s) proposed for this project may produce a mosquito breeding problem. For information concerning appropriate mosquito control measures, the applicant should contact the Public Health Pest Management Section at (252) 726-8970.
- The applicant should be advised that prior to the removal or demolition of dilapidated structures, a extensive rodent control program may be necessary in order to prevent the migration of the rodents to adjacent areas. For information concerning rodent control, contact the local health department or the Public Health Pest Management Section at (919) 733-6407.
- The applicant should be advised to contact the local health department regarding their requirements for septic tank installations (as required under 15A NCAC 18A. 1900 et. sep.). For information concerning septic tank and other on-site waste disposal methods, contact the On-Site Wastewater Section at (919) 733-2895.
- The applicant should be advised to contact the local health department regarding the sanitary facilities required for this project.
- If existing water lines will be relocated during the construction, plans for the water line relocation must be submitted to the Division of Environmental Health, Public Water Supply Section, Technical Services Branch, 1634 Mail Service Center, Raleigh, North Carolina 27699-1634, (919) 733-2321.
- For Regional and Central Office comments, see the reverse side of this form.

Jerry Puffin Reviewer Public Water Supply Section/Branch 1/22/03 Date



North Carolina
Department of Environment and
Natural Resources

Michael F. Easley, Governor
William G. Ross Jr., Secretary



North Carolina
Division of Forest Resources

Stanford M. Adams, Director



2411 Old US 70 West
Clayton, NC 27520
January 27, 2003

MEMORANDUM

TO: Melba McGee, Office of Legislative Affairs
FROM: Bill Pickens, NC Division Forest Resources
SUBJECT: DOT Scoping for Improvements to SR 1500 & SR 1401, Brunswick County
PROJECT #: 03-0187 and State Project # 8.2231801, TIP # R3434

RECEIVED
BY MSP | DATE 2/14/03
R-3434

The North Carolina Division of Forest Resources has reviewed the referenced scoping document and offers the following comments that should be addressed in the EA concerning impacts to woodlands.

- Impacts to forest resources may occur as a result of this project. To help us evaluate the loss of timber production the EA should list the total forest land acreage by type that is removed by right of way construction. Efforts should be made to align corridors to minimize impacts to woodlands in the following order of priority:
 - Managed, high site index woodland
 - Productive forested woodlands
 - Managed, lower site index woodlands
 - Unique forest ecosystems
 - Unmanaged, fully stocked woodlands
 - Unmanaged, cutover woodlands
 - Urban woodlands
- The productivity of the forest soils affected by the proposed project as indicated by the soil series.
- The EA should state the provisions the contractor will take to utilize the merchantable timber removed during construction. Emphasis should be on selling all wood products. However, if the wood products cannot be sold then efforts should be made to haul off the material or turn it into mulch with a tub grinder. This practice will minimize the need for debris burning, and the risk of escaped fires and smoke management problems to residences, highways, schools, and towns.
- If debris burning is needed, the contractor must comply with the laws and regulations of open burning as covered under G.S. 113-60.21 through G.S. 113-60.31. Brunswick County is classified as a high hazard county, and G.S. 113-60.23 requiring a special burning permit would apply. Local DFR rangers only are authorized to issue this permit.

5. The provisions that the contractor will take to prevent erosion and damage to forestland outside the right-of-way. Trees, particularly the root system, can be permanently damaged by heavy equipment. Efforts should be to avoid skinning of the tree trunk, compacting the soil, adding layers of fill, exposing the root system, or spilling petroleum or other substances.
6. The impact upon any existing greenways in the proposed project area should be addressed.

We appreciate the opportunity to comment on the proposed project, and encourage the impact on our forestland be considered during the planning process.

cc: Barry New

**North Carolina Department of
Environment and Natural Resources
Division of Soil and Water Conservation**



Michael F. Easley, Governor
William G. Ross Jr., Secretary
David S. Vogel, Director

RECEIVED
BY MSP | DATE 2/14/03
R-3434

MEMORANDUM:

January 9, 2003

TO: Melba McGee

FROM: David Harrison *DEH*

SUBJECT: Improvements to SR 1500 and SR 1401 in Brunswick County. Project #03-E-0187

The project involves widening SR 1500 and SR 11401 to 24-feet, realigning 3 intersections and replacing 3 bridges.

The environmental assessment should include information on adverse impacts to Prime or Statewide Important Farmland.

The definition of Prime or Statewide Important Farmland is based on the soil series and not on its current land use. Areas that are developed or are within municipal boundaries are exempt from consideration as Prime or Important Farmland.

For additional information, contact the soils specialists with the Natural Resources Conservation Service, USDA, Raleigh, NC at (919) 873-2141.

1614 Mail Service Center, Raleigh, North Carolina 27699-1614
Phone: 919-733-2302 \ FAX: 919-715-3559
Internet: www.enr.state.nc.us/ENR/DSWC/

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50% RECYCLED / 10% POST CONSUMER PAPER



North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

April 13, 2004

Ms. Susan Shelingoski
Stantec Consulting Services, Inc.
801 Jones Franklin Road, Suite 300
Raleigh, NC 27606

Subject: Proposed Improvement of SR 1500 (Midway Road) from NC 211 to US 17 Bypass;
Brunswick County; Project R-3434

Dear Ms. Shelingoski:

The Natural Heritage Program has no records of significant natural communities or priority natural areas at the site nor within a mile of the project area. However, we have records of several rare species in the general vicinity of the project:

a quillwort (*Isoetes microvela*), State Significantly Rare and Federal Species of Concern
Carolina goldenrod (*Solidago pulchra*), State Significantly Rare
American alligator (*Alligator mississippiensis*), State Threatened and Federal Threatened
due to Similarity of Appearance
eastern diamondback rattlesnake (*Crotalus adamanteus*), State Endangered

The quillwort is a very recently (1998) described species with very few known locations; it is globally endangered (G1 NatureServe rank). The population in the project area is along the north side of River Swamp at SR 1500. This site could easily be impacted by construction for the project, unless the new bridges over the creek have a large span, are built away from the quillwort, or unless there is literally no sedimentation or other disturbance to the population from construction on-site. I have enclosed a copy of the element occurrence record.

The goldenrod population, found in 1994, lies 0.1 mile east of the SR 1500 and NC 211 intersection, along the south side of NC 211. Assuming that there is a widening of this intersection with the addition of several lanes to SR 1500, the population could be destroyed.

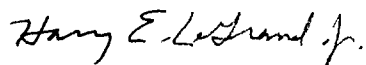
The alligator record is from 1982 from the Bolivia area, but location only to coordinates – 340356N, 0780857W. Nonetheless, because this species moves up and down streams and rivers, including tidal waters to an extent, one should assume that alligators are found in the project area, such as Middle Swamp and River Swamp.

The rattlesnake record is from 1959, near Bolivia. We are not aware of any state records in at least 10 years, though the species is not yet considered extirpated from North Carolina. We assume the species is not now present in the study area.

Because of the likelihood that three of the four above species are still present in the study area, we strongly recommend that Stantec or NC Department of Transportation conduct biological surveys in 2004 along the project corridor. In particular, our Program is concerned about the fate of the quillwort population, as only three sites in the world are known for this plant – 2 sites in Brunswick County and one farther north along the White Oak River in Jones/Onslow counties.

You may wish to check the Natural Heritage Program database website at www.ncsparks.net/nhp/search.html for a listing of rare plants and animals and significant natural communities in the county and on the topographic quad map. Please do not hesitate to contact me at 919-715-8697 if you have questions or need further information.

Sincerely,



Harry E. LeGrand, Jr., Zoologist
Natural Heritage Program

cc: Mary Fraser, NC Department of Transportation
Dale Suiter, US Fish and Wildlife Service, Raleigh Field Office

Enclosure

HEL/hel

ISOETES MICROVELA 003
QUILLWORT
02/08/99

OCODE: PPISO01240*003*NC IDENT: Y FONUM: ELEMENT RANKS: GRANK: G1 SRANK: S1
COUNTYNAME: BRUNSWICK
ITEMNAME: SITECODE:
SURVEYSITE: RIVER SWAMP AT SR 1500 PRECISION: S WATERSHED: 03040207

AT: 340043N S: E: QUADNAME: QUADCODE: MARGNUM: DOTNUM:
LONG: 0780850W N: W: BOLIVIA 3407812 11

DIRECTIONS: RIVER SWAMP AT SR 1500: ALONG THE NORTH SIDE OF RIVER SWAMP 50 METERS WEST OF THE ROAD (BRUNTON 1999).

STATUS:
SURVEYDATE: 1998-07-11 LASTOBS: 1998-07-11 FIRSTOBS: 1998-07-11 EORANK: E EORANKDATE: 1998-07-11
CORANKCOM:
COLDATA: 50+? PLANTS SEVERELY WILTED BY LONG EXPOSURE, 11 JULY 1998 (BRUNTON 1999, BRUNTON & BRITTON 1998).

DESCRIPTION:
DESC: SCATTERED PLANTS WITH BRYOPHYTES AND OCCASIONAL GRAMINOID SEEDLINGS IN A DENSE MAT OF TREE ROOTLETS IN FINE SAND ON EXPOSED CREEK BANK IN SEASONALLY FLOODED SWAMP FOREST (BRUNTON & BRITTON 1998).

LEVEL: 15-20 SIZE: SIZE COMMENT:

GEOMORPH: CCI GEOL: TPYW SPECSTAT: SURVEY: P

SOIL: MUCKALEE LOAM

ELEMENTSPP:

PROTECTION AND OWNERSHIP:
MACODE: MANAME: CONTAINED:

MORELAND: MOREPROT: MOREMGMT: TNCINVOLVE:
MGMTCOM:

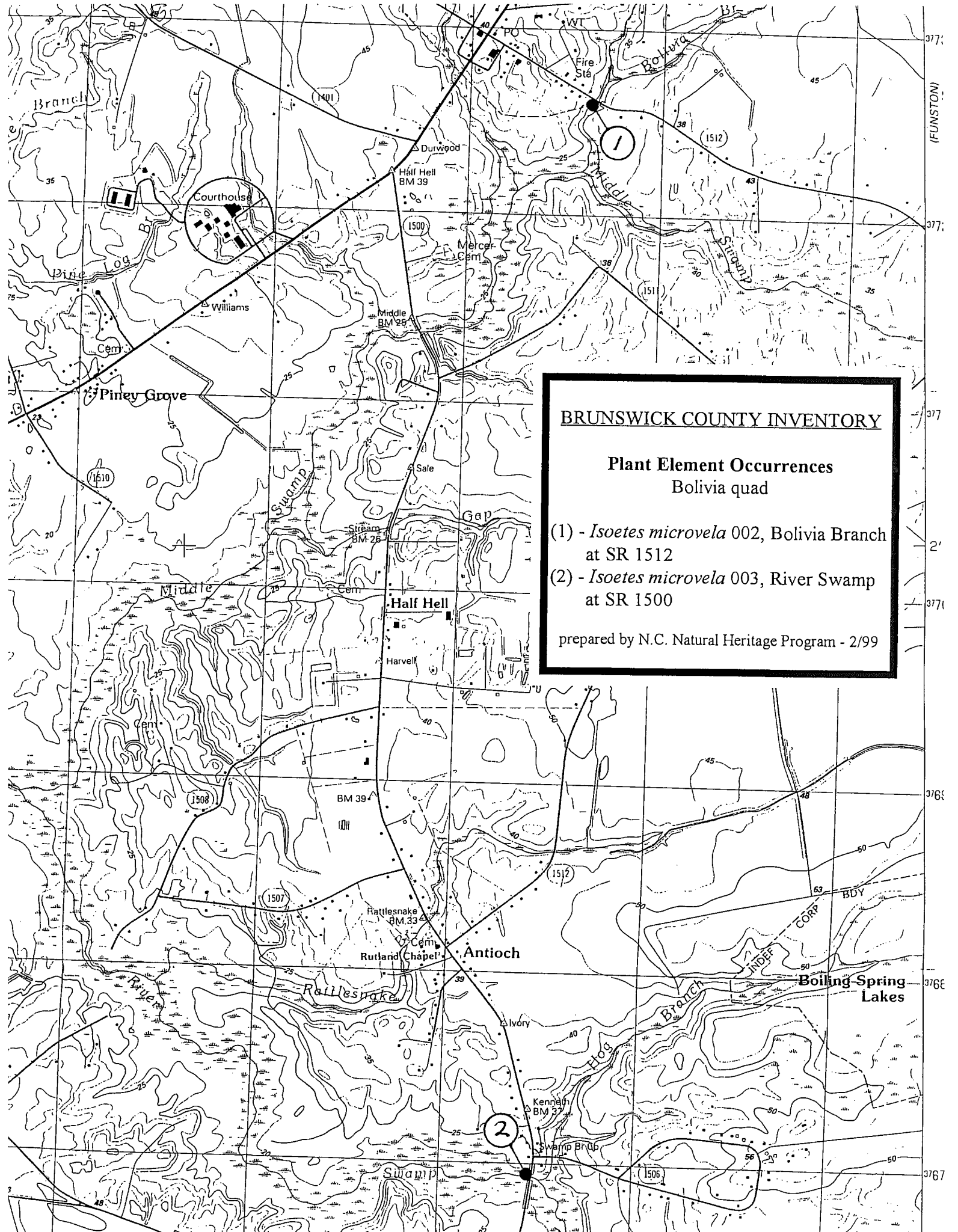
PROTCOM:
OWNER: PRIVATE OWNERINFO:
OWNERCOM:

COMMENTS:

DOCUMENTATION AND MAINTENANCE: DATASENS: BOUNDARIES: AERIAL PHOTO#:
BESTSOURCE: D.F. BRUNTON, 1 FEB 1999 (LETTER TO NCNHP). BRUNTON & MCINTOSH 11 JULY 1998 (SPECIMEN DATA).

