

**Widening of US 158  
from West of NC 32 in Sunbury to US 17 at Morgans Corner  
Gates County and Pasquotank County, North Carolina  
WBS No. 38805.1.1  
TIP No. R-2579**

**ADMINISTRATIVE ACTION**

**STATE ENVIRONMENTAL ASSESSMENT**

In Compliance with the North Carolina  
State Environmental Policy Act

**N. C. DEPARTMENT OF TRANSPORTATION**

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



**APPROVED:**

12/20/13  
Date

Richard W. Hancock  
**Richard W. Hancock, PE, Manager**  
Project Development and Environmental Analysis Unit, NCDOT

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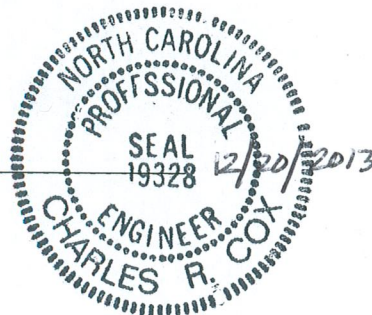
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12/20/13  
**Date**

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**PROJECT COMMITMENTS**  
**Widening of US 158**  
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**Division 1**

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division 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.

**Division 1, Project Development and Environmental Analysis Unit, Natural Environment Section**

Construction moratoria will be in place from February 15 thru June 30 due to anadromous fish spawning in Chowan and Pasquotank River tributaries. The NCDOT staff will coordinate with the NMFS to determine which streams will require the construction moratoria.

**Hydraulics Unit**

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

**Project Development and Environmental Analysis Unit/Archaeological Resources Section**

Once the set of recommended alternatives have been determined, NCDOT archaeologist will conduct or oversee an archaeological site investigation and evaluation survey.

### **Project Development and Environmental Analysis Unit/Historic Resources Section**

If Alternative 1C and/or 3C are selected as part of the set of recommended alternatives, NCDOT will prepare a Memorandum of Agreement with the State Historic Preservation Office and the US Army Corps of Engineers due to impacts associated with the Sunbury Historic District (Alternative 1C) and the Hinton-Morgan House (Alternative 3C).

### **Roadside Environmental Unit/Project Development and Environmental Analysis Unit/Historic Resources Section**

If Alternative 3B is selected as a recommended alternative, a landscaping plan will be developed for the Moses R. White, Jr. House.

### **Project Development and Environmental Analysis Unit/Community Studies Section**

Pasquotank County's Voluntary Agricultural District (VAD) ordinance and maps will be obtained prior to the final environmental document to determine potential impacts.



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**SUMMARY**

**A. Type of Action**

This State Environmental Assessment (SEA) has been prepared to evaluate the potential impacts of this proposed transportation improvement project. From this evaluation, the North Carolina Department of Transportation (NCDOT) does not anticipate significant impacts to the environment will occur as a result of this proposed project. A final determination will be made in supplemental documentation, likely a State Finding of No Significant Impact (SFONSI) document.

**B. Description of Action**

The NCDOT proposes to widen US 158 in Gates and Pasquotank Counties from west of NC 32 in Sunbury to US 17 in Morgans Corner (see Figure 1). Alternatives under consideration would utilize the existing roadway, in combination with some segments located on new location. The widening will convert the roadway from its current configuration as a two-lane highway to a four-lane, median-divided highway. The proposed roadway will have 12-foot lanes, paved shoulders, and a 46-foot grass median. The total length of the project is approximately 16 miles.

This project is included in the 2013-2023 North Carolina Draft State Transportation Improvement Program (STIP). The total cost in the STIP is \$93,702,000, which includes \$8,400,000 for right of way and \$84,000,000 for construction. The current estimated total cost ranges from \$114,015,000 to \$119,798,000 (when adding the three sections together). Right of way acquisition is scheduled to begin in Federal Fiscal Year (FFY) 2019 and construction is currently unfunded.

**C. Summary of Purpose and Need**

The purpose and need of the proposed project is to improve safety along US 158, increase capacity, and to enhance the function of the Highway as a Strategic Highway Corridor and Hurricane Evacuation Route.



#### **D. Alternatives Considered**

Several alternatives are currently being considered. Alternate modes of transportation and transportation systems management options were evaluated but have already been eliminated. No alternative is recommended at this time. When a decision is made, the final recommendation for R-2579 will be a combination of the recommended alternative from each of the 3 sections of the project (i.e., Sunbury, Dismal Swamp/ New Canal, and Morgans Corner).

#### **E. Summary of Environmental Effects**

Adverse impacts to the human and natural environment have been minimized through the development of the alternatives. No adverse effect on the air quality of the surrounding area is anticipated as a result of the project. One district and two other properties eligible for or listed on the National Register of Historic Places could be affected by this project. Depending on the alternatives chosen, up to 101 residential and 18 business relocations could occur from the proposed project, when combining Sections 1, 2 and 3 together. Further information can be found in Table S-1.

As of December 2012, the U.S. Fish and Wildlife Service (USFWS) lists five federally protected species for Gates County and Pasquotank County. A biological conclusion of No Effect was reached for each species. A biological conclusion was not required for the American alligator.

A minimum of 85 acres of wetlands and a maximum of 103 acres of wetlands could be impacted by the project, when combining Sections 1, 2 and 3 together. A minimum of 4,306 linear feet and up to 4758 linear feet of streams could be impacted by the project , when combining Sections 1, 2 and 3 together.

Table S-1 gives a summary of the resources and impacts for the proposed alternative. Figures 1 and 2 show the alternatives currently under consideration.

**Table S-1: Summary of Resources and Impacts**

Impacted Resource		Alt. 1C	Alt. 1D	Alt. 1F	Alt. 2B
Alternate Length (miles)		2.1	2.2	2.4	11.5
Relocations	Residential	12	10	17	27
	Business	0	1	5	4
	Total	12	11	22	31
Historic Properties		SHD – Adverse Effect	SHD – No Adverse Effect	SHD – No Adverse Effect	0
Community Facilities		0	1	0	1
Noise Receptors		5	5	4	14
Underground Storage Tanks		Low	Low	Low	Low
Hazardous Material/Landfill Sites		0	0	0	0
Great Dismal Swamp Wildlife Refuge (Acres)		0	0	0	0
Wetlands (Acres)		6.0	14.4	5.0	76.4
Streams (Linear Feet)		416	298	559	3871
Federally Protected Species		No Effect	No Effect	No Effect	No Effect
Environmental Justice		None	None	Probable	None
Costs	Construction	\$12,900,000	\$14,000,000	\$15,300,000	\$50,200,000
	Utilities	\$997,864	\$997,864	\$997,864	\$1,995,890
	ROW	\$3,795,606	\$3,935,412	\$3,149,841	\$6,713,406
<b>TOTAL:</b>		<b>\$17,693,470</b>	<b>\$18,933,276</b>	<b>\$19,447,705</b>	<b>58,909,296</b>

Notes:

- Historic Properties: Sunbury Historic District (SHD); Moses-White House (MWH); Hinton-Morgan House (HMH)
- All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits
- Environmental Justice: Disproportionately high & adverse impacts
- Community Facilities Impacted: Sunbury Fire Department (Alt 1B); Pasquotank Newland Fire Department (Alt 2B)

**Table S-1: Summary of Resources and Impacts (continued)**

Impacted Resource		Alt. 3B	Alt.3C	Alt. 3D
<b>Alternate Length (miles)</b>		2.8	2.6	2.8
<b>Relocations</b>	<b>Residential</b>	21	57	16
	<b>Business</b>	2	9	0
	<b>Total</b>	23	66	16
<b>Historic Properties</b>		HMH – No Adverse Effect MWH – No Adverse Effect*	HMH – Adverse Effect MWH – No Adverse Effect	HMH – No Adverse Effect MWH – No Adverse Effect
<b>Community Facilities</b>		0	0	0
<b>Noise Receptors</b>		11	38	15
<b>Underground Storage Tanks</b>		Low	Low	Low
<b>Hazardous Material/Landfill Sites</b>		0	0	0
<b>Great Dismal Swamp Wildlife Refuge (Acres)</b>		0	0	0
<b>Wetlands (Acres)</b>		4.0	3.2	12
<b>Streams (Linear Feet)</b>		137	362	137
<b>Federally Protected Species</b>		No Effect	No Effect	No Effect
<b>Environmental Justice</b>		None	Probable	None
<b>Costs</b>	<b>Construction</b>	\$27,700,000	\$21,100,000	\$33,000,000
	<b>Utilities</b>	\$2,839,880	\$2,839,880	\$1,465,440
	<b>ROW</b>	\$6,871,956	\$17,500,832	\$4,529,939
<b>TOTAL:</b>		\$37,411,836	\$41,440,712	\$38,995,379

Notes:

Historic Properties: Sunbury Historic District (SHD); Moses-White House (MWH); Hinton-Morgan House (HMH)

Federally Protected Species: Red-cockaded woodpecker (RCW) and Shortnose Sturgeon (SS)

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

Environmental Justice: Disproportionately high & adverse impacts

\*No Adverse Effect with landscaping commitments

## **F. Permits Required**

In accordance with Section 404 of the Clean Water Act, a permit issued by USACE will be required prior to impacting any jurisdictional stream or wetland within the project study area. An Individual Permit will likely be applicable due to the acreage of wetlands and length of streams present within the project study area. The USACE holds the final discretion as to what permit will be required to authorize impacts to Waters of the US associated with project construction.

In addition to the Section 404 permit, authorization from NCDWQ in the form of the corresponding Section 401 General Water Quality Certification (WQC) will be necessary. A WQC will be required prior to the issuance of a Section 404 Permit.

Coordination with the Regional Division of Water Quality office will be required to determine whether a State Stormwater Permit may be required.

#### **G. Coordination**

Federal, state, and local agencies were consulted during the preparation of this SEA. Written comments were received and considered from agencies noted with an asterisk (\*) during the preparation of this document (See Appendix B).

- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- \* State Clearinghouse
- \* N.C. Department of Cultural Resources
- \* N.C. Department of Environment and Natural Resources
- N.C. Department of Public Instruction
- \* N.C. Wildlife Resources Commission
- N.C. Division of Environmental Health
- \* N.C. Division of Forest Resources
- N.C. Division of Parks and Recreation
- \* N.C. Division of Coastal Management
- \* County of Pasquotank
- \* Gates County Planner

#### **H. Contact Information**

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

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**I. DESCRIPTION OF PROPOSED ACTION**

**A. General Description**

The NCDOT proposes to widen US 158 in Gates and Pasquotank Counties from west of NC 32 in Sunbury to US 17 in Morgans Corner (see Figure 1). Alternatives under consideration would utilize the existing roadway, in combination with some segments located on new location. The widening will convert the roadway from its current configuration as a two-lane highway to a four-lane, median-divided highway. The proposed roadway will have 12-foot lanes, paved shoulders, and a 46-foot grass median. The total length of the project is approximately 16 miles.

**B. Schedule and Cost**

This project is included in the 2013-2023 North Carolina Draft State Transportation Improvement Program (STIP). The total cost in the STIP is \$93,702,000, which includes \$8,400,000 for right of way and \$84,000,000 for construction. The current estimated total cost ranges from \$114,015,000 to \$119,798,000 (when adding the three sections together). Right of way acquisition is scheduled to begin in Federal Fiscal Year (FFY) 2019 and construction is currently unfunded.

## II. PURPOSE AND NEED FOR PROJECT

### A. Purpose Of Project

The purpose of this proposed project is to improve safety along US 158, increase capacity, and to enhance system linkage as a Strategic Highway Corridor and Hurricane Evacuation Route.

### B. Need For Project

**Safety:** Between 2008 and 2012, there were 199 crashes along this section of US 158 (See Table 1). The rates exceed the statewide rates in all categories and exceed the critical rates for total and night crashes. Poor sight distance and narrow shoulders, especially in the Great Dismal Swamp area, have contributed to this problem. In addition, NCDOT Division 1 has been concerned with the accidents at the US 158 and US 17 intersection, where 25 accidents have occurred.

**Table 1: Crash Rates**

Rate	Crashes	Crashes per 100 MVM	Statewide Rate <sup>1</sup>	Critical Rate <sup>2</sup>
<b>Total</b>	199	191.98	149.74	169.99
<b>Fatal</b>	3	2.89	1.64	4.19
<b>Non-Fatal</b>	62	59.81	52.69	66.01
<b>Night</b>	73	70.42	51.56	63.64
<b>Wet</b>	34	32.80	26.74	35.58

<sup>1</sup> 2008-2010 statewide crash rate for rural 2-lane, undivided United States (US) routes

<sup>2</sup> Based on the statewide crash rate (95% level of confidence).

**Capacity:** 2005 traffic estimates on US 158 ranged from 4,300 to 8,800 vehicles per day. The 2030 projected traffic volumes are estimated to be between 7,100 and 14,000.

**Strategic Highway Corridor Plan:** The Strategic Highway Corridors (SHC) initiative is an effort to preserve and maximize the mobility and connectivity on a core set of highway corridors, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible, and fostering economic prosperity through the quick and efficient movement of people and goods. The initiative offers NCDOT and its stakeholders an opportunity to consider a long-term vision when making land use decisions and design and operational decisions on the highway system. The subject section on US 158 is a portion of Corridor 37 identified in this initiative. The Strategic Highway Corridor Plan Vision for this section of US 158 is an expressway for widening on existing and a freeway for new location bypasses.

**Strategic Highway Corridor/ Hurricane Evacuation Route:** US 158 is the primary east-west route in this region of the state and has been designated as Strategic Highway Corridor. It is also



a designated hurricane route. A hurricane evacuation study was completed in December 2009. The results are noted below:

- Hurricane evacuation impacts of potential roadway improvements off the Outer Banks were studied for this project. As a part of this study, the amount of evacuation traffic expected to travel west on US 158 from Barco to Elizabeth City was identified. In addition, bottleneck areas were identified by scenario and evacuation clearance times calculated. The North Carolina General assembly has set an evacuation clearance time goal of 18 hours. If no improvements are made to US 158 from US 17 to Sunbury (no build alternative), evacuation travel demand grows to a time equivalent of 13 to 31 hours. The US 158 Corridor will become particularly significant if the State of Virginia and North Carolina implement the Barco Diversion Plan, which will keep evacuees from North Carolina from taking NC 168 from Barco into Virginia, but rather have them take US 158. Further findings were provided in a technical memo in December 2009 and include the following conclusions and recommendations.
- US 158 from US 17 to Sunbury plays a modest role in hurricane evacuations under normal circumstances both for the existing and future study years. However, in a major hurricane with the Barco Diversion Plan implemented, it will play a significant role. Planning for that eventuality is a prudent action by NCDOT, law enforcement, and emergency management.
- While activation of the Barco Diversion Plan could help relieve Hampton Roads, Virginia evacuation congestion, it will greatly stress the existing evacuation road network along US 158 in North Carolina.
- Widening US 158 between US 17 and Sunbury (and eventually to I-95) will further reduce evacuation clearance time below 18 hours on the corridor for major hurricane where the Barco Diversion Plan is implemented.

## **C. Description of Existing Conditions**

### **1. Functional Classification**

US 158 is classified as a principal arterial. US 158 is also designated as a Hurricane Evacuation Route and is part of the US 158 Strategic Highway Corridor (No. 37) from Winston-Salem to Kitty Hawk.

### **2. Physical Description of Existing Facility**

**a. Roadway Cross-Section**

Currently, US 158 is a 2-lane, 2-way roadway with lane widths varying from 10 to 12 feet, 2-foot paved shoulders and 5-6 foot grassed shoulders.

**b. Horizontal and Vertical Alignment**

The horizontal alignment for this project is generally tangent with several mild curves. The vertical alignment is generally gently sloping with the exception of the western entrance of the Great Dismal Swamp, which has a downward sloping grade for this region.

**c. Right of Way and Access Control**

A right-of-way of 60 feet currently exists. There is currently no control of access within the project limits.

**d. Speed Limit**

The existing speed limit varies from 45-55 mph.

**e. Typical Section**

The current typical section is a two-lane facility with narrow shoulders, especially in the vicinity of the Great Dismal Swamp/Newland Canal.

**f. Intersections/Interchanges**

There are twenty-three intersections along the project. The intersections at each end of the project are signalized. The remainder of the intersections are stop-sign controlled. There are no interchanges.

**g. Railroad Crossings**

There are no railroad crossings within the project limits.

#### **h. Structures**

There are several existing major stream crossings associated with the proposed project. Table 2 gives further detail on these existing structures.

**Table 2: Existing Hydraulic Structures**

<b>Stream</b>	<b>Location</b>	<b>Existing Structure</b>
Acorn Hill Millpond	Sunbury	RCBC; 2 @ 12'x6'
Newland Drainage Canal	Great Dismal Swamp	CMP PIPES (Y-LINE); 1 @ 84"
Newland Drainage Canal	Great Dismal Swamp	CMP PIPES (Y-LINE); 2 @ 96"
Canal	Great Dismal Swamp	CMPA PIPES; 2 @ 90"x72"
Newland Drainage Canal	Great Dismal Swamp	CMP PIPES (Y-LINE); 2 @ 96"
Canal	Great Dismal Swamp	RCBC; 1 @ 8'x6'
Canal	Great Dismal Swamp	48' BRIDGE
Newland Drainage Canal	Great Dismal Swamp	CMP PIPES (Y-LINE); 2 @ 102"
Canal	Great Dismal Swamp	RCBC; 1 @ 6'x5'
Canal	Great Dismal Swamp	RCBC; 1 @ 6'x5'
Canal	Morgans Corner	CMP PIPES (Y-LINE); 2 @ 66"
Newland Drainage Canal Branch	Morgans Corner	69' BRIDGE

#### **i. Bicycle and Pedestrian Facilities**

This section of US 158 is neither a designated statewide nor a local bike route, nor does it correspond to a Bicycle TIP Project, nor are there independent bicycle or pedestrian projects planned for this corridor. The NC Bicycling Highway, Ports of Call, does cross this project at the intersection of SR 1002, near the western end of the project. Also, the North Line Trace, another NC Bicycling Highway, parallels this project a few miles to the south.

#### **j. Utilities**

There is a moderate presence of utilities within the project corridor. They are underground telephone, fiber optic, cable television, county water and aerial power.

### **3. School Bus Usage**

The Gates County public schools transportation official indicated that six Gates County school buses make a total of nine daily trips along the studied portion of US 158. In addition, the Elizabeth City-Pasquotank County public schools transportation official stated that nine county schools buses make a total of 18 daily trips along the studied portion of US 158.

#### **4. Traffic Volumes**

Mainline volumes along US 158 for the year 2005 ranged from 2,700 to 8,800 vehicles per day (vpd). By 2030 the traffic is expected to range from 4,500 to 14,000 vpd.

#### **5. Airports**

There are no airports in the immediate vicinity of the project. Elizabeth City Regional Airport is located approximately 27 miles away from the Gates County end of the project.

#### **6. Other Highway Projects in the Area**

The 2013-2023 Draft STIP included one other project in the vicinity of STIP Project R-2579. STIP Project R-2578 is the widening of US 158 in Gates County to a multi-lane facility from US 13 to NC 32 in Sunbury. This project is approximately 15 miles in length, and its eastern terminus is the western terminus of STIP Project R-2579. STIP Project R-2578 is unfunded in the 2013-2023 Draft STIP.

### **D. Transportation and Land Use Plans**

#### **1. NC State Transportation Improvement Program (STIP)**

This project is currently included in the 2013-2023 Draft STIP. Right of way acquisition is scheduled to begin in FFY 2019; construction is currently unfunded.

#### **2. Local Thoroughfare Plans and Comprehensive Transportation Plans**

The Elizabeth City thoroughfare plan was adopted by NCDOT on 1/13/1989. This project is included in the 1998 Thoroughfare Plan Report for Pasquotank County; however, this plan has never been adopted by NCDOT. NCDOT's Transportation Planning Branch has initiated a comprehensive transportation plan (CTP) study for Pasquotank County and Elizabeth City, which will replace both studies with more comprehensive and updated information. Over the next two years, the NCDOT will be working cooperatively with stakeholders within Pasquotank County and Elizabeth City to develop this plan. These stakeholders include elected officials, city staff, county staff, the Elizabeth City Chamber of Commerce, Elizabeth City State University, the United States Coast Guard, the Albemarle Commission and RPO, local citizens, and others.

Gates County does not have a Thoroughfare Plan or a CTP.

### **3. Land Use Plans**

Gates County has a CAMA land use plan dated 2003-2004. Pasquotank County adopted their Pasquotank County/Elizabeth City 2004 CAMA Land Use Plan in 2012. The proposed project is consistent with these land use plans. Where multiple alternatives are being considered, further details comparing each alternative's consistency with these plans is provided in Section E. 4. d.

#### **E. Benefits of Proposed Project**

As a strategic highway corridor, US 158 provides important east-west connectivity for local and regional travelers. The Hurricane Evacuation study showed that improvements are needed to make US 158 a viable evacuation route. Improvement to the typical section will aid in overall safety.

### **III. ALTERNATIVES**

#### **A. Preliminary Study Alternatives**

##### **1. No-Build Alternative**

The No-Build Alternative offers no improvements to the project area. This alternative will not allow for the construction of additional lanes along US 158. As a result, there will be no additional increase in traffic capacity or reduction in congestion.

Since the No-Build Alternative does not address the purpose and need of the proposed action, it is not recommended. However, this Environmental Assessment utilizes the No-Build Alternative as a basis for comparison of the other alternatives.

##### **2. Alternative Modes of Transportation**

There is no existing mass transit in Gates or Pasquotank Counties in this area due to lack of demand, low-density development, and low population density. The study area is primarily rural, with the exception of the “downtown” areas of Sunbury and Morgans Corner. US 158 carries relatively high truck percentages, which is not conducive to local mass transit. Finally, alternative modes of transportation, including transit options, would not meet the purpose and need of this project since they do not provide any increase in capacity, would not provide an increase in safety along this facility, and would not help the facility serve as a hurricane evacuation route.

##### **3. Transportation Systems Management Alternative**

The Transportation Systems Management (TSM) improvements involve increasing the available capacity of the facility within the existing right-of-way with minimum capital expenditures and without reconstructing the facility. Items such as the addition of turn lanes, striping, signing, signalization, and minor realignments are examples of TSM physical improvements. Traffic law enforcement, speed restrictions, control, and signal timing changes are examples of TSM operational improvements. However, the TSM alternatives on their own would not meet the purpose and need of the project to increase capacity and allow the facility to properly function as a hurricane evacuation route. They will be used in conjunction with widening alternatives.



#### **4. Build Alternatives**

The current remaining alternatives are classified into the following three sections: Sunbury, Great Dismal Swamp/Newland Canal Area and Morgans Corner. These alternatives are shown on Figures 1 and 2. All alternatives are based on a four-lane, 46-foot median divided roadway.