CITATION: Brunton, D.F. & D.M. Britton. 1998. *Isoetes microvela* (Isoetaceae) a new quillwort from the coastal plain of the southeastern United States. *Rhodora* 100:261-275.

SPECIMENS: HERB.OAC, D.F. BRUNTON & K.L. MCINTOSH 13601, 11 JULY 1998.
TRANSCRIBER: MAPPER: 99-02-08 JLA EDITION: 99-02-08 EDAUTHOR: LEBLOND CHANGE.DATE: 99-02-08

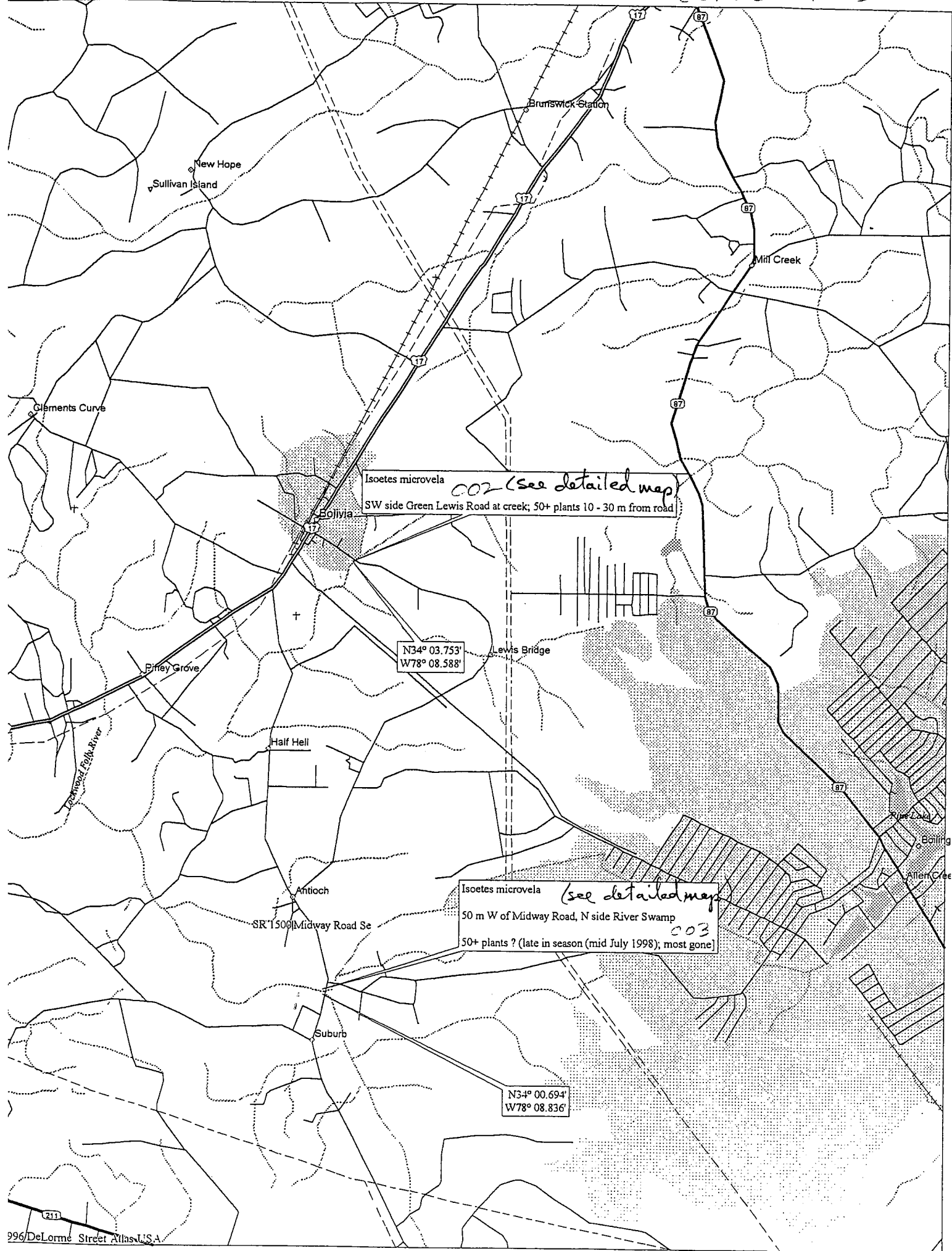


BRUNSWICK COUNTY INVENTORY

**Plant Element Occurrences
Bolivia quad**

- (1) - *Isoetes microvela* 002, Bolivia Branch at SR 1512
- (2) - *Isoetes microvela* 003, River Swamp at SR 1506

prepared by N.C. Natural Heritage Program - 2/99



Isoetes microvela *002* (see detailed map)
 SW side Green Lewis Road at creek; 50+ plants 10 - 30 m from road

N34° 03.753'
 W78° 08.588'

Isoetes microvela (see detailed map)
 50 m W of Midway Road, N side River Swamp
003
 50+ plants ? (late in season (mid July 1998); most gone)

N34° 00.694'
 W78° 08.836'

EUR 005

Half Hell

Antioch

SR 1500 Midway Road Se

Suburb

Isoetes microvela

50 m W of Midway Road, N side River

50+ plants ? (late in season (mid July

N34° 00.694'
W78° 08.836'

211

211

EO DATA FOR *ISOETES MICROVELA* D.F. BRUNTON

ISOETES MICROVELA 003

SURVEYSITE: RIVER SWAMP AT SR. 1500

PRECISION: S

COUNTYCODE: NC BRUN

QUADNAME: BOLIVIA

LAT: 340043N LONG: 0780850W

DIRECTIONS: RIVER SWAMP AT SR 1500: ALONG NORTH SIDE OF RIVER SWAMP 50 M WEST OF ROAD (BRUNTON 1999).

WATERSHED: 03040207

SURVEYDATE: 1998-07-11 LASTOBS: 1998-07-11 FIRSSTOBS: 1998-07-11

EODATA: 50+? PLANTS SEVERELY WILTED BY LONG EXPOSURE, 11 JULY 1998 (BRUNTON 1999, BRUNTON & BRITTON 1998).

GENDESC: SCATTERED PLANTS WITH BRYOPHYTES AND OCCASIONAL GRAMINOID SEEDLINGS IN A DENSE MAT OF TREE ROOTLETS IN FINE SAND ON EXPOSED CREEK BANK IN SEASONALLY FLOODED SWAMP FOREST (BRUNTON & BRITTON 1998).

MINELEV: 15 MAXELEV: 20

BESTSOURCE: D.F. BRUNTON, MAPPING AND POPULATION DATA PROVIDED TO NC NHP, 01 FEBRUARY 1999. BRUNTON & D.M. BRITTON 1998, RHODORA 100: 261-275. BRUNTON & MCINTOSH SPECIMEN DATA, 11 JULY 1998 (IBID.).

SPECIMENS: HERB.OAC, D.F. BRUNTON & K.L. MCINTOSH 13,601, 11 JULY 1998.

EOR OPTIONAL FIELDS

GEOMORPH: CCI

GEOL: TPYW

SOIL: MUCKALEE LOAM



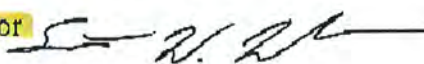
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 R-3434

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: Melba McGee
 Office of Legislative and Intergovernmental Affairs, DENR

FROM: Travis Wilson, Highway Project Coordinator
 Habitat Conservation Program 

DATE: January 30, 2003

SUBJECT: Request for information from the N. C. Department of Transportation (NCDOT) regarding fish and wildlife concerns for improvements to SR 1500 (Midway road) and SR 1401 (Galloway road) by upgrading both roadways to twenty-four feet, realigning the intersection of SR 1500, SR1401, and US 17 Business, and replacing Bridges 23, 25, and 104 in Brunswick County, North Carolina, TIP No. R-3434.

This memorandum responds to a request from Mr. Gregory J. Thorpe of the NCDOT for our concerns regarding impacts on fish and wildlife resources resulting from the subject project. Biologists on the staff of the N. C. Wildlife Resources Commission (NCWRC) have reviewed the proposed project, and our comments are provided in accordance with provisions of the North Carolina Environmental Policy Act (G.S. 113A-1 et seq., as amended; 1 NCAC 25).

We are concerned with extensive wetlands associated with River Swamp, Middle Swamp, and Rattlesnake Branch and any impacts the project will have in these areas. It should also be noted that Red-cockaded Woodpecker (*Picoides borealis*) habitat exist inside the project area, and that there are several occurrences of this federally listed endangered species inside Brunswick County. NCNHP database also shows an occurrence of a vascular plant species inside the study area, Quillwort (*Isoetes microvela*), with a state status of significantly rare. NCDOT should consider measures that could be used to reduce any impacts to these species or their habitats.

In addition to our specific concerns regarding this project, to help facilitate document preparation and the review process, our general informational needs are outlined below.

1. Description of fishery and wildlife resources within the project area, including a listing of federally or state designated threatened, endangered, or special concern species. Potential borrow areas to be used for project construction should be included in the inventories. A listing of designated plant species can be developed through consultation with:

Memo

2

January 30, 2003

N. C. Division of Parks and Recreation
Natural Heritage Program
1615 Mail Service Center
Raleigh, N. C. 27699-1615
(919) 733-7795

and,

NCDA Plant Conservation Program
P. O. Box 27647
Raleigh, N. C. 27611
(919) 733-3610

2. Description of any streams or wetlands affected by the project. The need for channelizing or relocating portions of streams crossed and the extent of such activities.
3. Cover type maps showing wetland acreages impacted by the project. Wetland acreages should include all project-related areas that may undergo hydrologic change as a result of ditching, other drainage, or filling for project construction. Wetland identification may be accomplished through coordination with the U. S. Army Corps of Engineers (COE). If the COE is not consulted, the person delineating wetlands should be identified and criteria listed.
4. Cover type maps showing acreages of upland wildlife habitat impacted by the proposed project. Potential borrow sites should be included.
5. The extent to which the project will result in loss, degradation, or fragmentation of wildlife habitat (wetlands or uplands).
6. Mitigation for avoiding, minimizing or compensating for direct and indirect degradation in habitat quality as well as quantitative losses.
7. A cumulative impact assessment section which analyzes the environmental effects of highway construction and quantifies the contribution of this individual project to environmental degradation.
8. A discussion of the probable impacts on natural resources which will result from secondary development facilitated by the improved road access.
9. If construction of this facility is to be coordinated with other state, municipal, or private development projects, a description of these projects should be included in the environmental document, and all project sponsors should be identified.

Thank you for the opportunity to provide input in the early planning stages for this project. If I can further assist your office, please contact me at (919) 528-9886.