- **Sunbury (Section 1):**

- **Alternative 1C:** Alternate 1C begins west of Sunbury on US 158 and proceeds slightly on the south side of Sunbury on new location crossing NC 32 south of the existing US 158/NC 32 intersection. It then reconnects with US 158 at SR 1429 (Sugar Run Rd) ending east of SR 1429 (Sugar Run Rd).
- **Alternative 1D:** Alternate 1D begins west of Sunbury on US 158 and proceeds on south side of Sunbury on new location crossing NC 32 south of the cemetery. It then reconnects with existing US 158 at SR 1429 (Sugar Run Rd) ending east of SR 1429 (Sugar Run Rd).
- **Alternative 1F:** Alternate 1F begins west of Sunbury on US 158 and proceeds north of Sunbury on new location crossing NC 32 north of SR 1338 (St. Paul Ln), avoiding the historic district. It ties back to existing US 158 near SR 1429 (Sugar Run Rd) and ending east of SR 1429 (Sugar Run Rd).

- **Great Dismal Swamp/Newland Canal Area (Section 2):**

- **Alternative 2B:** Alternate 2B begins east of SR 1429 (Sugar Run Rd) and proceeds east along existing US 158. The alternative 2B description has been revised to: “constructing four new lanes to the south of existing roadbed in the area of the Great Dismal Swamp/Newland Canal , to avoid impact to the refuge.”
- Alternative 2B is designed as a “best fit” in areas outside the refuge.

- **Morgans Corner (Section 3):**

- **Alternative 3B:** Alternate 3B begins east of SR 1001 (Turnpike Rd) and proceeds along existing US 158 until going to new location west of SR 1359 (Blindman Rd). It ends at US 17 with an interchange south of the existing US 158/US 17 intersection.
- **Alternative 3C:** Alternate 3C begins east of SR 1001 (Turnpike Rd) and proceeds along existing US 158 before going onto new location at SR 1354 (Millpond Rd) to avoid impacts to a historic areas near US 158 and US 17. It ends with an interchange north of the existing US 158/US 17 intersection.
- **Alternative 3D:** Alternate 3D begins east of SR 1001 (Turnpike Rd) and proceeds along existing US 158. It then goes onto new location west of SR 1359 (Blindman

Rd) running further south than Alternate 3B. It ends at US 17 with an interchange south of the existing US 158/US 17 intersection.

The current alternatives selected for detailed study and the impacts associated with each alternative are noted in Table 3.

## **5. Alternatives Eliminated**

- **Alternatives 1A:** Alternative 1A was a new location roadway to the north of Sunbury between existing US 158 and Alternative 1F. This alternative was eliminated due to high impacts to the Sunbury Historic District.
- **Alternative 1B:** Alternative 1B was the main alternative to widen US 158 through the center of Sunbury. It was eliminated due to Sunbury Historic District impacts and heavy community impacts along US 158 within the town limits.
- **Alternative 1E:** Alternative 1E was a new location roadway to the south of Alternative 1D. It was eliminated due to higher wetland impacts.
- **Alternative 2A:** Alternative 2A widened US 158 in the Great Dismal Swamp / Newland Canal area. Alternative 2A was eliminated because it directly impacted the Great Dismal Swamp Wildlife Refuge property.
- **Alternative 3A:** Alternative 3A widened US 158 the entire distance through the Morgans Corner community. It was eliminated due to the higher community impacts and impacts to two historic properties.

## **6. Recommended Alternative**

No alternative is recommended at this time. Comments received at the corridor public hearing will be reviewed, and additional coordination with other federal, state, and local agencies will occur before a final decision is made. When a decision is made, the final recommendation for R-2579 will be a combination of the recommended alternative from each of the 3 sections of the project (i.e., Sunbury, Great Dismal Swamp/ New Canal, and Morgans Corner).

**Table 3: Summary of Resources and Impacts**

Impacted Resource		Alt. 1C	Alt. 1D	Alt. 1F	Alt. 2B
<b>Alternate Length (miles)</b>		2.1	2.2	2.4	11.5
<b>Relocations</b>	<b>Residential</b>	12	10	17	27
	<b>Business</b>	0	1	5	4
	<b>Total</b>	12	11	22	31
<b>Historic Properties</b>		SHD - Adverse Effect	SHD - No Adverse Effect	SHD – No Adverse Effect	0
<b>Community Facilities</b>		0	1	0	1
<b>Noise Receptors</b>		5	5	4	14
<b>Underground Storage Tanks</b>		Low	Low	Low	Low
<b>Hazardous Material/Landfill Sites</b>		0	0	0	0
<b>Great Dismal Swamp Wildlife Refuge (Acres)</b>		0	0	0	0
<b>Wetlands (Acres)</b>		6.0	14.4	5.0	76.4
<b>Streams (Linear Feet)</b>		416	298	559	3871
<b>Federally Protected Species</b>		No Effect	No Effect	No Effect	No Effect
<b>Environmental Justice</b>		None	None	Probable	None
<b>Costs</b>	<b>Construction</b>	\$12,900,000	\$14,000,000	\$15,300,000	\$50,200,000
	<b>Utilities</b>	\$997,864	\$997,864	\$997,864	\$1,995,890
	<b>ROW</b>	\$3,795,606	\$3,935,412	\$3,149,841	\$6,713,406
<b>TOTAL:</b>		\$17,693,470	\$18,933,276	\$19,447,705	58,909,296

Notes:

- Historic Properties: Sunbury Historic District (SHD); Moses-White House (MWH); Hinton-Morgan House (HMH)
- All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits
- Environmental Justice: Disproportionately high & adverse impacts
- Community Facilities Impacted: Sunbury Fire Department (Alt 1B); Pasquotank Newland Fire Department (Alt 2B)

**Table 3: Summary of Resources and Impacts (continued)**

Impacted Resource		Alt. 3B	Alt.3C	Alt. 3D
Alternate Length (miles)		2.8	2.6	2.8
Relocations	Residential	21	57	16
	Business	2	9	0
	Total	23	66	16
Historic Properties		HMH – No Adverse Effect MWH – No Adverse Effect*	HMH – Adverse Effect MWH – No Adverse Effect	HMH – No Adverse Effect MWH – No Adverse Effect
Community Facilities		0	0	0
Noise Receptors		11	38	15
Underground Storage Tanks		Low	Low	Low
Hazardous Material/Landfill Sites		0	0	0
Great Dismal Swamp Wildlife Refuge (Acres)		0	0	0
Wetlands (Acres)		4.0	3.2	12
Streams (Linear Feet)		137	362	137
Federally Protected Species		No Effect	No Effect	No Effect
Environmental Justice		None	Probable	None
Costs	Construction	\$27,700,000	\$21,100,000	\$33,000,000
	Utilities	\$2,839,880	\$2,839,880	\$1,465,440
	ROW	\$6,871,956	\$17,500,832	\$4,529,939
TOTAL:		\$37,411,836	\$41,440,712	\$38,995,379

Notes:

- Historic Properties: Sunbury Historic District (SHD); Moses-White House (MWH); Hinton-Morgan House (HMH)
- All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits
- Environmental Justice: Disproportionately high & adverse impacts
- Community Facilities Impacted: Sunbury Fire Department (Alt 1B); Pasquotank Newland Fire Department (Alt 2B)

## **B. Capacity Analysis (Comparison Of No Build And Build Scenario)**

### **1. Traffic Volumes**

Mainline volumes along US 158 for the year 2005 range from 2,700 to 8,800 vehicles per day (vpd). In 2012, the volumes range from 3,300 to 6,300 vpd, showing very little growth. According to the 2030 design year traffic forecast, the Average Annual Daily Traffic (AADT) along US 158 is forecasted to range from 4,500 to 14,000 vpd.

## **2. Levels of Service**

### **Level of Service:**

Level of Service (LOS) is a measure of traffic congestion on roadway segments or intersections. Level of service assigns a letter ranking from “A”, representing the free flow of traffic, to “F”, representing breakdown in the system. This ranking system also generally takes into consideration various physical roadway characteristics such as lane width, roadway topography, roadside obstructions, and other geometric factors. LOS forecasts include all known transportation improvements within the 20-year planning horizon.

### **Mainline:**

The project proposes to widen US 158 to a four-lane median divided facility. For the future (2030) traffic two-lane (No Build) condition, the mainline is expected to peak at LOS E in the design year. Based on the four-lane divided roadway configuration and 2030 Build conditions, the mainline is expected to operate at LOS C or better throughout the project limits in the design year.

### **Intersections:**

#### **US 158 and NC 32 - Existing Signalized Intersection**

Based on the four-lane divided roadway configuration and 2030 Build conditions, the signalized intersection of US 158 and NC 32 is expected to operate at LOS B in the 2030 design year. It should be noted that due to the rural nature of this facility, this intersection remain a signalized full movement crossover location.

#### **US 158 and US 17 – Existing Signalized Intersection**

Based on the four-lane divided roadway configuration and 2030 Build conditions, the signalized intersection of US 158 and US 17 is expected to operate at LOS F in the 2030 design year. Significant turn lane and intersecting road improvements are required to accommodate future traffic volumes. Therefore, the proposed design replaces the intersection with an interchange. The interchange ramps should peak at a LOS C in the design year.

### **Unsignalized Intersections**

**Table 4 (See Appendix C)** shows a comparison of 2030 No Build and 2030 Build Levels of Service for all unsignalized intersections.

## **IV. PROPOSED IMPROVEMENTS**

### **A. Typical Section**

The proposed typical section is a four-lane (two 12-foot travel lanes in each direction) divided roadway with a 46-foot grassed median and paved shoulders (see Figure 3).

### **B. Right Of Way And Access Control**

A right-of-way of 250 feet is proposed. Partial control of access is proposed in most areas. However, the proposed interchange with US 17 will have full control of access.

### **C. Design Speed & Speed Limit**

The proposed design speed is 60 mph and the posted speed limit will be 55 mph or less.

### **D. Anticipated Design Exceptions**

There are no anticipated design exceptions for this project.

### **E. Intersections/Interchanges**

A signalized at-grade intersection will continue at the proposed intersection with NC 32. An interchange is proposed at the US 158/US 17 intersection. All other intersections on the project will remain stop-sign controlled. Consideration is being given to converting at-grade intersections to a super-street design, to limit some of the turning movements. The super-street design can provide advantages regarding the roadway's capacity and safety. This will be addressed prior to the Public Hearing.

### **F. Service Roads**

No service roads are planned for this project.

### **G. Bridges/Drainage Structures**

Five (5) new drainage bridges are proposed and one (1) existing bridge will be retained and widened (see Table 5). All other hydraulic structures will be retained and lengthened.



**Table 5: Hydraulic Structure Bridging Recommendations**

<b>Alternative</b>	<b>Wetland/ Stream Identification</b>	<b>Existing Structure</b>	<b>Recommended Structure (minimum)</b>
1C	W10; S7	N/A	70 ft. Bridge
1D	W10; S7	N/A	70 ft. Bridge
1F	W10; S8	N/A	70 ft. Bridge
3C	W37; W39; S50	69 ft. Bridge	Retain & widen
3B	W39; S50; S51	N/A	80 ft. Bridge
3D	W39; S50; S51	N/A	80 ft. Bridge

A bridge is also proposed as part of the US 158/US17 interchange.

**H. Bicycle And Pedestrian Facilities**

Bicyclists will be accommodated with paved shoulders.

**I. Utilities**

Utilities will be relocated as necessary as a part of this project.

**J. Noise Barriers**

Noise walls are not recommended as a part of this project.

**K. Work Zone, Traffic Control And Construction Phasing**

During construction of the project, it is anticipated the US 158 traffic will be maintained on site. As more project information is determined concerning alignments, subgrade conditions, pavement type and depth, as well as bridge designs, practical traffic management strategies will be developed and coordinated to ensure safety and efficiency.

## **V. ENVIRONMENTAL EFFECTS OF PROPOSED ACTION**

### **A. Natural Resources**

#### **1. Biotic Resources**

##### **a. Terrestrial Communities**

Nine terrestrial communities were identified in the project study area: Maintained/Disturbed Lands, Small Depression Pond, Mesic Mixed Hardwood Forest (Coastal Plain Subtype), Mesic Pine Flatwoods, Coastal Plain Bottomland Hardwoods (Blackwater Subtype), Coastal Plain Small Stream Swamp (Blackwater Subtype), Nonriverine Wet Hardwood Forest, Wet Pine Flatwoods, and Cypress-Gum Swamp (Blackwater Subtype).

##### **i. Maintained and Disturbed Lands**

The maintained/disturbed lands community is characterized by human influences and anthropogenic surfaces related to agricultural, commercial and residential development, roadways, and other areas that have been manipulated. Vegetation associated with this community is kept in an early state of succession by regular mowing, plowing, or other maintenance. This community accounts for approximately 52% of the project study area and includes the following areas: agricultural, rural residential, paved and unpaved roads, parking lots, and commercial development.

Agricultural fields and recent cutover areas are present throughout much of the project study area. Agricultural fields within the project study area consist of crop land, active horse and cattle pasture, and food plots for wildlife.

Within fallow fields, vegetation was dominated by sweetgum and loblolly pine. Vines and shrubs within these areas included muscadine grape, Japanese honeysuckle, and blackberry. The herbaceous layer had high diversity commonly including ebony spleenwort, Japanese stilt-grass, and Chinese bushclover. Maintained/disturbed land also includes roadsides within which ragweed, greenbrier, blackberry, bamboo, fescue, clover, violet, dandelion, onion, and trumpet vine were found.

Mature hardwood trees were noted adjacent to maintained residential areas within the project study area. Canopy trees surrounding the residential areas include red maple, water oak, pecan, loblolly pine, and willow oak. Fescue, centipede grass, coastal Bermuda grass, Japanese honeysuckle, blackberry, poison ivy, and dandelion were observed as the primary groundcover. Other species identified in these residential areas include mimosa, flowering dogwood, eastern redcedar, and sweetbay magnolia.

## **ii. Small Depression Pond**

Small depression ponds are often permanently flooded in the center, grading outward to the prevailing hydrology of the surrounding area. The deepest parts of the pond may support aquatic vegetation, including American water-lily, big floatingheart, yellow pond-lily, combleaf mermaidweed, and a variety of bladderworts. Shallower areas may contain a variety of emergent and wetland herbaceous species, grading to woody wetland plants, often resembling a pocosin community. Within the project study area, herbaceous species were mostly absent, with woody wetland species, including red maple, wax myrtle, sweetgum, and swamp tupelo, sparsely scattered throughout the depression.

## **iii. Mesic Pine Flatwoods**

Mesic Pine Flatwoods are located either on flat or rolling Coastal Plain sediments that are neither excessively drained nor characterized by a significant seasonal high water table. This community is underlain by loamy or fine-textured soils, sometimes sands, and is characterized as having a closed to open canopy mainly consisting of longleaf pine or loblolly pine. Within the project study area, the canopy layer was almost exclusively dominated by loblolly pine, with scattered oaks, sweetgum, and red maple in some locations. The understory and shrub layers were sparse to moderately dense and contained species such as sweetgum, red maple, water oak, willow oak, southern red oak, post oak, sweetbay magnolia, American holly, black gum, winged elm, devils walking stick, and black cherry. The herb and vine layers included species such as poison ivy, common greenbrier, blackberry, ebony spleenwort, bracken fern, southern lady fern, muscadine grape, and Japanese honeysuckle.

The Mesic Pine Flatwoods account for approximately 20% of the project study area, typically occurring on broad flats along interstream divides. Many of these tracts of land are routinely logged and replanted. Planted pine forests of all ages were mapped within this community type. This community often occurs adjacent to Wet Pine Flatwoods. Mesic Pine Flatwoods is differentiated from Wet Pine Flatwoods by the terrestrial palustrine boundary as well as the shift from mesic to more hydrophytic vegetation, such as netted chain fern, combined with the pines.

## **iv. Mesic Mixed Hardwood Forest**

Mesic Mixed Hardwood Forest (Coastal Plain Subtype) occurs on mesic (non-wetland) upland areas throughout the Coastal Plain. Primarily found on north-facing river bluffs and ravine slopes in areas protected from fire by topography and moisture, these communities are supported by various moist upland soils. The Mesic Mixed Hardwood Forest (Coastal Plain Subtype) accounts for approximately 8% of the project study area. Most often, this community occurs on the low and mid slopes transitioning from wet areas dominated by bottomland hardwood species to upland communities such as Mesic Pine Flatwoods and agricultural fields. The canopy within this community was dominated by tulip tree, sweetgum, white oak, red maple, willow oak, water oak, and American beech. Loblolly pine was also observed in the canopy layer. The understory within this community was often moderately dense and dominated

by younger canopy species as well as American holly and sourwood. The shrub layer consisted of coastal pepperbush, American holly, various blueberries, Chinese privet, and saplings of canopy species. The herb and vine layers included species such as poison ivy, Japanese honeysuckle, Christmas fern, ebony spleenwort, muscadine grape, common greenbrier, and giant cane. Areas that had recently been timbered but were beginning to reestablish vegetation consistent with this community type were also mapped as Mesic Mixed Hardwood Forest (Coastal Plain Subtype).

**v. Coastal Plain Cotton Hardwood Forest (Blackwater Subtype)**

Coastal Plain Bottomland Hardwood Forest (Blackwater Subtype) are seasonally to intermittently flooded and occur on relatively high parts of the floodplain. These forests are underlain by mineral soils that often have a sandy texture. Within the project study area, the canopy layer was dominated by willow oak, water oak, swamp chestnut oak, laurel oak, red maple, loblolly pine, and sweetgum. The understory often consists of younger canopy species along with swamp tupelo, cherrybark oak, and sweetbay magnolia. Herbaceous species were more common in the wetter portions of these forests and consisted of lizard's tail, netted chain fern, rush, and royal fern. Vines found in this community included greenbrier, Japanese honeysuckle, and rattan vine.

Coastal Plain Bottomland Hardwoods account for approximately 5% of the project study area and occurred most frequently near Harrell Swamp and Raynor Swamp, and their associated tributaries. These forests often grade downstream or downslope into Cypress-Gum Swamps and upslope to Mesic Mixed Hardwood Forests.

**vi. Coastal Plain Small Stream Swamps (Blackwater Subtype)**

Coastal Plain Small Stream Swamps (Blackwater Subtype) occur over alluvial or organic soils in the floodplains of small streams. These systems are intermittently to seasonally flooded. The canopy layer is dominated by red maple, sweetgum, and tuliptree, with various oaks and loblolly pine scattered throughout. The understory consisted of ironwood, Chinese privet, American elderberry, and American holly. Greenbrier and Japanese honeysuckles were also present. Within the project study area, this community is rarely found. It was identified along three streams, one in the northwestern portion of the project study area and two in the northeastern portion of the project study area.

**vii. Nonriverine Wet Hardwood Forest**

Wet Hardwood Forests are described as poorly drained interstream flats with fine-textured soils, not associated with rivers or estuaries. These communities are underlain by poorly drained loamy or clayey mineral soils. These areas are seasonally saturated or flooded by high water tables with poor drainage. This community occurs along interstream divides as small to medium flats and as small areas surrounded by agricultural fields and other upland communities. This community was fairly uncommon, accounting for approximately 1% of the project study

area. In the larger flats, the canopy was composed of various oak species such as willow oak, water oak, white oak, swamp chestnut oak, and tuliptree. Pawpaw, red maple, ironwood, and American holly dominated the understory, which was moderately open. The smaller areas were generally dominated by species such as sweetgum, red maple, black willow, common greenbrier, and coastal pepperbush. The herbaceous layer was usually sparse in this community. This community is distinguished from Mesic Mixed Hardwood Forest (Coastal Plain Subtype) by the presence of hydrophytic species such as black willow and coastal pepperbush.

#### **viii. Wet Pine Flatwoods**

This community is found in generally flat areas that are seasonally wet to semipermanently wet. Soils are most commonly sandy in texture. In the project study area, Wet Pine Flatwoods typically occurs along broad interstream divides. These areas were often planted pine forests. Tire ruts were commonly found throughout this community as a result of past logging operations, which have also resulted in significant soil compaction in some areas. Loblolly pine dominates the canopy in this community, and giant cane was often prevalent in the understory. Other species found within this community include willow oak, water oak, sweetgum, red maple, netted chain fern, sweetbay magnolia, and common greenbrier. The terrestrial-palustrine boundary often coincides with the boundary between Mesic Pine Flatwoods and Wet Pine Flatwoods. Wet Pine Flatwoods account for approximately 4% of the project study area.

#### **ix. Cypress-Gum Swamps (Blackwater Subtype)**

Cypress-Gum Swamps (Blackwater Subtype) are seasonally to semi-permanently flooded bottomlands adjacent to Blackwater rivers. Blackwater rivers are low in nutrients and tend to have floods of short duration and periods of very low flow. This community is underlain by mineral or organic soils and is characterized by a canopy consisting mainly of bald cypress and swamp blackgum. The understory and shrub layers are sparse to moderately dense and consist of red maple, green ash, swamp blackgum, slippery elm, sweetbay magnolia, and swamp chestnut oak. The herbaceous and vine layer is also sparse to moderately dense, consisting of netted chain fern, cinnamon fern, lizard's tail, greenbrier, and various smartweeds.

#### **b. Terrestrial Community Impacts**

Terrestrial communities in the study area will be impacted by project construction as a result of grading and paving of portions of the study area. The amount will depend on the alternatives that are recommended and will be shown in supplemental environmental documentation.

### **c. Terrestrial Wildlife**

The project study area offers a variety of wildlife habitat, ranging from mature mixed hardwood forests to cypress-gum swamps. Agriculture is one of the most abundant land use practices in this area of North Carolina and provides an ample food supply for wildlife. The high rate of logging activity in this region has also created several early successional forests throughout the project study area. The Great Dismal Swamp bisects the project study corridor and provides open water habitat for various waterfowl. Many fauna species are highly adaptive and may populate or exploit the entire range of terrestrial communities located within the project study area. All species listed in the following paragraphs were observed by field personnel during the course of onsite investigations.

Mammalian species that were observed in forested habitats and stream corridors within the project study area include eastern cottontail, raccoon, Virginia opossum, eastern gray squirrel, beaver, coyote, bobcat, muskrat, woodchuck, nutria, otter, and white-tailed deer. A black bear was also observed as it crossed US 158 near the western edge of the Great Dismal Swamp. The abundance of open water habitat provided by the Great Dismal Swamp and the Newland Drainage Canal provides excellent foraging habitat for bats and many birds such as the double crested cormorant, anhinga, great blue heron, pied-billed grebe, osprey, American coot, great egret, green heron, Canada goose, wood duck, mallard, American black duck, ring-necked duck, and hooded merganser. Birds observed in forest and forest edge habitats include the American crow, blue jay, Carolina chickadee, Carolina wren, tufted titmouse, brown creeper, eastern wood-pewee, great crested flycatcher, red-eyed vireo, white-eyed vireo, white throated sparrow, brown thrasher, northern cardinal, northern bobwhite, wild turkey, eastern towhee, wood thrush, ruby-crowned kinglet, American robin, red-shouldered hawk, and a variety of warblers, woodpeckers, and owls. Avian species that are were commonly observed near open habitat, such as agricultural fields, residential lawns, and roadside rights-of-way, include red-tailed hawk, northern harrier, eastern bluebird, black vulture, turkey vulture, mourning dove, rock dove, red-winged blackbird, eastern meadowlark, field sparrow, and common snipe.