Cc: John Hennessy, DWQ, Raleigh
Gary Jordan, USFWS, Raleigh
Sarah Kopplin, NCNHP



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BY MSP | DATE 3/3/03
R-3434

North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

MEMO TO: Melba McGee
Office of Legislative & Intergovernmental Affairs

FROM: Bennett Wynne *BW*
Habitat Conservation Program

DATE: February 19, 2003

SUBJECT: Scoping information request for proposed SR 1500 & SR 1401 improvements in Brunswick County, North Carolina. Project: 03E-0187.



To assist with the production of an environmental document, we are providing the following standard scoping response that we hope will be useful in its preparation. Although some of the information requests and comments may not be applicable to certain projects, these guidelines should facilitate preparation of fisheries and wildlife impact assessments. Our ability to evaluate project impacts and provide beneficial recommendations when reviewing environmental documents will be enhanced if consultants, project sponsors, or permit applicants provide the following information.

1. Complete descriptions of wildlife, fisheries, and wetland resources within, adjacent to, or utilizing the proposed project construction area including a listing of species designated as federally or state endangered, threatened, or special concern. When practicable, potential borrow areas to be used for project construction and discharge areas should be included in the inventories. A listing of designated species can be developed through consultation with:

N.C. Natural Heritage Program
1615 Mail Service Center
Raleigh, N.C. 27699-1615
(919) 733-7795

and,

N.C.D.A. Plant Conservation Program
P.O. Box 27647
Raleigh, N.C. 27611
(919) 733-3610

RECEIVED
1/20/03

2. Project map identifying wetland acreage impacted by the project. Wetland acreage should include all project related areas that may undergo hydrologic change as a result of ditching, other drainage, or filling for project construction. Wetland identification may be accomplished through coordination with the U.S. Army Corps of Engineers (COE). If the COE is not consulted, the person delineating wetlands should be identified and criteria listed.

3. Description of any streams or wetlands affected by the project. The need for channelizing or relocating portions of streams and the extent of such activities should be noted. Any water withdrawals from groundwater or surface water sources should also be well described. In addition, wetland acreage impacted by alternative project designs should be provided. Finally, for projects involving the discharge of wastewater, potential impacts to streams and wetlands should be thoroughly described, whether wastes are directly discharged to surface waters or land applied. Adequate buffers should be maintained between all land application areas and wetlands or streams.

4. Description of project site and non-wetland vegetative communities.

5. The extent of wildlife habitat fragmentation in uplands and wetlands and impacts associated with fragmentation.

6. Mitigation for avoiding, minimizing, or compensating for direct and indirect habitat loss and degradation in quantitative terms.

7. A discussion of the cumulative impacts of secondary development facilitated by the proposed facility improvements. Such discussion should weigh the economic benefits of the project against the costs of associated environmental degradation.

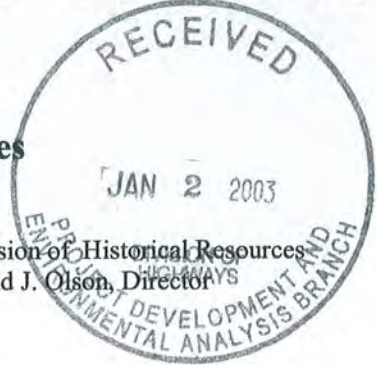
8. If environmental documents are required, a list of preparers and respective areas of expertise, including professional qualifications, should be included.

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

Thank you for the opportunity to comment during the early planning stages of this project. If you have questions regarding these comments, please call me at (252) 522-9736.



R-3434 RECEIVED BY MSP DATE 1/6/03



North Carolina Department of Cultural Resources
State Historic Preservation Office

David L. S. Brook, Administrator

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

Division of Historical Resources
David J. Olson, Director

December 23, 2002

MEMORANDUM

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

FROM: David Brook *for David Brook*

SUBJECT: Scoping , Upgrade SR 1500 (Midway Road) and SR 1401 (Galloway Road) from NC 211 to US 17 Bypass; Improve Intersection at SR 1500, SR 1401, and US 17 Business; Replacement of Bridges 23, 25, and 104; T.I.P. Project No. R-3434, State Project No. 8.2231801, Brunswick County, ER02-11247

Thank you for your Memorandum of October 15, 2002, concerning the above project.

We have conducted a search of our files and are aware of no structures of historical or architectural importance located within the planning area. However, since a survey of this area has not been conducted in over 20 years, there may be structures of which we are unaware located within the planning area.

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over 50 years of age within the project area, and report the findings to us.

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

DB:doc

cc: Mary Pope Furr
Matt Wilkerson

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



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 25, 2003
(Thursday)

Ms. Renee Gledhill-Earley
Environmental Review Coordinator
N.C. Department of Cultural Resources
State Historic Preservation Office
4617 Mail Service Center, Raleigh, NC 27699-4617

RE: Change in Project Scope & Request for SHPO Review
Project No. R-3434: SR 1500 (Midway Rd) and SR 1401 (Galloway Rd)

Dear Ms. Gledhill-Earley:

In accordance with our telephone conversation this morning, I am writing this letter to apprise the State Historic Preservation Office that we are considering a change in the scope of this project and to request your review and comment with respect to an archaeological investigation.

In his December 23, 2002 letter to Dr. Greg Thorpe, NCDOT-PDEA Environmental Management Director, Mr. David Brook, Administrator of the State Historic Preservation Office, recommended that we conduct a historic architecture evaluation, but did not recommend an archaeological investigation.

Since Mr. Brook's letter was written, Brunswick County officials have requested that NCDOT consider a more-westerly realignment of Midway Road and Galloway Road in order to improve access to the County Government Center. I have attached a sketch showing the approximate location of the portion of the project on new location. The remainder of the project scope is consistent with your understanding of the project as documented in the Scoping Sheets (October 15, 2002), the Scoping Meeting (November 19, 2002), and the Scoping Meeting Minutes (December 10, 2002).

Please review this change in scope and determine whether an archaeological investigation is warranted for this project. Should you have comments or questions regarding this request, please contact me at 733-7844 x214 at your earliest convenience. I appreciate your time and look forward to your response.

Sincerely,

Mark S. Pierce, P.E.
Project Development Engineer

Attachment

cc: Mr. Matt Wilkerson (NCDOT-PDEA-Archaeology)

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

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

WEBSITE: WWW.NCDOT.ORG/PLANNING

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC 27601

CITIZENS PARTICIPATION
RECEIVED

JUN 24 2005



North Carolina Department of Cultural Resources
State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 22, 2005

MEMORANDUM

TO: Gregory Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck *Page for Peter Sandbeck*

SUBJECT: Phase II (Intensive Level) Architectural Survey Report, SR 1500 (Midway Road) and SR 1401 (Cardwell Road) Improvements, From NC 211 to US 17 Bypass, R-3434, Brunswick County, ER 02-11247

Thank you for your letter of May 19, 2005, transmitting the survey report by Richard Mattson of Mattson, Alexander and Associates, Inc. for the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is eligible for the National Register under the criteria cited:

(Nos. 7-8) Antioch Crossroads Stores, east side of SR 1500 at junction with SR 1512, Antioch Crossroads, are eligible for the National Register under Criterion A for commerce and Criterion C for architecture. The stores are tangible reminders of the rural, roadside stores that once dotted the county but are now rare. In their simple front gable forms, the stores typify a common commercial form of the early twentieth century. Store No. 8, with its front gable pump canopy, clearly illustrates the auto-oriented country stores of the early- to mid-twentieth century. We concur with the proposed National Register boundary as defined and delineated in the report.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following properties are not eligible for the National Register of Historic Places:

Properties 1 - 6; 9 - 19.

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.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION RESTORATION SURVEY & PLANNING	501 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-4763/733-8653
	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
	518 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801

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

cc: Mary Pope Furr, NCDOT
Richard Mattson, Mattson, Alexander and Associates, Inc.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

MEMO

To: Renee Gledhill-Earley
Environmental Review Coordinator
North Carolina State Historic Preservation Office

From: Vanessa E. Patrick

Date: August 4, 2011

Subject: *T.I.P. No. R-3434, Brunswick County. Midway Road Improvements, SR 1500 (Midway Road) and SR 1401 (Galloway Road) From NC 211 to US 17 Bypass. WBS No.34545.1.1. F.A. Project No. STP-1550(6). ER 02-11247.*

The NCDOT has recently reactivated the R-3434 project in southeastern Brunswick County (see attached map). The project involves widening, some realignment, and the replacement of three bridges on Midway Road (SR 1500) and Galloway Road (SR 1401). Mattson, Alexander and Associates, Inc. executed the original architectural survey, recording nineteen resources, in 2005. In a memo dated June 22, 2005 (copy attached), HPO agreed with NCDOT that two of the surveyed resources, the Antioch Crossroads Stores (BW 262), are eligible for the National Register of Historic Places (NR) under Criteria A and C and the remaining seventeen properties are ineligible and warrant no further study.

As the original architectural survey is now six years old, NCDOT Historic Architecture planned to revisit the R-3434 project area to 1) confirm the continued existence and status of the Antioch Crossroads Stores, 2) check the accuracy of the earlier survey, and 3) identify, photograph, and map any resources, previously recorded or otherwise, requiring evaluation for NR eligibility. NCDOT architectural historians established a new Area of Potential Effects (APE), slightly larger than the original in response to further refinement of the design since 2005. The new APE extends 1500 feet from the centerlines of Midway and Galloway Roads and from both termini of the 7.5-mile project corridor. HPOWeb indicated that the 2008-2010 comprehensive architectural survey of Brunswick County did not add any recorded properties to the APE and confirmed the presence and determination of eligibility of the Antioch Crossroads Stores.

MAILING ADDRESS:

NC DEPARTMENT OF TRANSPORTATION
PDEA - HUMAN ENVIRONMENT UNIT
1598 MAIL SERVICE CENTER
RALEIGH, NC 27699-1598

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE: WWW.NCDOT.ORG

LOCATION:

PDEA - HUMAN ENVIRONMENT UNIT
CENTURY CENTER, BLDG B
1020 Birch Ridge Drive
Raleigh, NC 27610

NCDOT architectural historians conducted a field survey on July 27, 2011 covering 100% of the APE by automobile and on foot. The Antioch Crossroads Stores no longer occupy their sites and are presumed to have been demolished (see attached photographs). The majority of resources dating to about 1961 and earlier in the APE are represented in the 2005 survey and subsequent evaluations. A number of additional pre-1961 properties -- predominantly residential buildings of undistinguished and widely represented types plus a modern cemetery -- are clearly not candidates for National Register eligibility. That these properties do not appear in the recent county survey underscores this assessment. The R-3434 APE has lost its only NR-eligible properties and contains no others of concern.

The disappearance of the Antioch Crossroads Stores has been reported to and acknowledged by Michael Southern for purposes of updating the HPO databases. We shall alert the NCDOT planning engineers to the presence of the newly found cemetery, as well as four others (none qualify for NR eligibility), and the absence of NR-listed and -eligible architectural resources in the R-3434 project area. Should questions arise, please contact me at 919-707-6082 or vepatrick@ncdot.gov. Thank you.

V. E. P.

Attachments



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

**VICINITY MAP
 IMPROVEMENTS TO
 SR 1500 (MIDWAY ROAD)
 AND SR 1401 (GALLOWAY ROAD)
 FROM NC 211 TO US 17 BYPASS
 BRUNSWICK COUNTY
 TIP PROJECT R-3434**

County:	BRUNSWICK
Div:	3
TIP#:	R-3434
WBS:	34545.1.1
Date:	JULY 2008

**Figure
 1**

CITIZENS PARTICIPATION
RECEIVED

JUN 24 2005



North Carolina Department of Cultural Resources State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

Office of Archives and History
Division of Historical Resources
David Brook, Director

June 22, 2005

MEMORANDUM

TO: Gregory Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck *Page for Peter Sandbeck*

SUBJECT: Phase II (Intensive Level) Architectural Survey Report, SR 1500 (Midway Road) and SR 1401 (Cardwell Road) Improvements, From NC 211 to US 17 Bypass, R-3434, Brunswick County, ER 02-11247

Thank you for your letter of May 19, 2005, transmitting the survey report by Richard Mattson of Mattson, Alexander and Associates, Inc. for the above project.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following property is eligible for the National Register under the criteria cited:

(Nos. 7-8) Antioch Crossroads Stores, east side of SR 1500 at junction with SR 1512, Antioch Crossroads, are eligible for the National Register under Criterion A for commerce and Criterion C for architecture. The stores are tangible reminders of the rural, roadside stores that once dotted the county but are now rare. In their simple front gable forms, the stores typify a common commercial form of the early twentieth century. Store No. 8, with its front gable pump canopy, clearly illustrates the auto-oriented country stores of the early- to mid-twentieth century. We concur with the proposed National Register boundary as defined and delineated in the report.

For purposes of compliance with Section 106 of the National Historic Preservation Act, we concur that the following properties are not eligible for the National Register of Historic Places:

Properties 1 - 6; 9 - 19.

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.

ADMINISTRATION
RESTORATION
SURVEY & PLANNING

Location
501 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh NC
515 N. Blount Street, Raleigh, NC

Mailing Address
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617
4617 Mail Service Center, Raleigh NC 27699-4617

Telephone/Fax
(919) 733-4763 / 733-8653
(919) 733-6547 / 715-4801
(919) 733-6545 / 715-4801

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

cc: Mary Pope Furr, NCDOT
Richard Mattson, Mattson, Alexander and Associates, Inc.



**Antioch Crossroads Stores (BW 262) – looking east in
2005 (above) and 2011 (below).
R-3434, Brunswick County**



North Carolina Department of Cultural Resources
State Historic Preservation Office

Claudia Brown, Acting Administrator

Beverly Eaves Perdue, Governor
Linda A. Carlisle, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

August 19, 2011

MEMORANDUM

TO: Vanessa Patrick
Human Environment Unit
NC Department of Transportation

FROM: Renee Gledhill-Earley 
Environmental Review Coordinator

SUBJECT: Midway Road improvements from NC 211 to US 17 Bypass, R-3434, Brunswick County,
ER 02-11247

Thank you for your memorandum of August 4, 2011, informing us of the expanded Area of Potential Effects (APE) for the above referenced project and noting that the Antioch Crossroads Stores (BW 262) have been demolished. We have updated our statewide GIS at <http://gis.ncdcr.gov/hpoweb/> to reflect the loss of the buildings.

We concur that there appear to be no other historic properties within the expanded APE and no further architectural survey work is warranted.

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

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-807-6579. In all future communication concerning this project, please cite the above referenced tracking number.

cc: Mary Pope Furr, NCDOT



Local Comments

Contents:

Brunswick County Resolutions

Correspondence with Brunswick County Government

County of Brunswick
Office of the County Commissioners



RESOLUTION IN SUPPORT OF FOUR LANES ON MIDWAY ROAD

Whereas, the flow of goods and people has always been necessary for the vitality of an economy, and the safe passage of persons and merchandise is essential for stable and viable commerce, and

Whereas, the completion of the second bridge to Oak Island will intensify the traffic demands between the towns of Oak Island, Caswell Beach, Bald Head Island and Southport to more distal points that will naturally utilize Midway Road, currently a two-lane road sorely in need of improvement, and it was the only road in the southeastern portion of the County that did not flood during the ravages of Hurricane Floyd, making it an essential evacuation route in the event of a major storm, or nuclear episode, or national strategic weapons event at or near Sunny Point, and

Whereas, the North Carolina Department of Transportation has recently indicated that there may be no real need to make Midway Road a four lane highway, which is not rational in the face of the new bridge and the development in the Sunset Harbor area, and additional persons are making Brunswick County their home every day, and

Whereas, the investment of making Midway Road a four lane highway will secure a viable, quick and easy method for goods and people to move to other markets, and allow goods and people to safely move to and from our markets.

Now therefore, the Brunswick County Commissioners are hereby resolved to support the efforts of the North Carolina Department of Transportation to classify Midway Road as one of the roadways in the Brunswick area that will be improved to a four lane highway, and to advance this road project which will have an impact on our County for many years to come.

This the 3rd day of November, 2008.

William M. Sue, Chair
Brunswick County Commissioners

Attest:

Deborah S. (Debby) Gore, EMC
Clerk to the Board



BRUNSWICK COUNTY ADMINISTRATION

BRUNSWICK COUNTY GOVERNMENT CENTER
DAVID R. SANDIFER COUNTY ADMINISTRATION BUILDING
30 GOVERNMENT CENTER DRIVE, N.E.
BOLIVIA, NORTH CAROLINA 28422

MAILING ADDRESS:

POST OFFICE BOX 249
BOLIVIA, NORTH CAROLINA 28422

TELEPHONE
(910) 253-2000
(800) 442-7033

June 22, 2011

FAX
RECEIVED (910) 253-2022
DIVISION ENGINEER
THIRD DIVISION

Mr. H. Allen Pope, P.E.
Division Engineer
NCDOT Division Office
124 Division Drive
Wilmington, North Carolina 28401

JUN 27 2011

Const.	Maint.
Oper. Mgr.	Pers. Tech.
Bus. Ofc.	Env. Supr.
Proj. Mgr.	
Others	Division of Highways

Re: Resolution of Support (TIP Project No. R-5021)

Dear Mr. Pope:

The Brunswick County Board of Commissioners, at their regular meeting on June 20, 2011, approved a Resolution in support of the NCDOT acquiring the necessary right-of-way as part of the NC 211 widening project to construct a future interchange at the intersection of Midway Road and NC 211. A copy of the Resolution is enclosed for your files.

If you have any questions, please do not hesitate to contact me.

Sincerely,


Marty K. Lawing
County Manager

MKL/agw

Enclosure

cc: Mike Alford, Division 03 Member



County of Brunswick
Office of the County Commissioners



A RESOLUTION IN SUPPORT OF THE NCDOT ACQUIRING THE NECESSARY RIGHT OF WAY AS PART OF THE N.C 211 WIDENING PROJECT (TIP Project No. R-5021) TO CONSTRUCT A FUTURE INTERCHANGE AT THE INTERSECTION OF MIDWAY ROAD AND N.C. 211.

WHEREAS, North Carolina Department of Transportation is responsible for planning, developing and maintaining the highway system in the state of North Carolina; and

WHEREAS, an adequate transportation system is crucial to the growth and development and quality of life of a county; and

WHEREAS, Brunswick County is one of the fastest growing counties in America and the second fastest growth County in North Carolina with a 46% growth in population from 2000 to 2010; and

WHEREAS, as a tourist destination, the seasonal population more than doubles during the summer months and significant residential development is planned for the NC 211 Corridor; and

WHEREAS, the North Carolina Department of Transportation has constructed the Second Oak Island Bridge and has plans to widen Midway Road and NC 211; and

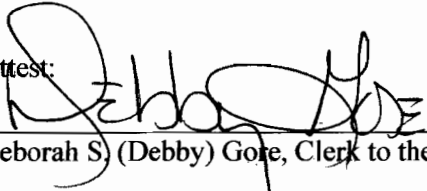
WHEREAS, the Oak Island Bridge Project has been a major improvement in moving traffic and the Midway Road and Highway 211 widening projects will complement the Bridge Project to accommodate tourist traffic and well as access to major evacuation routes; and

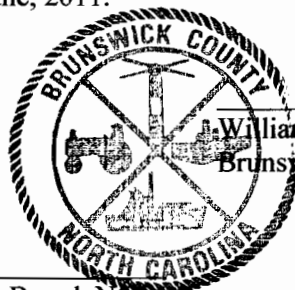
WHEREAS, in order to optimize the impact of these roadways to move traffic, the Brunswick County Board of Commissioners believe that the construction of a future interchange will be necessary where these three roads intersect.

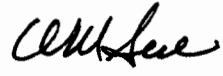
NOW, THEREFORE BE IT RESOLVED THAT the Brunswick County Board of Commissioners does recommend, support and request that the North Carolina Department of Transportation acquire adequate right of way as part of the NC 211 Widening Project (TIP Project No. R-5021) for the construction of a future interchange at Midway Road and N.C. 211 to optimize the movement of traffic at this crucial intersection in Brunswick County.

Adopted this the 20th day of June, 2011.

Attest:


Deborah S. (Debby) Goye, Clerk to the Board, NCCCC




William M. Sue, Chairman
Brunswick County Commissioners

BRUNSWICK COUNTY EMERGENCY SERVICES

BRUNSWICK COUNTY GOVERNMENT CENTER
3325 OLD OCEAN HWY
BOLIVIA, NORTH CAROLINA 28422

MAILING ADDRESS:
POST OFFICE BOX 249
BOLIVIA, NC 28422

ANTHONY MARZANO, CEM
DIRECTOR



TELEPHONE
(910) 253-5383
(800) 522-2346

TELECOPY
(910) 253-4451

July 6, 2012

Mr. Bruce Maxwell
Town of St James
Via Electronic Mail

Mr. Maxwell,

Thank you for the opportunity to meet a few weeks ago and discuss the planned improvements to the Midway / Galloway Road corridor between the US 17 bypass and NC 211. This is a critical route for emergency services and I am happy to provide some additional comments to you based on our discussion last month.

As you are aware, there are a few key hazards of interest to emergency services that are associated with the area in question. The entire area being a coastal area, we are of course prone to tropical weather events. Additionally, the Brunswick Nuclear Plant in Southport has an emergency planning zone (primary evacuation area) extending out to ten miles. The corridor in question is a key evacuation route for both of those scenarios. As such, emergency services is primarily concerned with ensuring both capacity as well as survivability of the corridor both during and after such a disaster may strike.

Last year, at a meeting to discuss the NC 211 widening project, NC DOT indicated their plan to eventually construct an interchange at NC 211 and Midway Road. While we support that from an evacuation standpoint, that would also create a situation of ideally being able to send traffic coming west on NC 211 from Southport/St. James under the overpass and traffic on Middleton Rd from Oak Island traveling north up onto Midway Road. The interchange would allow traffic to move simultaneously and reduce queuing which occurs right now with the stoplight that exists presently. I recommend that the DOT engineers take this into consideration, since reducing Middleton from two lanes down to one would undoubtedly create a queue. Having two lanes up Midway, or even a three lane / reversible (similar to the plan we had for Long Beach Road until the second bridge opened last year) would be better from our standpoint.

In terms of survivability, Brunswick County is flood prone and we have a history of major road flooding which impact our primary evacuation routes. In September 2010 we experienced major flooding associated with storms and the remnants of TS Nicole. NC 211 WB was closed at the Lockwood Folly River, NC 133 (River Road) was closed near Orton Curve, and NC 87 was barely passable through Boiling Spring Lakes at the bridge. This left Midway Road as the only passable route. As the nuclear plant was still up and operating, federal officials from the NRC and FEMA conducted a disaster initiated review based on the road flooding to determine if evacuation capacity was adequate. While it was at the time, loss of another route could have possibly been of great enough concern for the NRC to order the plant to shut down due to temporary inability to evacuate the public in the event of an emergency. Needless to say, this would have major implications to both the power grid and the local economy.

It should be noted that the new Oak Island Bridge has changed the evacuation methodology for the nuclear plant enough to require a new evacuation time estimate study (ETE) which is currently underway and should be completed by this fall. This study is the responsibility of Progress Energy and is being conducted by a contractor (KLD). I am sure that NC DOT will be provided with access to this information once it is complete.

Finally, it is worth noting that Midway Road is a major route and thoroughfare for emergency services to use in accessing the southeastern part of the County. The emergency services center, located at the Brunswick County government center in Bolivia, is located on the US 17 Bypass (Old Ocean Highway) about ½ mile west of Midway Road.

I hope this helps to better outline some of our thoughts and concerns related to this project. Please let me know if I may be of further assistance.

Respectfully,

A handwritten signature in black ink, appearing to read 'Anthony Marzano', written in a cursive style.