Reptilian and amphibian species that were observed within the project study area include the rat snake, black racer, northern watersnake, redbelly watersnake, eastern kingsnake, cottonmouth, canebrake rattlesnake, ring-necked snake, bullfrog, Northern Cricket frog, American toad, Southern toad, Fowler's toad, Gray treefrogs, Green treefrog, eastern box turtle, eastern mud turtle, snapping turtle, painted turtle, red-bellied turtle, spotted turtle, yellow-bellied slider, eastern fence lizard, five-lined skink, broadhead skink, ground skink, redback salamander, and slimy salamander.

### **d. Aquatic Communities**

Aquatic communities in the project study area consist of perennial and intermittent coastal plain streams, roadside ditches and drainage canals. Perennial streams and canals in the study area support largemouth bass, flier, bluegill, eastern mosquitofish, and bowfin. Intermittent



streams in the study area are relatively small in size and support aquatic communities of crayfish and various benthic macroinvertebrates. During winter and early spring, the water level in some of the larger canals is high enough to allow fish to migrate into intermittent streams and smaller canals.

**e. Invasive Species**

Four species from the NCDOT Invasive Exotic Plant List for North Carolina were identified within the project study area (NCDOT 2007). These species are listed in Table 6 according to their threat level:

**Table 6: Invasive Species Threat Levels within Project Area**

<b>Common Name</b>	<b>Threat Level</b>
Chinese privet	Severe Threat to Habitat and Natural Areas
Japanese grass	Severe Threat to Habitat and Natural Areas
Japanese honeysuckle	Threat to Habitat and Natural Areas
bamboo	Threat to Habitat and Natural Areas

NCDOT will follow the Department's Best Management Practices (BMPs) for the management of invasive plant species.

**2. Clean Water Act -Waters of the United States**

**a. Streams, Wetlands, Ponds**

Fifty-seven jurisdictional streams were identified in the project study area. All jurisdictional streams in the project study area have been designated as warm water streams for the purposes of stream mitigation. Water resources are a part of the Chowan and Pasquotank river basins.

Fifty jurisdictional wetlands were identified within the project study area. The wetlands in the study area are within the Chowan and Pasquotank River basins. Wetlands were delineated within Small Depression Ponds, Wet Pine Flatwoods, Coastal Plain Bottomland Hardwood Forests, Coastal Plain Small Stream Swamps, Nonriverine Wet Hardwood Forests, and Cypress-Gum Swamps. Impacts to wetlands could be heavy, as they are present for about 3 ½ miles of this project.

Eight ponds, totaling 14.6 acres, are located within the project study area and shown as open water habitat. These ponds are not connected to a jurisdictional stream and the USACE does not consider these ponds to be jurisdictional. Four of these ponds are located in agricultural settings and four area result of borrow operations.

**Table 7 (See Appendix D)** lists water resources in the project study area. **Table 8 (See Appendix D)** lists jurisdictional characteristics of wetlands in the project study area.

**b. Calculated Impacts**

Wetland and stream impacts were calculated based on the current alternatives. Wetland impacts are calculated from slope stake to slope stake plus an additional 25 feet outside of each limit as determined from the current functional design plans for each alternative studied. The totals are rounded to the nearest acre for wetlands and to the nearest foot for streams. Table 9 shows calculated impacts.

For Section 1, wetland impacts range from 5 acres to 14.4 acres; stream impacts range from 298 feet to 559 feet.

For Section 2, wetland impacts are approximately 76.4 acres; stream impacts are approximately 3871 feet.

For Section 3, wetland impacts range from 3.2 acres to 12 acres; stream impacts range from 137 feet to 362 feet.

A minimum of 85 acres of wetlands and a maximum of 103 acres of wetlands could be impacted by the project, when combining Sections 1, 2 and 3 together. A minimum of 4,306 linear feet and up to 4758 linear feet of streams could be impacted by the project, when combining Sections 1, 2 and 3 together.

**Table 9: Wetland/ Stream Impacts (Alternative 1C)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W2	PFO1/PFO4 /PFO6	2.0		78, 22, 76, 76, 89	Riverine
W4	PFO1	1.4		78	Riverine
W5	PFO6/PSS1	0.1		77, 69	Riverine
W9	PFO6/PSS6/ PEM1	0.1		49	Riverine
S6			237		Perennial
S7			179		Perennial
W10	PFO1	2.4		68	Riverine
W14	PFO1	0.0*		36	Nonriverine
<b>TOTALS:</b>		<b>6.0</b>	<b>416</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 1D)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W2	PFO1/PFO4 /PFO6	2.0		78, 22, 76, 76, 89	Riverine
W4	PFO1	1.4		78	Riverine
W5	PFO6/PSS1	0.0*		77, 69	Riverine
W9	PFO6/PSS6/ PEM1	3.1		49	Riverine
S6			290		Perennial
S7			8		Perennial
W10	PFO1	7.9		68	Riverine
W14	PFO1	0.0*		36	Nonriverine
<b>TOTALS:</b>		<b>14.4</b>	<b>298</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 1F)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W2	PFO1/PFO4 /PFO6	2.7		78, 22, 76, 76, 89	Riverine
W4	PFO1	0.5		78	Riverine
W5	PFO6/PSS1	0.4		77, 69	Riverine
S5			401		Perennial
S8			158		Perennial
W10	PFO1	1.4		68	Riverine
W14	PFO1	0.0*		36	Nonriverine
<b>TOTALS:</b>		<b>5.0</b>	<b>559</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 2B)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W18	PFO1	0.0*		18	Nonriverine
W19	PSS4	0.4		24	Nonriverine
W20	PSS1	0.6		24	Nonriverine
S14			111		Intermittent
S15			212		Intermittent
W22	PFO4	0.4		22	Nonriverine
S16			224		Intermittent
S17			191		Intermittent
W24	PFO6/PFO4	2.4		24	Riverine
W25	PFO4	0.1		68	Riverine
W26	PFO4	3.0		78	Riverine
W27	PFO1	41.3		88, 47	Riverine
S18			43		Intermittent
S19			104		Perennial
S20			125		Perennial
W28	PSS1	1.4		78	Riverine
S22			91		Perennial
W29	PFO1	26.6		23	Riverine
S23**			0		Perennial
W30	PFO4	0.1		36	Nonriverine
S28			163		Intermittent
S33			117		Intermittent
S35			204		Intermittent
S40			1,494		Intermittent
S41			98		Intermittent
S44			213		Intermittent
W33	PFO4	0.1		62	Riverine
S45			126		Intermittent
S46			135		Intermittent
W34	PFO1/PFO4	0.0*		67	Nonriverine
W36	FPFO1/PFO4	0.0*		58	Riverine
S47			220		Perennial
<b>TOTALS:</b>		<b>76.4</b>	<b>3,871</b>		

Notes: All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

Alts are the same except from W24 to W29, from S17 to S28

\*Less than 0.01

\*\*S23- Newland Canal- NCDOT will make every effort to not impact this canal

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 3B)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W37	PFO4	0.0*		79	Riverine
W39	PFO4	4.0		68, 71, 74, 37	Riverine
S48			137		Intermittent
S50			0		Perennial
S53			0		Perennial
W46	PSS1/PSS4	0.0*		18	Nonriverine
<b>TOTALS:</b>		<b>4.0</b>	<b>137</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 3C)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W37	PFO4	0.4		79	Riverine
S48			137		Intermittent
S50			128		Perennial
W39	PFO4	0.8		79	Riverine
W40	PFO1	0.1		49	Nonriverine
W42	PFO4	1.8		85	Riverine
S53			97		Perennial
<b>TOTALS:</b>		<b>3.2</b>	<b>362</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

**Table 9: (continued) Wetland/ Stream Impacts (Alternative 3D)**

Wetland/ Stream Identification	Wetland Type	Wetland Area Impacted (Acres)	Length of Stream Impacted (ft)	NC DWQ Rating	Riverine/ Non- Riverine (wetlands)
					Perennial/ Intermittent (streams)
W37	PFO4	0.0*		79	Riverine
S48			137		Intermittent
S50			0		Perennial
W39	PFO4	11.3		68, 71, 74, 37	Riverine
W46	PFO1	0.4		49	Nonriverine
W47	PFO4	0.4		85	Riverine
S53			0		Perennial
<b>TOTALS:</b>		<b>12.0</b>	<b>137</b>		

Notes: \*Less than 0.01

All wetland and stream calculations are based on 25-ft offsets beyond cut/fill limits

#### **c. Clean Water Act Permits**

In accordance with Section 404 of the Clean Water Act, a permit issued by USACE will be required prior to impacting any jurisdictional stream or wetland within the project study area. An Individual Permit will likely be applicable due to the acreage of wetlands and length of streams present within the project study area. The USACE holds the final discretion as to what permit will be required to authorize impacts to Waters of the US associated with project construction.

In addition to the Section 404 permit, authorization from NCDWQ in the form of the corresponding Section 401 General Water Quality Certification (WQC) will be necessary. A WQC will be required prior to the issuance of a Section 404 Permit.

#### **d. Wetland and Stream Mitigation**

NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the extent practicable in choosing a recommended alternative and during project design. At this time, no final decisions have been made with regard to the location or design of the recommended alternative.

### **i. Avoidance and Minimization of Impacts**

The USACE has adopted, through the Council on Environmental Quality (CEQ), a mitigation policy that embraces the concepts of "no net loss of wetlands" and sequencing. Mitigation of wetland impacts has been defined by the CEQ to include: avoiding impacts (to wetlands), minimizing impacts, rectifying impacts, reducing impacts over time, and compensating for impacts (40 CFR 1508.20). Avoidance, minimization, and compensatory mitigation must be considered in sequential order.

Avoidance examines all appropriate and practicable possibilities of averting impacts to Waters of the United States. According to a 1990 Memorandum of Agreement (MOA) between the USEPA and the USACE, "appropriate and practicable" measures to offset unavoidable impacts should be appropriate to the scope and degree of those impacts and practicable in terms of cost, existing technology, and logistics in light of overall project purposes. Some wetland systems (i.e., W2, W10, W26, W39) were so extensive and followed closely with US 158 that impacts to these wetlands were unavoidable. However, several of the alternatives (i.e., Alt 2B) were shifted either north or south to avoid smaller wetlands when possible. Alternative 1E was eliminated due to its higher wetland impacts.

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

- Strict enforcement of BMPs to control sedimentation during project construction
- Bridge high quality, linear wetland systems
- Minimize clearing and grubbing activity
- Decrease or eliminate discharges into streams
- Re-establish vegetation on exposed areas
- Minimize in-stream activity

Efforts were made on all the alternatives to minimize impacts to adjacent wetlands. Alternative 1E was eliminated due to its higher wetland impacts. Alternative 1F was shifted south to minimize impacts to wetlands W2 and W10. Alternative 1D was shifted north to minimize impacts to wetlands W9 and W10. Alternative 2B was developed to avoid impacts to the Great Dismal Swamp Wildlife Refuge, but still impacts wetlands to the south. Alternative 2B was also shifted south to avoid impacts to the Newland Canal. Alt 3B and 3D were shifted to minimize impacts to wetland W39.



## **ii. Compensatory Mitigation of Impacts**

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided or minimized to the maximum extent possible. It is recognized that "no net loss of wetlands" functions and values may not be achieved in each and every permit action. Appropriate and practicable compensatory mitigation is required for unavoidable adverse impacts that remain after all appropriate and practicable minimization has been completed. Compensatory actions often include restoration, creation, and enhancement of Waters of the United States. Such action should be undertaken in areas adjacent to the discharge site when feasible.

NCDOT will investigate potential on-site stream and wetland mitigation opportunities once a final decision has been rendered with regard to the location of the recommended alternative. If on-site mitigation is not feasible, mitigation will be provided by North Carolina Department of Environment and Natural Resources - Ecosystem Enhancement Program (EEP), in accordance with the "Memorandum of Agreement among the North Carolina Department of Environment and Natural Resources and the North Carolina Department of Transportation and the United States Army Corps of Engineers, Wilmington District" (MOA), dated July 22, 2003.

### **e. Construction Moratoria**

National Marine Fisheries Service (NMFS) is the primary agency requesting in-water construction moratoria for protection of sturgeon and other anadromous fish such as alewife, blueback herring, hickory shad, and American shad. The project will not affect S52 (at the east end of the project limits), therefore, specific moratoria dates are not necessary. The in-water work moratorium for anadromous fish spawning extends from February 15 through June 30. These moratoria apply to the Chowan and Pasquotank Rivers and potentially their tributaries. It is not expected that all stream crossings will be affected; the NCDOT staff will coordinate with the NMFS to determine which streams will require the construction moratoria.

### **f. NC River Basin Rules**

The Chowan and Pasquotank River basins do not have buffer rules; therefore, riparian buffer rules do not apply to any of the streams within the project study area.

### **g. Flood Hazard Evaluation**

Gates and Pasquotank Counties are participants in the National Flood Insurance Program, administered by the Federal Emergency Management Agency (FEMA). Based on the most current information available from the NC Floodplain Mapping Program (FMP), Raynor Swamp Trib. 2, Acorn Hill Millpond and Newland Drainage Canal are located in designated flood hazard

zones which are within a Limited Detailed Flood Study reach, having a regulated 100-year non-encroachment width regulated as a floodway. The proposed replacement structures will provide equivalent or greater conveyance than that of the existing structures. The NCDOT Hydraulics Unit will coordinate with NC Floodplain Mapping Program (FMP) to determine the status of the project with regard to applicability of NCDOT'S Memorandum of Agreement with FMP, or 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, the Division 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.

#### **h. Rivers and Harbors Act Section 10 Navigable Waters**

There are no navigable waters, as defined under Section 10 of the Rivers and Harbors Act, within the project study area.

### **3. Federally Protected Species**

#### **a. Endangered Species Act Protected Species**

As of September 22, 2010, the USFWS lists five species for Gates and Pasquotank counties that are protected under the provisions of Section 7 of the Endangered Species Act of 1973, as amended (ESA). As of December 2012, the NCNHP database of rare species and unique habitats shows no occurrence of these species within one mile of the project study area. Table 10 shows Federally Listed Species for Gates and Pasquotank County.

**Table 10: Federally Listed Species for Gates and Pasquotank Counties**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status</b>	<b>Habitat Present</b>	<b>Biological Conclusion</b>
Alligator mississippiensis	American alligator	T(S/A)	Yes	N/A
Picoides borealis	Red-cockaded woodpecker	E	Yes	No Effect
Acipenser brevirostrum	Shortnose sturgeon	E	Yes	No Effect
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	Yes	No Effect
Trichechus mantus	West Indian manatee	E	Yes	No Effect

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

## **American Alligator**

Habitat Requirements: The American alligator inhabits great river swamps, lakes, bayous, marshes, and other water bodies of Florida and the Gulf and Lower Atlantic Coastal Plain. Nests consist of mounds of vegetative debris in which the eggs are buried between spring and early autumn.

Biological Conclusion: No Biological Conclusion is required for this species.

The American alligator is listed as “threatened due to similar appearance” to provide protection to the American crocodile, a species which it closely resembles. The American crocodile is a tropical species and is not found in saltwater habitats this far north of Florida. The American alligator is not protected under Section 7 of the ESA. NCNHP does not have a recorded occurrence of the alligator within one mile of the project study area.

## **Red-cockaded Woodpecker**

Habitat Requirements: The red cockaded woodpecker (RCW) occupies open, mature stands of southern pines, particularly longleaf pine, for foraging and nesting habitat. The RCW typically nests in pine trees that are at least 60 years old and which are contiguous with pine stands at least 30 years of age to provide foraging habitat. The foraging range of the RCW is normally no more than one-half mile radius from the nesting tree.

Biological Conclusion: No Effect

Habitat for the RCW exists within the project study area. Surveys for the RCW were conducted in the areas in which the bird’s habitat, foraging or nesting, was identified within a one-half mile radius of the project study area. Biologists from ARCADIS conducted pedestrian surveys within the project study area during July, August, and September 2008. The total RCW survey area covers approximately 1,530 acres. No individuals or cavity trees were observed during the surveys. Foraging habitat in and around the project study area was generally dominated by 20- to 40-year-old loblolly pine. A small stand of longleaf pine in the 10- to 20-year-old age class was also surveyed within the project study area. Nesting habitat was dominated by 50- to 70-year-old loblolly pine. Current habitat within the project study area is under pressure from abundant timber operations throughout the county and has been highly fragmented by past and present landscape modifications associated with large-scale agricultural operations. A review of NCNHP records indicates no known RCW occurrence within 1.0 mile of the project study area. A separate report (R-2579 RCW Survey Report) provides detailed information regarding the locations and descriptions of habitat that was surveyed.

## **Shortnose Sturgeon**

Habitat Requirements: Shortnose sturgeon occur in most major river systems along the eastern seaboard of the United States. The species prefers the nearshore marine, estuarine, and riverine habitat of large river systems. It is an anadromous species that migrates to faster-moving

freshwater areas to spawn in the spring but spends most of its life within proximity of the river's mouth. Large freshwater rivers that are unobstructed by dams or pollutants are imperative to successful reproduction. Distribution information by river/waterbody is lacking for the rivers of North Carolina; however, records are known from most coastal counties.

Biological Conclusion: No Effect

### **Atlantic Sturgeon**

Habitat Requirements: The Biological Survey Section is working with sturgeon experts to develop a habitat description due to the recent listing and limited knowledge of this species life history. As soon as this has been completed, a biological conclusion will be determined.

Biological Conclusion: No Effect

### **West Indian manatee**

Habitat Requirements: Manatees have been observed in all the North Carolina coastal counties. Manatees are found in canals, sluggish rivers, estuarine habitats, salt water bays, and as far off shore as 3.7 miles. They utilize freshwater and marine habitats at shallow depths of 5 to 20 feet. In the winter, between October and April, manatees concentrate in areas with warm water. During other times of the year habitats appropriate for the manatee are those with sufficient water depth, an adequate food supply, and in proximity to freshwater. Manatees require a source of freshwater to drink. Manatees are primarily herbivorous, feeding on any aquatic vegetation present, but they may occasionally feed on fish.

Biological Conclusion: No Effect

Suitable habitat for West Indian manatee does not exist in the study area. Streams in the study area are not of sufficient size to support West Indian manatee. A review of NCNHP records, updated December 2012, indicates there are no known West Indian manatee occurrences within 1.0 mile of the study area.

### **b. Bald and Golden Eagle Protection Act**

An additional species, the bald eagle, is protected under the provisions of the Bald and Golden Eagle Protection Act of 1940 (BGPA) and the Migratory Bird Treaty Act of 1918. Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large, dominant trees are utilized for nesting sites, typically within one mile of open water. There are currently no known bald eagle nests within one mile of the project study area (personal communication with David Allen, North Carolina Wildlife Resources Commission, July 2008). ARCADIS biologists conducted pedestrian surveys, within the project study area, concurrent with other natural resources field work, between March and September 2008.

Two locations of nesting/foraging habitat for bald eagle exist in the project study area. The first area is in the vicinity of the southern terminus of the project study area along the existing US 17/US 158 roadway. Open water in the form of a large borrow pond with adjacent forest dominated by mature trees is present within one mile of the project study area. The second area includes open water and mature forested stands associated with the existing US 158 crossing of the Great Dismal Swamp. A juvenile bald eagle was observed in flight on the south side of US 158 above the western edge of the Great Dismal Swamp (June 2008). Additionally, a mature bald eagle was observed soaring in a crisscross pattern over US 17 less than one mile south of the project study area boundary(August 2008). These sightings were one-time events.

**c. Endangered Species Act Candidate Species**

As of September 22, 2010, the USFWS does not list any Candidate species for Gates or Pasquotank County.

**4. Coastal Zone Issues**

**a. Coastal Area Management Act (CAMA) Areas of Environmental Concern**

The Pasquotank River is the only CAMA area of environmental concern in the project area.

**b. Essential Fish Habitat**

There are no areas identified as Essential Fish Habitat (EFH) within the project study area. Coordination with the NMFS regarding EFH is not required for this project.

**5. Soils**

The Camden, Gates and Pasquotank County Soil Surveys identify 47 soil types within the study area in Table 11 (See Appendix D).

**B. Cultural Resources**

**1. Compliance**

This project is subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended and implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified as 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 on the National Register of Historic Places (NR) and to afford the Advisory Council a reasonable opportunity to comment on such undertakings.

## **2. Historic Architectural Resources**

NCDOT architectural historians conducted a Section 106 survey to identify historic architectural resources within the project's Area of Potential Effects (APE). Every property in the APE fifty years of age or older was photographed and documented, as were properties less than fifty years old potentially eligible for Criterion Consideration G. Survey findings were presented to the North Carolina State Historic Preservation Office (NC-HPO) for review. At that, NC-HPO requested further investigation of sixty-five properties contained within the APE, fifty of which are to be considered as part of a potential expansion of the Sunbury Historic District (NCSL). Table 12 lists properties eligible for or are listed on the National Register of Historic Places. A copy of the "Effect" forms are included in Appendix E.

**Table 12: Historic Architectural Resources**

<b>Name</b>	<b>Status</b>	<b>Alternate Location</b>	<b>Effects</b>
Sunbury Historic District	ENR	1C	Adverse Effect
Sunbury Historic District	ENR	1D, 1F	No Adverse Effect
Moses R. White, Jr. House	ENR	3B*, 3C & 3D	No Adverse Effect
Hinton-Morgan House	NR	3B, 3D	No Adverse Effect
Hinton-Morgan House	NR	3C	Adverse Effect

\*No adverse effect with landscaping commitments

ENR-Eligible for the National Register of Historic Places

NR- National Register of Historic Places

## **3. Archaeological Resources**

As recommended by the State Historic Preservation Office (see Appendix A for a copy of the letter), an archaeological survey will be required to identify archeological properties that may be eligible for listing on the National Register of Historic Places. Previous archaeological surveys from the project area will be used as guidance for field methodology and expectations, suggesting especially high and low probability locations for documenting new archaeological sites. Of the current alternatives, no one single alternative crosses predominately low or high probability areas for encountering archaeological sites. Generally, all of the alternatives have similar archaeological expectations. Once the set of recommended alternatives have been

determined, NCDOT archaeologists will conduct or oversee an archaeological site identification and evaluation survey.

### **C. Section 4(F)/6(F) Resources**

Section 4(f) of the USDOT Act of 1966 protects the use of publicly owned parks, recreation areas, wildlife/waterfowl refuges, and historic properties from USDOT actions. The proposed project is State funded, so Section 4(f) is not applicable.