Anthony Marzano, CEM
Emergency Services Director



**Brunswick County Planning and
Community Development
P.O. Box 249
75 Courthouse Drive N.E., Bldg I
Bolivia NC 28422**

MEMORANDUM

To: Bruce Maxwell, Town of St. James

From: J. Leslie Bell, AICP
Planning Director

Date: 16-Jul-12

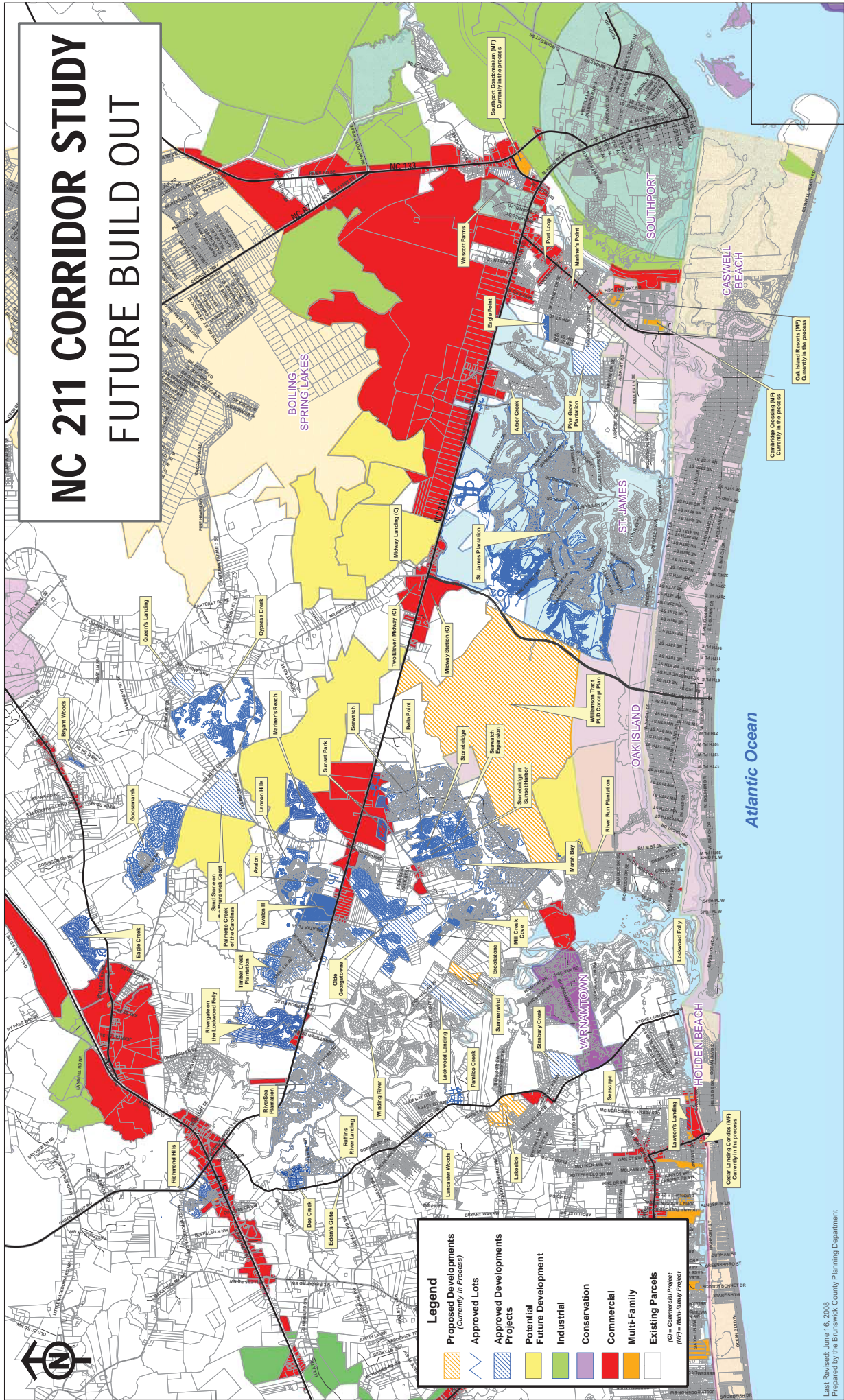
RE: TIP R-3434 (Midway Rd SR 1500 / Galloway Rd SR 1401 Improvement)

Per our previous meeting, please find below a review of the existing and projected conditions that may have a potential impact on the NC 211/Midway Rd (SR 1500) corridor. As you are aware, the portion of NC 211 from the NC 211/US Hwy 17 intersection and running east through the City of Southport and terminating at the Intracoastal Waterway is one of the fastest growing corridors in Brunswick County. While the County population grew approximately forty-seven percent (47%) based on the last decennial census (2000-2010), this corridor has a projected and approved unit count at final build-out of more than 25,400 housing units (attached). While all of these projected units are not located directly along NC 211, residents of these units will travel NC 211 as their primary thoroughfare to access the closest four-lane facility (US Hwy 17).

Additionally and although Brunswick County's most recent Comprehensive Transportation Plan (March 2010) does not contain a map of its major hurricane evacuation routes, the County's previous 2001 Transportation Plan lists NC 211 as the major evacuation route (attached) located between the Intracoastal Waterway and the Lockwood Folly River. Moreover, seasonal projections cited in Brunswick County's Coastal Area Management Act (CAMA) Plan certified by the North Carolina Coastal Resources Commission in October 2007 estimate a seasonal population increase of 2.6 times its full-time permanent population count (attached).

Please feel free to contact me at 910.253.2033 should you have any questions.

NC 211 CORRIDOR STUDY FUTURE BUILD OUT



Legend

- Proposed Developments (Currently in Process)
- Approved Lots
- Approved Developments Projects
- Potential Future Development
- Industrial
- Conservation
- Commercial
- Multi-Family
- Existing Parcels
- (C) = Commercial Project
- (MF) = Multi-Family Project

NC 211 Corridor

File #	Development	Acreeage	Density	Location	Open Space	Units	Type	Approved
SE-78	Arbor Creek (Phase 7 & 8) PUD	134.19	2.05	Located off of NC 211 adjacent to St. James Plant.	33.15	92	s/f	8-Sep-03
SE-129	Avalon II PUD	99.07	2.34	Located on Southport-Supply Rd (NC 211)	24.76	323	243 s/f, 80 m/f	26-Jun-06
SE-111	Avalon PUD	226.25	1.94	Located on and between Old Lennon Rd (SR 1504) and Southport-Supply Rd (Hwy 211)	22.63	440	344 s/f, 96 m/f	14-Nov-05
SE-134	Bella Point PUD	75.01	1.93	Located on Sunset Harbor Rd (SR 1112)	27.56	145	s/f	24-Jul-06
SS-199	Brookstone Major Subdivision	38.31	2.3	Located on Sunset Harbor Rd (SR1112)	1.17	88	s/f	12-Sep-05
SS-212	Bryant Woods Major Subdivision	12.45	2.25	Located on George T. Bryant Road (ST 1510)	0.5	28	s/f	11-Jun-07
MF-2	Cambridge Crossing	21.54	4.09	Located on Fish Factory Road (SR 1101)	0	88	m/f	21-Feb-06
SE-54	Carolina Bay PUD	488.9	1	Southeast of the intersection of Sunset Harbor Rd and NC 211	53.73	488	s/f	11-Dec-00
SE-82	Carolina Place (Expansion) PUD	56.71	3.21	Located off of North Hampton Drive SE via Long Beach Rd (NC 133)	8.08	182	122 s/f, 60 m/f	8-Dec-03
SS-155	Cedar Greens Major Subdivision	8.46	1.76	Stone Chimney Rd	0	15	s/f	9-Oct-00
SE-125	Cypress Creek PUD	588	2.4	Located on Gilbert Rd (SR 1501)	88.2	1409	917 s/f, 492 m/f	26-Jun-06
SS-197	Doe Creek Plantation Major Subdivision	38.1	2.39	Located on Stone Chimney Rd (SR 1115)	1.67	91	s/f	28-Jul-05
SS-153	Dutchman Village Commercial Subdivision	48.3	0.2	Hwy 211	0	10	s/f	21-Jun-00
SE-149	Eagle Creek PUD	156.85	3.04	Located on Old Ocean Hwy (US 17 Business)	33.45	477	382 s/f, 95 m/f	12-Feb-07
SS-229	Eagle Point Major Subdivision	37.87	1.21	Located on Sea Pines Drive (SR 1217)	1.27	46	s/f	23-Apr-07
SS-246	Eden's Gate Major Subdivision Expansion	4.52	3.5	Located on Stone Chimney Road (SR 1119)	0.72	16	s/f	13-Aug-07
SS-189	Expansion of Colt's Neck Farmettes Major Subdivision	181.94	0.26	Located off of Gilbert Rd (SR 1501) on Clemmons Rd (SR1505)	7.6	48	s/f	14-Mar-05
SS-200	Goose Marsh Major Subdivision	400	1.99	Located on Gilbert Road (SR 1501)	34.18	794	794 s/f	10-Oct-05
SS-173	Hunters Run Major Subdivision	53.25	0.54	Sunset Harbor Rd (SR 1112)	4.42	29	s/f	13-Oct-03
SE-62	Lakes at Lockwood II PUD	95.97	1.09	Stone Chimney Road	32.22	105	s/f	10-Dec-01
SE-179	Lakeside PUD	95.56	2.31	Located on Stone Chimney Rd (SR 1115)	34.39	221	s/f	14-Jul-08
SS-187	Lancaster Woods Major Subdivision	9	2.2	Located on Stone Chimney Rd (SR 1115) between Taft Rd and Field View Lane SW	0.27	20	s/f	8-Nov-04
SE-119	Lawson's Landing PUD	15.06	3.85	Located on Old Ferry Road (SR 1115)	4.51	58	8 s/f, 50 m/f	27-Mar-06
SE-118	Lennon Hills PUD	81.8	3.3	Located on Old lennon Road (SR 1504)	20.45	270	225 s/f, 45 m/f	27-Mar-06
SS-239	Lockwood Landing Major Subdivision	77.81	1.69	Located on Zion Hill Road (SR 1114)	5.81	132	s/f	23-Apr-07
SE-80	Lockwood Plantation (Revised) PUD, now Riversea	460.5	1.29	Located off of NC 211 towards Supply	63.5	595	463 s/f, 132 m/f	13-Oct-03

NC 211 Corridor

File #	Development	Acreage	Density	Location	Open Space	Units	Type	Approved
SE-68	Lockwood Plantation PUD, now Riversea	460.5	1.44	Located off of NC 211 towards Supply	63.5	595	463 s/f, 132 m/f	13-Oct-03
SE-123	Mariner's Point PUD	33.75	2.52	Located on Faith Blvd, off of Long Beach Rd (NC 133)	5.06	85	s/f	12-Jun-06
SE-164	Mariner's Reach PUD	187.7	2.9	Located on Clemmons Rd (SR 1505)	70.47	536	450s/f, 86m/f	8-Oct-07
SS-168	Marsh Bay (Phase 5 & 6) Major Subdivision	29.27	1.38	Sunset Harbor Rd (SR 1112)	6.9	41	s/f	10-Mar-03
SS-152	Marsh Bay Major Subdivision	48.45	1.44	West side of Sunset Harbor Rd across from Retreat St.	0	71	s/f	19-Apr-00
SS-213	Marsh Bay Phase 5 Major Subdivision	24.34	1.27	Located on Sunset Harbor Road (SR 1112)	3.37	32	s/f	26-Mar-07
SE-114	Midway Landing Commercial Center	13.1	0	Located at the NE quadrant of the intersection of Southport-Supply Road (NC 211) and Midway Road (SR 1500)	0	0	0	28-Nov-05
SE-115	Midway Station Commercial Center	98.14	0	Located at the SW quadrant of the intersection of Southport Supply Road (NC 211) and Midway Road (SR 1500)	0	0	0	28-Nov-05
SE-113	Mill Creek Cove PUD	171	2.27	Located on Sunset Harbor Rd. (SR 1112)	32.18	388	292 s/f, 96 m/f	23-Jan-06
SE-133	Olde Georgetowne PUD	548.9	2.2	Located on Southport-Supply Rd (NC 211), near Sunset Harbor Rd.	89.8	1203	1009 s/f, 194 m/f	24-Jul-06
SE-101	Palmetto Creek of the Carolinas PUD	214	2.28	Located on and between Old Lennon Rd. (SR 1504) and Southport-Supply Rd (NC 211)	56.72	487	393 s/f, 94 m/f	8-Aug-05
SS-184	Pamlico Creek Major Subdivision	32	0.84	Located on Stone Chimney Rd (SR 1115) just north of Cedar Grove Rd (SR 1125)	0.87	27	s/f	8-Nov-04
SE-174	Pine Grove Plantation PUD	114.96	1.92	Located on Villanova Road	34.59	221	s/f	14-Jan-08
SS-205	Port Loop Road Extension Major Subdivision	2.95	4.75	Located on Port Loop Rd, off of Long Beach Rd (NC 133)	0	14	s/f	23-Jan-06
SS-249	Queen's Landing Major Sub.	47.31	2.55	Located on Midway Road (SR 1500)	16.09	121	s/f	8-Oct-07
SE-132	Richmond Hills PUD	46.07	2.1	Located on Big Macedonia Road (SR 1342) and Green Swamp Road (NC 211)	6.9	95	s/f	12-Dec-06
SE-158	Richmond Hills Expansion PUD	18.68	2.1	Located on NC 211 and US 17	12.26	41	s/f	11-Jun-07
SE-150	Rivergate on the Lockwood Folly PUD	285	2.23	Located on Southport-Supply Road (NC 211)	56.51	638	322 s/f, 316 m/f	12-Mar-07
SE-107	Riversea Expansion A & B PUD	79.3	0.83	Located on 211	70.37	117	67 s/f in A, 50 s/f in B	12-Sep-05
SS-202	Ruffins River Landing Major Subdivision	62.94	1.46	Located on Eden Road, off of Stone Chimney Road (SR 1115)	1.89	92	s/f	28-Nov-05
SE-172	Sand Stone on the Brunswick Coast PUD	189	2.68	Located on Clemmons Rd (SR 1505)	81.9	508	246 s/f, 262 m/f	14-Jan-08

NC 211 Corridor

File #	Development	Acreeage	Density	Location	Open Space	Units	Type	Approved
SE-40	Seascape PUD	501.6	1.25	On Stone Chimney at the Intracoastal	123.2	626	s/f	18-Aug-99
SE-70, SE-72 masterplan	Seawatch - Mercer Mill PUD	622.76	1.5	Located along Sunset Harbor Road (SR 1112)	34	932	621 s/f, 311 m/f	10-Mar-03
SE-87	Seawatch at Sunset Harbor Expansion PUD	555.8	2	Sunset Harbor Road SE (SR 1112)	56	1,111	586 s/f, 525 m/f	10-May-04
SE-89	Seawatch at Sunset Harbor PUD (West Tract)	88.2	3	Sunset Harbor Road SE (SR 1112)	23.1	264	142 s/f, 122 m/f	12-Jul-04
SE-90	Seawatch at Sunset Harbor PUD (Yellow Banks North Tract)	475.6	1.3	Sunset Harbor Road SE (SR 1112)	36.4	620	335 s/f, 285 m/f	12-Jul-04
SE-120	Seawatch Phase 10 PUD	243.38	1.6	Located within Seawatch, off of Southport-Supply Rd (NC 211)	31.89	438	s/f	26-Jun-06
SE-104	St. James Expansion PUD	19.2	1.41	Located at St. James Plantation off NC 211, on Harborside Way	182.7	21	s/f	28-Jul-05
SE-42	St. James Plantation (Consolidation) PUD	1006	0.14	NC Hwy 211 adjacent to Arbor Creek	186.2	1,436	1,122 s/f, 314 m/f	19-Jan-00
SE-64	St. James Plantation (Paladin Club) PUD	669.66	0.76	NC Hwy 211 adjacent to Arbor Creek	112.41	512	s/f	10-Dec-01
SE-53	St. James Plantation (Player's Club) PUD	300.62	0.91	NC Hwy 211 adjacent to Arbor Creek	64.64	273	s/f	13-Nov-00
SE-65	St. James Plantation (The Reserve) PUD	2,277.17	0.98	NC Hwy 211	247.8	2,202	1,082 s/f, 1120 m/f	10-Dec-01
SE-106	Stanbury Creek PUD	87.76	2.64	Located on Stone Chimney Road (SR 1119), across from Stanbury Road (SR 1124)	20.12	232	147 s/f, 85 m/f	10-Oct-05
SS-223	Stonebridge at Sunset Harbor Major Subdivision	45.55	2.44	Located on Sunset Harbor Road (SR 1112)	1.98	111	s/f	23-Oct-06
SS-245	Stonebridge at Sunset Harbor Major Subdivision Expansion	53.48	2	Located on Sunset Harbor Road (SR 1112)	4.09	107	s/f	9-Jul-07
SS-244	Summerwind	40	2.1	Located on Zion Hill Road (SR 1114)	1.5	85	s/f	8-Dec-08
SS-238	Sunset Park Major Subdivision	23.8	2.39	Located on Sunset Harbor Road (SR 1112)	0.7	57	s/f	14-May-07
SS-170	Sweet Bay Village Major Subdivision (Vested Rights)	45.33	2.96	Located off of Long Beach Road (NC 133) and Sweet Bay Drive SE adjacent to Sea Pines Subdivision	0	134	s/f	11-Aug-03
SE-55	The Lakes at Lockwood PUD	81.31	1.54	Stone Chimney Rd SW adjacent to Stanbury Heights Subdivision	18.73	125	s/f	19-Mar-97
SE-91	The Reserve at St. James PUD Expansion 2169 acres)	2,169.20	1.7	Located south of NC 211 and west of St. James main entrance and east of Midway Road (SR 1500)	237.1	3,753	1,105 s/f, 11 legacy, 1,795 m/f	9-Aug-04
SE-92	The Reserve at St. James PUD, formerly The Paladin Club)	711.68	0.78	NC 211	196.34	554	526 s/f, 28 m/f	9-Aug-04

NC 211 Corridor

File #	Development	Acreage	Density	Location	Open Space	Units	Type	Approved
SE-141	Timber Creek Plantation Major Subdivision	112	1.75	Located on Old Lennon Road (SR 1504)	31.27	196	s/f	25-Sep-06
SS-172	Trotters Ridge Major Subdivision	28	1.68 du/ac	Sunset Harbor Rd (SR 1112)	1	47	s/f	13-Oct-03
SS-207	Wescott Farms Major Subdivision	55.1	1	Located on Doshier Cutoff Rd (NC 133)	1.65	55	s/f	16-Feb-06
TOTAL		16,426				25,413		

BRUNSWICK COUNTY



CAMA CORE LAND USE PLAN

Adopted by the Brunswick County Board of Commissioners: October 15, 2007
Certified by the Coastal Resources Commission: November 30, 2007
Recertified by the Coastal Resources Commission: June 25, 2009
Recertified by the Coastal Resources Commission: October 30, 2009
Recertified by the Coastal Resources Commission: August 25, 2011

Prepared by:

Holland Consulting Planners, Inc
Wilmington, North Carolina

The preparation of this document was financed in part through a grant provided by the North Carolina Coastal Management Program, through funds provided by the Coastal Zone Management Act of 1972, as amended, which is administrated by the Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration.

2. Brunswick County and Municipal Population Change 1980-2005

Table 2 provides population growth for Brunswick County and its municipalities from 1980 to 2005. The municipalities that participated in the development of this plan are highlighted in bold print and delineated on Map 3. During this period, the total municipal population increased by 291.3% while the county's unincorporated areas grew at a rate of 102.9%. Overall the county's growth rate was 150.1%.

Table 2.
Brunswick County and Municipal Population Growth, 1980-2005

Municipality	Total Population				% Change			Overall 1980-2005
	1980	1990	2000	2005 Estimate	1980- 1990	1990- 2000	2000- 2005	
Bald Head Island*	0	78	173	229	0.0%	121.8%	32.4%	193.6%
Belville	102	66	363	445	-35.3%	450.0%	22.6%	336.3%
Boiling Spring Lakes	998	1,650	2,972	3,767	65.3%	80.1%	26.7%	277.5%
Bolivia	252	228	148	159	-9.5%	-35.1%	7.4%	-36.9%
Calabash	128	179	711	1,380	39.8%	297.2%	94.1%	978.1%
Carolina Shores*	0	1,031	1,482	2,536	N/A	43.7%	71.1%	145.9%
Caswell Beach	110	175	370	461	59.1%	111.4%	24.6%	319.1%
Holden Beach	232	626	787	889	169.8%	25.7%	12.9%	283.2%
Leland*	0	1,801	1,938	5,189	0.0%	7.6%	167.8%	188.1%
Long Beach**	1,844	3,816	N/A	N/A	106.9%	N/A	N/A	N/A
Navassa	439	445	479	1,660	1.4%	7.6%	246.6%	278.1%
Northwest*	0	611	671	776	0.0%	9.8%	15.6%	27.0%
Oak Island**	0	0	6,570	7,711	0.0%	0.0%	17.4%	17.4%
Ocean Isle Beach	143	523	426	481	265.7%	-18.5%	12.9%	236.4%
Sandy Creek*	0	243	246	275	0.0%	1.2%	11.8%	13.1%
Shalotte	680	1,073	1,381	1,768	57.8%	28.7%	28.0%	160.0%
Southport	2,824	2,369	2,351	2,677	-16.1%	-0.8%	13.9%	-5.2%
St. James***	0	0	804	1,873	0.0%	0.0%	132.9%	132.9%
Sunset Beach	304	311	1,824	2,211	2.3%	486.5%	21.2%	627.3%
Varnamtown*	328	404	481	546	23.2%	19.1%	13.5%	66.5%
Yaupon Beach**	569	734	N/A	N/A	29.0%	N/A	N/A	N/A
Total Municipalities	8,953	16,363	24,178	35,033	82.8%	47.3%	44.9%	291.3%
Total Unincorporated Areas	26,824	34,622	48,963	54,436	29.1%	41.6%	11.2%	102.9%
Total County	35,777	50,985	73,141	89,469	42.5%	43.5%	22.3%	150.1%

*This municipality incorporated or reactivated between the 1980 and 1990 censuses. The overall percent change reflects 1990-2005, except for Varnamtown.

**Long Beach and Yaupon Beach merged to form the Town of Oak Island in July, 1999. The percentage change for the Town of Oak Island represents 2000-2005.

***This municipality incorporated between the 1990 and 2000 censuses. The overall percent change reflects 2000-2005. (See first paragraph on page 5-5.)

Source: US Census Bureau.

It should be noted that the Town of Saint James paid for a special census to be completed as a result of some annexations that occurred after the 2000 Census was taken. The special census, dated June 10, 2004, reflects a census count of 1,831 persons. Municipalities may challenge a census count within three years of when the census is taken in order to have the population changed. The special census taken for Saint James was completed after that time period, and therefore the official decennial census count was not changed. However, the state demographer gave Saint James an updated census count of 1,814. This figure was based on the town's boundaries, including the 2001 annexed areas. (This information was obtained from the North Carolina State Data Center.)

In 2003, the municipalities of Belville, Boiling Springs Lakes, Carolina Shores, Northwest and Saint James had a total estimated population of 8,291 or 27.7% of the county's municipal population and 10.1% of the county's overall population. The largest municipalities in Brunswick County include Oak Island, Leland, Boiling Spring Lakes, Southport, Sunset Beach, and Shallotte. Since 1980 the fastest growing municipalities in the County have been Calabash and Sunset Beach, with growth rates of 942.2% and 547.0% respectively.

3. Brunswick County Seasonal Population

Based on information provided by the Brunswick County Economic Development Commission, the following provides estimated peak seasonal population by year for Brunswick County:

Year	Population
1990	153,000
1995	178,120
2000	190,480

Most of this peak seasonal population is attracted to the barrier island beach communities and the county's numerous golf course developments. In 2000 the estimated peak seasonal population was 2.6 times the county's total year-round population. Thus, the seasonal visitors in 2000 were approximately 117,339 visitors.

4. Brunswick County Day Visitors

It is difficult to estimate day visitor population for Brunswick County. However, it should be recognized that day visitors place a strain on law enforcement personnel and the county's transportation system. As an example of day visitor impact, the City of Southport estimated that the four-day 2004 Fourth of July Festival attracted 45,000-50,000 visitors. However, it is acknowledged that not all of those visitors came from outside of Brunswick County. Other festivals and events that are conducted throughout the year also attract day visitors from outside of the County.