Section 6(f) of the Land and Water Conservation Act applies to the conversion of certain recreation lands to non-recreational purposes. The act applies to recreation lands that have received Land and Water Conservation Fund (LWCF) money. Any land conversions on property that has received LWCF money must be approved by the US Department of the Interior–National Park Service. Section 6(f) also requires that any applicable land converted to non-recreational uses must be replaced with land of equal or greater value, location, and usefulness. No Section 6(f) protected properties will be impacted by this project.

### **D. Farmland**

North Carolina Executive Order Number 96 (NC EO 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 US Natural Resources Conservation Service (NRCS). These soils are determined by the Natural Resource 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 guidelines to minimize impacts.

Agricultural uses make up much of the Direct Community Impact Area (DCIA). Section 1 and Section 3 bypass alternatives bisect several large actively farmed properties. Since partial control of access is proposed, it is assumed that there will be one access point per parcel along the corridor. Therefore, remaining farmland split by the proposed corridor will have access on each side of the corridor and will remain farmable, although moving equipment across a divided four lane highway will likely affect farming operations.

### ***Section 1 (Alternatives 1C, 1D and 1F)***

Alternative 1C traverses four actively farmed properties and may require some right of way acquisition along the periphery of four other farms in the Sunbury area.

Alternative 1D bisects two actively farmed crops and may require some right of way acquisition along the periphery of four other farms in the Sunbury area.

Alternative 1F bisects four actively farmed properties and may require some right of way acquisition along the periphery of four other farms in the Sunbury area.

## ***Section 2 (Alternative 2B)***

Alternative 2B will likely encroach upon the periphery of all agricultural operations located adjacent to existing US 158 along Section 2.

## ***Section 3 (Alternatives 3B, 3C and 3D)***

Alternative 3B traverses five actively farmed properties and may require some right of way acquisition along the periphery of two other farms west of Blindman Road.

Alternative 3C bisects one actively farmed property and may require some right of way acquisition along the periphery of ten other farms located adjacent to existing US 158 and US 17. The bisected farm property is located in the path of Alternative 3C's proposed interchange with US 17, so it is assumed that most of this crop will be displaced as a result of Alternative 3C.

Alternative 3D traverses two actively farmed properties and may require some right of way acquisition along the periphery of three other farms along the south side of existing US 158.

A preliminary screening of farmland conversion impacts was completed for the project. Based on the results of the screening, NCDOT and NRCS will complete the remainder of the farmland conversion form for each project alternative.

Pasquotank County has a Voluntary Agricultural District (VAD) program. The planner indicated that there may be some VADs in the DCIA, but the County's VAD ordinance and maps are not available at this time. This information will be obtained prior to the final environmental document to determine potential impacts.

Gates County does not have a VAD program.

## **E. Community Resources**

### **1. Community Context, Direction and Notable Features**

#### **a. Population**

In 2010, Gates County's population was 12,197. The county seat and only incorporated municipality is Gatesville, about nine miles southwest of Sunbury.

As of 2010, Pasquotank County's population was 40,661. The Pasquotank county seat, and largest municipality in a 16-county area, is Elizabeth City. Located where the narrows of the Pasquotank River open up and the river begins widening out on its course to the Albemarle Sound, Elizabeth City is the economic and commercial hub of the northeastern North Carolina



mainland. The Dismal Swamp Canal is a means of transportation for thousands of pleasure boaters on the Intracoastal Waterway, and Elizabeth City has become a popular stop.

Because of their location, both Gates and Pasquotank Counties have travelers passing through to the Outer Banks, Elizabeth City, and the State of Virginia.

Gates County still relies on the agriculture and timber industry more than any other commercial enterprise. Six of the nine largest manufacturers in the County all rely on the timber businesses, while the majority of jobs are in agriculture.

#### **b. Communities**

Much of the project corridor and the overall DCIA have many rural characteristics, including large tracts of agricultural operations and low-density single family homes. Some commercial uses are scattered along the US 158 corridor, but most commercial uses include small, locally-owned businesses concentrated at the crossroads communities of Sunbury and Morgan's Corner.

A cluster of single family homes are located in Sunbury along both sides of Orchard Street, and low-density, modest single family homes are scattered throughout the DCIA. However, no identified subdivisions were observed within the DCIA.

A few mobile home parks are located within the DCIA. An unnamed mobile home park is located in Sunbury on the east side of NC 32 north of St. Paul Lane. Additionally, Old Lebanon Mobile Home Park is located on the east side of Firetower Road approximately 2,000 feet north of US 158. Morgan's Corner Mobile Home Park is located on the west side of Morgan's Corner Road approximately 1,400 feet north of US 158, and Forbes Mobile Home Park is located on the east side of Morgan's Corner Road approximately 750 feet north of US 158.

#### **c. Business Resources**

While a few new businesses have been constructed in the area since the 2010 Indirect and Cumulative Effects Screening Report, a number of vacant and abandoned buildings were observed throughout the DCIA, when field surveys were first conducted in 2010.

Although the main commercial centers in the area are located in Elizabeth City, several small-scale businesses/commercial uses are scattered throughout the DCIA. Most of these small-scale businesses are located at the crossroads communities of Sunbury and Morgan's Corner, while a few are scattered along US 158 between these communities.

A cluster of small-scale businesses are located near the intersection of US 158 and NC 32 in Sunbury. Dixie Auto Parts, a US Post Office, and Family Foods Supermarket / Shell Gas Station are located on the north side of US 158 just west of NC 32. A recently constructed

Family Dollar is located on the south side of US 158 just west of NC 32. A mini storage facility is located behind the Family Foods Supermarket / Shell Gas Station.

Sunco Gas Station is located on the northeast corner of US 158 and NC 32, and a car wash, Brinkley Lawn care & Landscaping, Cash Points (ATM), and tool repair business are located on the north side of US 158 just east of NC 32.

First Citizens Bank is located on the west side of NC 32 just north of US 158, and Hertford County Undertakers Gates Chapel, a hair salon, NAPA Auto Parts, and Bagley's Preventative Maintenance are located on the east side of NC 32 just north of US 158. Further north, Kellogg-Morgan Insurance Agency is located on the southeast corner of NC 32 and St. Paul Lane, and Townes Metal Works, an unnamed warehouse and Case Agriculture/B&S Enterprises are located on the east side of NC 32 just north of proposed Alternative 1F.

John Deere East Coast Equipment is located on the north side of US 158 approximately one mile east of Sugar Run Road. Further east, Peggy's Country Café is located on the north side of US 158 just east of Newland Road and S&S Group, Inc. (grading and excavating) is located on the north side of US 158 just west of Turnpike Road.

Everything Automotive is located on the northwest corner of US 158 and Firetower Road, and a truck maintenance shop is located on the south side of US 158 approximately 0.5 miles east of Firetower Road. Consignment Thrift Store is located on the north side of US 158 across from Millpond Road, Morgan's Corner Pizza and Mini Storage are located on the northwest corner of US 158 and Morgan's Corner Road, and Russell Auto Parts is located on the south side of US 158 at Morgan's Corner Road.

A recently constructed Shell Gas Station and Dollar General are located on the northwest and southwest corners of the US 158/US 17 intersection, respectively.

#### **d. Schools**

There are no schools located within the DCIA.

#### **e. Churches and Cemeteries**

Eleven churches and eight cemeteries are located in the DCIA. The churches are listed below:

- Beulah Baptist Church (south side of US 158 approximate 1,400 feet west of NC 32);
- St. John AME Zion Church (south side of US 158 approximately 0.4 miles east of NC 32);
- St. Peter's Episcopal Church (east side of NC 32 just south of St. Paul Lane);
- Philadelphia United Methodist Church (northeast corner of NC 32 and St. Paul Lane);
- St. Paul's Missionary Baptist Church (north side of St. Paul Lane approximately 1,500 feet east of NC 32);

- Congregational Christian Church (west side of NC 32 at St. Paul Lane);
- Ramoth Gilead Baptist Church (southeast corner of Schoolhouse Road and Crooked Run Road);
- Father Unity Christian Ministries (south side of Crooked Run Road just west of Firetower Road);
- Mt. Carmel Missionary Baptist Church (north side of US 158 just west of Blindman Road);
- Newland United Methodist Church (west side of Firetower Road just north of US 158); and
- Bethel AME Zion Church (east side of Firetower Road just south of Crooked Run Road)

St. John AME Zion, St. Paul's Missionary Baptist, Congregational Christian, and Bethel AME Zion Church all have cemeteries associated with them. In addition, unnamed cemeteries are located at the following locations:

- South side of US 158 just east of NC 32;
- South side of Crooked Run Road just east of Newland Road;
- East side of Firetower Road just north of US 158; and
- West side of Firetower Road just south of Crooked Run Road.

#### **f. Recreational Facilities**

Newland Community Building is located on the southeast corner of US 158 and Blindman Road.

Morgan's Corner Pulling Park is located on the south side of US 158 just west of Millpond Road. The Pulling Park hosts truck and tractor pulls and, according to their website, has an event about once per month between April and October.

River City Motocross Park is located on the north side of US 158 east of Morgan's Corner Road. The Park is privately owned and consists of two dirt tracks.

## **2. Demographics**

### **a. Population-Trends and Composition**

As shown in Table 12 (see Appendix F), the population in Census Tract 9701, Block Group 2 (Gates County) grew by 20.8% between 2000 and 2010, while the population in Gates County grew by 16% during the same time period. No physical growth indicators were observed in the DCIA. Census block group boundaries changed in Pasquotank County between 2000 and 2010. The boundary change was significant enough to make the demographic study areas incomparable; thus historical population trends (i.e., % change) in the Pasquotank County block groups and overall DSA were not analyzed to avoid statistical inaccuracies.

**b. Racial and Ethnic Make-up**

In 2010, 34.5% of the Demographic Study Area was non-white, while the non-white percentages of the population in Gates and Pasquotank Counties were 36.3% and 43.3%, respectively (see Table 13, in Appendix F). No minority populations exceeded 50% of the total Demographic Study Area population. The largest minority group in the Demographic Study Area was African American, making up 31% of the total population. The comparable population in Gates and Pasquotank Counties was 33.2% and 37.8%, respectively.

The percentage of Hispanics or Latinos in the Demographic Study Area (2.1%) was slightly higher than the comparable population in Gates County (1.4%), but lower than Pasquotank County (4.0%) (see Table 14, in Appendix F).

Based on this demographic assessment, it does not appear that there are notable minority populations in the Demographic Study Area at the Demographic Study Area level. When compared to Gates and Pasquotank Counties, the Demographic Study Area has a slightly lower percentage of African Americans. However, 46.4% of the population in Census Tract 9701, Block Group 3 (Gates County) identified themselves as African American, which is more than 10 percentage points higher than the comparable population in Gates County (33.2%). Therefore, Census data indicates a notable presence of an Environmental Justice population (minority) in the Demographic Study Area at the Block Group level.

Although not observed during the site visit, the Pasquotank County planner indicated that some minority (African American) families are located along Brothers Lane and Millpond Road within the DCIA. Additionally, the Gates County planner indicated that minority populations are sporadic throughout the southeastern portion of Gates County. It was noted that there may be some African American families located on Emory Lane and within the unnamed mobile home park on the east side of NC 32 north of US 158. However, the Gates County planner indicated that there are no minority communities or clusters within the DCIA or near any of the proposed alignments.

**c. Limited English Proficiency**

Based on the US Census Bureau American Community Survey 5-year Estimates (2006-2010), there are no special populations in the Demographic Study Area in which more than 5% of the adult population, or more than 1000 adults, speak English less than very well. This demographic assessment does not indicate the presence of a Limited English Proficiency (LEP) language group which exceeds the United States Department of Justice “Safe Harbor” threshold. In addition, the local planners are not aware of any LEP populations within the DCIA.