NEPA/404 Merger Team

Contents:

Concurrence Point 1 – Signature Pages

Concurrence Point 2 – Signature Pages

Concurrence Point 2a – Signature Pages

**Section 404/NEPA Merger Project Team Agreement
Concurrence Point No. 1: Purpose & Need
TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

The Project Team Members listed below have concurred with the following statement as the Purpose & Need for this project:

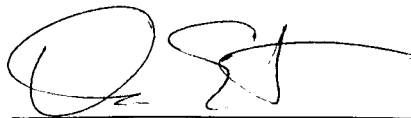
The purpose of this project is to make safety and operational improvements and facilitate weather-related evacuations and general emergency response events.

The Project Team members have also concurred with the following project study area:

As depicted on Figure 3 of the Merger packet, the following project study area is agreed upon. A map of the study area is attached.

US Army Corps of Engineers	<u>Brad Shaver</u>	9/19/2012
	Brad Shaver	DATE
US Fish & Wildlife Service	<u>Gary Jordan</u>	9/19/2012
	Gary Jordan	DATE
NC Division of Water Quality	<u>Mason Herndon</u>	9/19/12
	Mason Herndon	DATE
NC Division of Marine Fisheries	_____	DATE
	Jessi Baker	DATE
NC Division of Coastal Management	<u>Steve Sollod</u>	9/19/12
	Steve Sollod	DATE
National Marine Fisheries	_____	DATE
	FRITZ ROHDE	DATE
Wildlife Resources Commission	<u>Travis Wilson</u>	9-19-12
	Travis Wilson	DATE
Environmental Protection Agency	<u>Chris Militscher</u>	9-19-12
	Chris Militscher	DATE
Federal Highway Administration	<u>Ron Lucas</u>	9/19/12
	Ron Lucas	DATE
NC Department of Transportation	<u>Kristine O'Connor</u>	DATE
	Kristine O'Connor	DATE
State Historic Preservation Office	<u>Renee Gledhill-Earley</u>	9.19.12
	Renee Gledhill-Earley	DATE

Cape Fear RPO



Don Eggert

September 19, 2012

9.19.12

DATE

Section 404/NEPA Merger Project Team Agreement
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	Mason Herndon	DATE
NC Division of Marine Fisheries	_____	
	Jessi Baker	DATE
NC Division of Coastal Management	_____	
	Steve Sollod	DATE
National Marine Fisheries	<u>Fritz Rohde</u>	9/24/12
	Fritz Rohde	DATE
Wildlife Resources Commission	_____	
	Travis Wilson	DATE
Environmental Protection Agency	_____	
	Chris Militscher	DATE
Federal Highway Administration	_____	
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	Kristine O'Connor	DATE
State Historic Preservation Office	_____	
	Renee Gledhill-Earley	DATE

**Section 404/NEPA Merger Project Team Agreement
 Concurrence Point No. 1: Purpose & Need
 TIP Project R-3434**

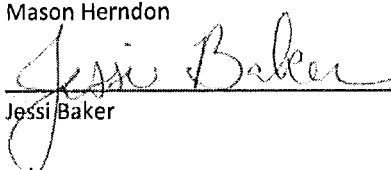
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NC Division of Water Quality	_____	DATE
	Mason Herndon	
NC Division of Marine Fisheries		10/2/12
	Jessi Baker	DATE
NC Division of Coastal Management	_____	DATE
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NC Department of Transportation	_____	DATE
	Kristine O'Connor	
State Historic Preservation Office	_____	DATE
	Renee Gledhill-Earley	

**Section 404/NEPA Merger Project Team Agreement
 Concurrence Point No. 2: Alternatives to be Carried Forward
 TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

The Project Team Members listed below have concurred with the following alternatives to be carried forward for detailed study:

- Alternative 1 – 2-lane section on 2-lane right of way
- Alternative 2 – 4-lane section on 4-lane right of way
- Alternative 3 – Enhanced 2-lane section on 4-lane right of way

Alternative 3 , which was presented at the Concurrence Point 2 meeting on this date, was modified from a 3-lane section on 4-lane of right of way to an enhanced 2-lane section on 4-lane right of way. All alternatives will be best fit.

US Army Corps of Engineers Brad Shaver 10/11/2012
 Brad Shaver DATE

US Fish & Wildlife Service Gary Jordan 10/11/2012
 Gary Jordan DATE

NC Division of Water Quality Mason Herndon 10/11/2012
 Mason Herndon DATE

NC Division of Marine Fisheries _____
 Jessi Baker DATE

NC Division of Coastal Management Steve Sollod 10/11/12
 Steve Sollod DATE

National Marine Fisheries _____
 Fritz Rohde DATE

Wildlife Resources Commission _____
 Travis Wilson DATE

Environmental Protection Agency _____
 Chris Militscher DATE

Federal Highway Administration Ron Lucas 10-11-12
 Ron Lucas DATE

NC Department of Transportation Kristine O'Connor
 Kristine O'Connor DATE

State Historic Preservation Office

Renee Gledhill-Earley
Renee Gledhill-Earley

October 11, 2012

10.22.12

DATE

Cape Fear Rural Planning Organization

Don Eggert
Don Eggert

10-11-12

DATE

**Section 404/NEPA Merger Project Team Agreement
Concurrence Point No. 2: Alternatives to be Carried Forward
TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

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Brad Shaver DATE

US Fish & Wildlife Service _____
Gary Jordan DATE

NC Division of Water Quality _____
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Jessi Baker 10/29/12
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National Marine Fisheries _____
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Wildlife Resources Commission _____
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NC Department of Transportation _____
Kristine O'Connor DATE

October 11, 2012

Section 404/NEPA Merger Project Team Agreement
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TIP Project R-3434

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NC Division of Marine Fisheries	<u>Jessi Baker</u>	<u>DATE</u>
	Jessi Baker	DATE
NC Division of Coastal Management	<u>Steve Sallod</u>	<u>10/11/12</u>
	Steve Sallod	DATE
National Marine Fisheries	<u>Fritz Rohde</u>	<u>DATE</u>
	Fritz Rohde	DATE
Wildlife Resources Commission	<u>Travis Wilson</u>	<u>DATE</u>
	Travis Wilson	DATE
Environmental Protection Agency	<u>Chris Militscher</u>	<u>10/22/12</u>
	Chris Militscher	DATE
Federal Highway Administration	<u>Ron Lucas</u>	<u>10-11-12</u>
	Ron Lucas	DATE
NC Department of Transportation	<u>Kristine O'Connor</u>	<u>DATE</u>
	Kristine O'Connor	DATE

October 11, 2012

State Historic Preservation Office

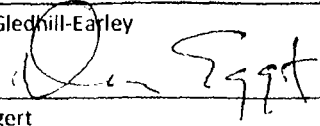
Renee Gledhill-Earley

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Cape Fear Rural Planning Organization

Don Eggert

DATE

 10-11-12

**Section 404/NEPA Merger Project Team Agreement
 Concurrence Point No. 2: Alternatives to be Carried Forward
 TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

The Project Team Members listed below have concurred with the following alternatives to be carried forward for detailed study:

- Alternative 1 – 2-lane section on 2-lane right of way
- Alternative 2 – 4-lane section on 4-lane right of way
- Alternative 3 – Enhanced 2-lane section on 4-lane right of way

Alternative 3, which was presented at the Concurrence Point 2 meeting on this date, was modified from a 3-lane section on 4-lane of right of way to an enhanced 2-lane section on 4-lane right of way. All alternatives will be best fit.

US Army Corps of Engineers	<u>Brad Shaver</u> Brad Shaver	<u>10/11/2012</u> DATE
US Fish & Wildlife Service	<u>Gary Jordan</u> Gary Jordan	<u>10/11/2012</u> DATE
NC Division of Water Quality	<u>Mason Herndon</u> Mason Herndon	<u>10/11/2012</u> DATE
NC Division of Marine Fisheries	<u>Jessi Baker</u> Jessi Baker	<u>DATE</u>
NC Division of Coastal Management	<u>Steve Sollod</u> Steve Sollod	<u>10/11/12</u> DATE
National Marine Fisheries	<u>Fritz Rohde</u> Fritz Rohde	<u>10/24/12</u> DATE
Wildlife Resources Commission	<u>Travis Wilson</u> Travis Wilson	<u>DATE</u>
Environmental Protection Agency	<u>Chris Militscher</u> Chris Militscher	<u>DATE</u>
Federal Highway Administration	<u>Ron Lucas</u> Ron Lucas	<u>10-11-12</u> DATE
NC Department of Transportation	<u>Kristine O'Connor</u> Kristine O'Connor	<u>DATE</u>

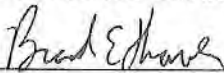
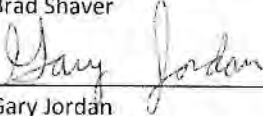


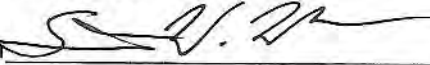


**Section 404/NEPA Merger Project Team Agreement
Concurrence Point No. 2: Alternatives to be Carried Forward
TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

The Project Team Members listed below have concurred with the following alternatives to be carried forward for detailed study:

- Alternative 1 – 2-lane section on 2-lane right of way
- Alternative 2 – 4-lane section on 4-lane right of way
- Alternative 3 – Enhanced 2-lane section on 4-lane right of way

Alternative 3 , which was presented at the Concurrence Point 2 meeting on this date, was modified from a 3-lane section on 4-lane of right of way to an enhanced 2-lane section on 4-lane right of way. All alternatives will be best fit.

US Army Corps of Engineers	 Brad Shaver	10/11/2012 DATE
US Fish & Wildlife Service	 Gary Jordan	10/11/2012 DATE
NC Division of Water Quality	 Mason Herndon	10/11/2012 DATE
NC Division of Marine Fisheries	Jessi Baker	DATE
NC Division of Coastal Management	 Steve Sollod	10/11/12 DATE
National Marine Fisheries	Fritz Rohde	DATE
Wildlife Resources Commission	 Travis Wilson	10-22-2012 DATE
Environmental Protection Agency	Chris Militscher	DATE
Federal Highway Administration	 Ron Lucas	10-11-12 DATE
NC Department of Transportation	 Kristine O'Connor	DATE

October 11, 2012

State Historic Preservation Office

Renee Gledhill-Earley

DATE

Cape Fear Rural Planning Organization

Don Eggert

DATE

Don Eggert

10-11-12

**Section 404/NEPA Merger Project Team Agreement
Concurrence Point No. 2a: Bridging and Alignment Review
TIP Project R-3434**

Project Name/Description: Proposed Improvements to SR 1500 (Midway Road) and SR 1401 (Galloway Road) from US 17 Bypass to NC 211, Brunswick County

The Project Team Members listed below have concurred with the following proposed crossing structures:

Site No.	Stream Name	Type & Length of the Existing Hydraulic Structure	NCDOT Recommended Hydraulic Structure	Agreed Upon Structure (from 2a Meeting)
1	UT1 Midway Branch	2 @ 60" CMP	1 @ 10'x6' RCBC buried 1'	2 @ 5'x6' RCBC buried 1' with low flow barrel on east side
2	UT3 Midway Branch	2 @ 54" CMP	1 @ 10'x6' RCBC buried 1'	1 @ 10'x6' RCBC buried 1' with baffles
3	Sarah Hole	37' Bridge #23, 2 span @ 18'-6", RC Floor on I-beams	3 @ 10'x8' RCBC buried 1'	70' bridge
4	River Swamp	81' Bridge #25, 4 span @ 20'-4", RC Floor on I-beams	120' bridge SF-090025 under construction	120' bridge SF-090025 under construction
5	Rattlesnake Branch	90" CMP	1 @ 10'x8' RCBC buried 1'	1 @ 10'x8' RCBC buried 1'
6	Half Hell Branch	110"X84" CAP	1 @ 12'x8' RCBC buried 1'	1 @ 12'x8' RCBC buried 1' & 1 @ 36" RCP
7	Middle Swamp	55' Bridge #104, 3 span @ 18'-5", RC Floor on I-beams	160' bridge	165' bridge*

***The NCDOT also commits to extending the bridge beyond 165', if necessary, to prevent permanent stream impacts to the Middle Swamp Stream in the final design.**

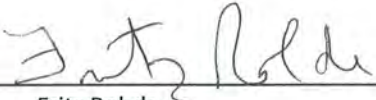
US Army Corps of Engineers Brad Shaver 4/16/2014
 Brad Shaver DATE

US Fish & Wildlife Service Gary Jordan 4/16/2014
 Gary Jordan DATE

NC Division of Water Quality Mason Herndon 4-16-14
 Mason Herndon DATE

NC Division of Marine Fisheries _____
Jessi Baker DATE

NC Division of Coastal Management  4/14/14
Steve Sollod DATE

National Marine Fisheries  4-16-2014
Fritz Rohde DATE

Wildlife Resources Commission  4-16-2014
Travis Wilson DATE

Environmental Protection Agency  4.16.2014
Cynthia Van Der Wiele DATE

Federal Highway Administration  4-16-2014
Ron Lucas DATE

NC Department of Transportation  4/16/14
Matthew Potter DATE

State Historic Preservation Office _____
Renee Gledhill-Earley DATE

Cape Fear Rural Planning Organization _____
Allen Serkin DATE

NC Division of Marine Fisheries _____
Jessi Baker DATE

NC Division of Coastal Management _____
Steve Sollod DATE

National Marine Fisheries _____
Fritz Rohde DATE

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Environmental Protection Agency _____
Cynthia Van Der Wiele DATE

Federal Highway Administration _____
Ron Lucas DATE

NC Department of Transportation _____
Matthew Potter DATE

State Historic Preservation Office Renee Gledhill-Earley 4.15.14
Renee Gledhill-Earley DATE

Cape Fear Rural Planning Organization _____
Allen Serkin DATE

NC Division of Marine Fisheries _____
Jessi Baker DATE

NC Division of Coastal Management _____
Steve Sollod DATE

National Marine Fisheries _____
Fritz Rohde DATE


Wildlife Resources Commission _____
Travis Wilson DATE

Environmental Protection Agency _____
Cynthia Van Der Wiele DATE

Federal Highway Administration _____
Ron Lucas DATE

NC Department of Transportation _____
Matthew Potter DATE

State Historic Preservation Office _____
Renee Gledhill-Earley DATE

Cape Fear Rural Planning Organization _____
Allen Serkin  4/15/2014
DATE



Appendix C

Relocation Report

DIVISION OF HIGHWAYS RELOCATION PROGRAM

The relocation program for the proposed action will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Public Law 91-646), and/or the North Carolina Relocation Assistance Act (GS-133-5 through 133-18). The program is designed to provide assistance to displaced persons in relocating to a replacement site in which to live or do business. At least one relocation agent is assigned to each highway project for this purpose.

The relocation agent will determine the needs of displaced families, individuals, businesses, non-profit organizations, and farm operations for relocation assistance advisory services without regard to race, color, religion, sex or national origin. The NCDOT will schedule its work to allow ample time, prior to displacement, for negotiations and possession of replacement housing which meets decent, safe, and sanitary standards.

The displacees are given a 90 Day Letter of Assurance after the initiation of negotiations, or in the case of residential displacees, only after a comparable replacement dwelling has been offered to the displacee. This letter assures that that displacee will have at least 90 days from the date of the letter to move. Once the claim has been closed or condemnation has begun, a 30 Day Notice to Vacate letter will be sent to the displacee with the final date to vacate indicated. At no time will the final vacate date be less than the 90 days assured to the displacee.

For Residential Displacees:

It is the policy of NCDOT to ensure comparable replacement housing will be available prior to construction of state and federally-assisted projects. No person will be displaced by NCDOT's State or Federally-assisted construction projects unless and until comparable replacement housing has been offered or provided for each displacee within a reasonable period of time prior to displacement. All attempts will be made to find Decent, Safe, and Sanitary replacement dwellings within the financial means of the residential displacee. NCDOT offers the following relocation assistance to residential displacees:

- Replacement Housing Payment for Owner-Occupant displacees
- Rent Supplement Payment for Tenant Displacees
- Relocation Moving Payments
- Advisory Services

Last Resort Housing is a program used when comparable replacement housing is not available, or when it is unavailable within the displacee's financial means, and the replacement payment exceeds the federal/state legal limitation. The purpose of the program is to allow broad latitude in methods of implementation by the state so that decent, safe, and sanitary replacement housing can be provided.

Non-Residential Displacees:

Displaced Businesses, Farms, and Non-Profit Organizations are eligible for the following relocation assistance:

- Relocation Moving Expenses
- Reestablishment Reimbursement up to the maximum Federal amount
- Searching expenses up to the maximum Federal amount
- Business Fixed Payment up to the Federal maximum (in lieu of the items above)
- Advisory Services

No relocation payment received will be considered as income for the purposes of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under Social Security Act or any federal law.

These relocation benefits are only available to persons lawfully present in the United States.

EIS RELOCATION REPORT

**North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM**

X E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	34545.1.1	COUNTY	Brunswick	Alternate	1	of	3	Alternates
T.I.P. No.:	R-3434							
DESCRIPTION OF PROJECT:	Midway Road (SR-1500) and Galloway Road (SR-1401) from NC-211 to US-17 Bypass							

ESTIMATED DISPLACED					INCOME LEVEL					
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP	
Residential	3	3	6	1	0	0	2	2	2	
Businesses	1	0	1	0	VALUE OF DWELLING			DSS DWELLING AVAILABLE		
Farms	0	0	0	0	Owners		Tenants		For Sale	
Non-Profit	0	0	0	0	0-20M	0	\$ 0-150	0	0-20M	4
					20-40M	0	150-250	1	20-40M	20
					40-70M	1	250-400	0	40-70M	140
					70-100M	1	400-600	1	70-100M	130
					100 UP	1	600 UP	1	100 UP	1834
					600 UP			60		
					TOTAL	3	3	3	2128	95

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Will special relocation services be necessary?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	2. Will schools or churches be affected by displacement?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Will business services still be available after project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Will relocation cause a housing shortage?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. Source for available housing (list).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Will additional housing programs be needed?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. Should Last Resort Housing be considered?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Are there large, disabled, elderly, etc. families?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Will public housing be needed for project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. Is public housing available?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. Is it felt there will be adequate DSS housing available during relocation period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Will there be a problem of housing within financial means?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 18-24

REMARKS (Respond by Number)			
3. The loss of the business involved will not affect the area.			
4. Bail Bonds Small business 2-4 employees			
6. Realtors, MLS, newspapers and private market.			
8. As required by law			
11. Section 8 housing in Brunswick County			
12. There are no government programs competing for housing			
14. Same as Number 6 above.			

<p>R.B. Chadwick Right of Way Agent</p>	10/21/13	<p>Relocation Coordinator</p>	11/19/13
Date		Date	

EIS RELOCATION REPORT

**North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM**

X E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	34545.1.1	COUNTY	Brunswick	Alternate	2	of	3	Alternates
T.I.P. No.:	R-3434							
DESCRIPTION OF PROJECT:	Midway Road (SR-1500) and Galloway Road (SR-1401) from NC-211 to US-17 Bypass							

ESTIMATED DISPLACED					INCOME LEVEL					
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP	
Residential	11	3	14	1	0	2	4	2	6	
Businesses	2	0	2	0	VALUE OF DWELLING			DSS DWELLING AVAILABLE		
Farms	0	0	0	0	Owners		Tenants		For Sale	
Non-Profit	1	0	1	1	0-20M	0	\$ 0-150	0	0-20M	4
					20-40M	1	150-250	1	20-40M	20
					40-70M	1	250-400	0	40-70M	140
					70-100M	3	400-600	2	70-100M	130
					100 UP	6	600 UP	0	100 UP	1834
					TOTAL	11	3	3	2128	95

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. Will special relocation services be necessary?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Will schools or churches be affected by displacement?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Will business services still be available after project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Will relocation cause a housing shortage?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. Source for available housing (list).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	7. Will additional housing programs be needed?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. Should Last Resort Housing be considered?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Are there large, disabled, elderly, etc. families?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Will public housing be needed for project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. Is public housing available?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. Is it felt there will be adequate DSS housing available during relocation period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Will there be a problem of housing within financial means?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 18-24

REMARKS (Respond by Number)			
2.	Rutland Chapel AME Church.	3.	The loss of the ^{businesses} subbusinesses involved will not affect the area.
4.	Worms & Coffee small 4-6 emp. Bail Bonds Small 2-4 emp.	6.	Realtors, MLS, newspapers and private market.
8.	As required by law	11.	Section 8 housing in Brunswick County
12.	There are no government programs competing for housing		
14.	Same as Number 6 above.		

<p>R.B. Chadwick Right of Way Agent</p>	10/21/13	<p>Relocation Coordinator</p>	11/19/13
Date		Date	

EIS RELOCATION REPORT

**North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM**

X E.I.S. CORRIDOR DESIGN

WBS ELEMENT:	34545.1.1	COUNTY	Brunswick	Alternate	3	of	3	Alternates
T.I.P. No.:	R-3434							
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ESTIMATED DISPLACED					INCOME LEVEL					
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Residential	11	3	14	1	0	2	4	2	6	
Businesses	2	0	2	0	VALUE OF DWELLING			DSS DWELLING AVAILABLE		
Farms	0	0	0	0	Owners		Tenants		For Sale	
Non-Profit	1	0	1	1	0-20M	0	\$ 0-150	0	0-20M	4
					20-40M	1	150-250	1	20-40M	20
					40-70M	1	250-400	0	40-70M	140
					70-100M	3	400-600	2	70-100M	130
					100 UP	6	600 UP	0	100 UP	1834
					TOTAL	11	3	3	2128	95

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	1. Will special relocation services be necessary?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Will schools or churches be affected by displacement?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Will business services still be available after project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	5. Will relocation cause a housing shortage?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	6. Source for available housing (list).
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<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. Should Last Resort Housing be considered?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	9. Are there large, disabled, elderly, etc. families?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	10. Will public housing be needed for project?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	11. Is public housing available?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12. Is it felt there will be adequate DSS housing available during relocation period?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	13. Will there be a problem of housing within financial means?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	14. Are suitable business sites available (list source).
		15. Number months estimated to complete RELOCATION? 18-24

REMARKS (Respond by Number)									
2. Rutland Chapel AME Church.									
3. The loss of the ^{businesses} submisses involved will not affect the area.									
4. Worms & Coffee small 4-6 emp. Bail Bonds Small 2-4 emp.									
6. Realtors, MLS, newspapers and private market.									
8. As required by law									
11. Section 8 housing in Brunswick County									
12. There are no government programs competing for housing									
14. Same as Number 6 above.									

<p>R.B. Chadwick Right of Way Agent</p>	10/21/13	Date	<p>Relocation Coordinator</p>	11/19/13	Date
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Appendix D

Farmland Forms

Appendix D: NRCS Farmland Conversion Impact Rating Form For Corridor Type Projects (NRCS CPA-106)

- 1. Area in non-urban use. Points awarded = 15 out of 15**
A total of 94 percent of the area within one-mile of the project is in non-urban use.
- 2. Perimeter in non-urban use. Points awarded = 9 out of 10**
Approximately 87 percent of the perimeter around the project is in non-urban use.
- 3. Percent of corridor being farmed. Points awarded = 3 out of 20**
Approximately 28 percent of the corridor is being farmed.
- 4. Protection provided by state and local government. Points awarded = 20 out of 20**
The area within the vicinity of the project is subject to the Brunswick County Volunteer Agricultural District Program.
- 5. Size of present farm unit compared to average. Points awarded = 1 out of 10**
The average farm in the vicinity of the project is 45% smaller than the County average.
- 6. Creation of non-farmable farmland. Points awarded = 0 out of 25**
Less than 5 percent of the farmland will become non-farmable.
- 7. Availability of farm support services. Points awarded = 3 out of 5**
Some services are available.
- 8. On-farm investments. Points awarded = 10 out of 20**
There is a moderate amount of on-farm investments.
- 9. Effects of conversion on farm support services. Points awarded = 10 out of 25**
There may be a moderate reduction in in demand for farm support services.
- 10. Compatibility with existing agricultural use. Points awarded = 5 out of 10**
The project is somewhat compatible with existing agricultural use.

Conclusion: Total Points = 76 out of 160

NCDOT has completed a screening of farmland in the project area and calculated the total number of points for the site per Part VI of the NRCS CPA-106 Farmland Conversion Impact Rating Form For Corridor Type Projects.