#### **d. Economics**

The project was reviewed for the percentage of the population below the poverty level, very poor (below 50% of the poverty level), and near poor (between 100% and 150% of the poverty level). The US Census Bureau American Community Survey 5-year Estimates (2006-2010) indicate that the actual percentage below poverty and below 50% of the poverty level in the Demographic Study Area was less than the comparable percentages in Gates and Pasquotank Counties. The percentage of the Demographic Study Area (8.1%) living between 100% and 150% of the poverty level is slightly higher than the comparable population in Gates County (7.7%) but lower than in Pasquotank County (9.3%).

Based on this demographic assessment, it does not appear that there are notable low-income populations in the Demographic Study Area at the Demographic Study Area or block group levels. Although the Gates and Pasquotank County Planners are not aware of any low-income populations or concentrations within the DCIA, the Gates County Planner indicated that some low-income families are most likely located within the unnamed mobile home park on the east side of NC 32 in Sunbury. Three other mobile home parks were observed (all in Pasquotank County) during the June 2012 site visit. Although not indicated by the local planner, these mobile home parks may also be potential indicators of low-income populations.

### **3. Plans and Development Regulations**

Pasquotank County adopted their Pasquotank County / Elizabeth City 2004 CAMA Land Use Plan in 2012. US 158 is a primary Hurricane Evacuation Route in northeastern North Carolina, and one of the Plan's key planning issues includes ensuring that existing and planned development is coordinated with existing and planned evacuation infrastructure. According to local representatives, there is no planned development within the DCIA.

According to local officials, Gates and Pasquotank Counties share similar visions for the US 158 corridor. Both counties want land uses along the corridor to remain similar to what it is today. Gates County's vision includes small scale commercial uses near Sunbury and rural residential and agricultural uses west of Sunbury to the County line. Pasquotank County's vision is limited residential and agricultural uses along US 158 from the Gates County line to SR 1367 (Firetower Road).

### **4. Potential Community Impacts**

#### **a. Residential & Business Relocations**

The residences and businesses that would be relocated are listed in Table 15.

**Table 15: Residential & Business Relocations**

<b>Alternative</b>	<b>Residential Relocations</b>	<b>Business Relocations</b>
Alt 1C	12	0
Alt 1D	10	1
Alt 1F	17	5
Alt 2B	27	4
Alt 3B	21	2
Alt 3C	57	9
Alt 3D	16	0

**b. Community/Neighborhood Cohesion and Stability**

***Section 1 (Alternatives 1C, 1D and 1F)***

Sunbury appears to be a cohesive community. Alternative 1C will bisect a cluster of single family homes in Sunbury on NC 32 just south of US 158. Some of these homes will be relocated, while the remaining homes will be split by the new location transportation facility. Therefore, Alternative 1C is anticipated to have notable cohesion effects to this area in Sunbury. Impacts to community cohesion are not anticipated as a result of Alternative 1D and 1F.

***Section 2 (Alternative 2B)***

Impacts to community cohesion and stability are not anticipated as a result of Alternative 2B.

***Section 3 (Alternatives 3B, 3C and 3D)***

For Alternative 3B, a cul-de-sac is proposed on SR 1352 (Brothers Lane) on the north side and south side of proposed US 158 crossing of SR 1352 (Brothers Lane). This proposed alternative has the potential to be a barrier to the cluster of single family homes located along SR 1352 (Brothers Lane) just south of proposed Alternative 3B, by cutting off their access to US 158 and potentially isolating them from the Morgan's Corner community that was previously more accessible. According to the Pasquotank County Planner, potential Environmental Justice populations (minority) are located on Brothers Lane.

Morgan's Corner Pulling Park is anticipated to be displaced as a result of Alternative 3B. Overall, notable impacts to community cohesion near Morgan's Corner are anticipated as result of Alternative 3B.

For Alternative 3C, a cul-de-sac is proposed on Morgan's Corner Road on the north side of proposed crossing of the road. This proposed alternative has the potential to be a barrier to the single family homes, including Morgan's Corner Mobile Home Park and Forbes Mobile Home Park, located along Morgan's Corner Road north of proposed Alternative 3C, by cutting off their

access to US 158 and potentially isolating them from the Morgan's Corner community that was previously more accessible. Based on site visit observations, potential Environmental Justice (low-income) population may be located in the two mobile home parks on Morgan's Corner Road. Overall, moderate impacts to community cohesion are anticipated as a result of Alternative 3C.

Impacts to community cohesion are not anticipated as a result of Alternative 3D.

**c. Economic and Business Resources**

***Section 1 (Alternatives 1C, 1D and 1F)***

According to the Gates County planner, Sunbury is an economically distressed community and that often relies on drive-by traffic. Therefore, there is concern that constructing a bypass around Sunbury may further impact the community's economy by reducing exposure to its businesses. However, the planner feels that Alternative 1C would have the least negative economic impact on Sunbury compared to the other two bypass alternatives since it is closest to Sunbury. Overall, business and economic impacts as a result of Alternative 1C are anticipated to be low since it diverts traffic just south (approximately 500 feet) of Sunbury's main crossroads.

The planner feels that Alternative 1D would negatively impact Sunbury's economy by diverting traffic away from Sunbury's main crossroad of existing US 158 / NC 32. Overall, business and economic impacts as a result of Alternative 1D are anticipated to be moderate to high since the alternative diverts traffic approximately 0.25 miles away from businesses in Sunbury.

The planner feels that Alternative 1F would have the most negative impact on Sunbury's economy of the three proposed bypass alternative by diverting traffic the furthest away from Sunbury's main crossroad of existing US 158 / NC 32. Overall, business and economic impacts as a result of Alternative 1F are anticipated to be high due to business relocations and the diversion of traffic more than 0.5 miles away from businesses in Sunbury.

***Section 2 (Alternative 2B)***

Overall, business and economic impacts as a result of Alternative 2B is anticipated to be low.

***Section 3 (Alternatives 3B, 3C and 3D)***

Alternatives 3B, 3C and 3D propose to close existing US 158 with a cul-de-sac just east of the existing US 158 / US 17 intersection. Bypassing Morgan's Corner, along with closing existing US 158 with a cul-de-sac, may negatively impact business for the recently constructed Shell Gas Station on the northwest corner of the existing US 158 / US 17 intersection as well as Morgan's Corner Pizza, as these businesses most likely often rely on drive-by business. Overall, business and economic impacts are anticipated to be moderate as a result of Alternative 3B due to business relocations and the diversion of traffic away from existing businesses near Morgan's Corner.

Overall, business and economic impacts as a result of Alternative 3C are anticipated to be moderate to high.

Overall, business and economic impacts as a result of Alternative 3D are anticipated to be low to moderate. Although no business relocations are anticipated, this alternative diverts traffic the furthest distance away from Morgan's Corner and may negatively impact businesses in the area that often rely on drive-by business (e.g., Shell Gas Station, Morgan's Corner Pizza, Dollar General).

#### **d. Land Use, Character and Economic Development Plans**

According to local officials, Gates and Pasquotank Counties share similar visions for the US 158 corridor, in which both counties want land uses along the corridor to remain similar to what it is today. Gates County envisions small scale commercial uses near Sunbury and rural residential and agricultural uses west of Sunbury to the County line. Pasquotank County's vision includes limited residential and agricultural uses along US 158 from the Gates County line to SR 1367 (Firetower Road), and a limited service commercial corridor from SR 1367 to US 17.

According to the 2010 Indirect and Cumulative Effects Screening Report, STIP Project R-2579, along with STIP Project R-2578, should improve east - west mobility, particularly between I-95 and the coastal counties. The increased mobility provided by STIP Project R-2579 may spur some small-scale commercial development near Sunbury and Morgan's Corner. However, these types of development are reliant on an improved economy, and they are consistent with locally adopted land use plans.

In Pasquotank County, there has been little new development recently, and there are no approved site plans for future residential or commercial development in the Future Land Use Study Area. Approved developments along US 17 north of the Future Land Use Study Area will likely support employment in Virginia.

#### ***Section 1 (Alternatives 1C, 1D and 1F)***

The 2004 Gates County CAMA Core Land Use Plan classifies the US 158 / NC 32 intersection / Sunbury area as a developed and in-fill development area that contains, or is likely to experience, high to medium density development. All of the Section 1 alternatives bypass Sunbury and would divert traffic away from Sunbury. To the extent that development at the existing US 158/ NC 32 Sunbury area is dependent on direct access to US 158, these bypass alternatives will have an effect on the vision identified in the land use plan.

#### ***Section 2 (Alternative 2B)***

Alternative 2B is consistent with both Gates and Pasquotank County's vision for US 158 as well as locally adopted land use plans.



### ***Section 3 (Alternatives 3B, 3C and 3D)***

According to local land use plans and the Pasquotank County Planner, the County's visions and plans for the portion of the county near Section 3 consists of limited residential and agricultural uses along existing US 158 from the western end of Section 3 to Firetower Road, and limited service commercial uses from Firetower Road through Morgan's Corner to US 17. Since Alternative 3B splits from existing US 158 west of Blindman Road and bypasses existing US 158 south of Morgan's Corner, this alternative is anticipated to divert traffic approximately 1,100 feet south of the Morgan's Corner commercial area. Therefore, low to moderate impacts are anticipated.

Alternative 3C's proposed alignment follows existing US 158 until just west of Morgan's Corner Road and bypasses only a small portion of US 158 between Morgan's Corner Road and US 158. Therefore, low impacts are anticipated.

Alternative 3D splits from existing US 158 west of Blindman Road and bypasses existing US 158 the furthest distance south of Morgan's Corner, and is anticipated to divert traffic approximately 0.5 miles south of the Morgan's Corner commercial area. Therefore, moderate impacts are anticipated.

#### **e. Community Facilities**

### ***Section 1 (Alternatives 1C, 1D and 1F)***

Impacts to community facilities are not anticipated as a result of Alternative 1C.

Alternative 1D will displace the Sunbury Volunteer Fire Department Station 40, which is located on the east side of NC 32. Additionally, an unnamed cemetery is located on the west side of NC 32 just north of Alternative 1D's proposed crossing. Given the cemetery's close proximity to the road, minor roadway improvements on NC 32 near the proposed intersection may potentially encroach on the periphery cemetery.

It anticipated that Alternative 1F would alter the physical and visual environment of St. Paul's Missionary Baptist Church, located on St. Paul Lane just southwest of Alternative 1F's proposed crossing of NC 32, by removing existing structures and natural vegetation. Additionally, it is anticipated that the church and cemetery will experience an increase in traffic noise as a result of this alternative.

### ***Section 2 (Alternative 2B)***

The Pasquotank Newland Volunteer Fire Department will be relocated by Alternative 2B.

### ***Section 3 (Alternatives 3B, 3C and 3D)***

Right of way encroachment impacts to Mt. Carmel Missionary Baptist Church and Newland United Methodist Church are anticipated as a result of Alternative 3C, although no buildings would be directly impacted. In addition, impacts to the Newland Community Building

are anticipated. The Community Building appeared to be vacant and in disrepair, and the Pasquotank County Planner indicated that the building has not been in use “for a long time”.

It appears that the Pasquotank County Convenience Recycling Center may be relocated as a result of Alternative 3C. Alternative 3C will also impact the Newland-Providence Ruritan Club.

Impacts to community facilities are not anticipated as a result of Alternative 3B or 3D.

**f. Pedestrian, Bicycle and Transit Resources**

***Section 2 (Alternative 2B)***

SR 1002 (Acorn Hill Road/Folly Road) in Gates County is part of North Carolina Bicycle Route 3 – Ports of Call. Safety is currently a concern when traveling on Acorn Hill Road and crossing US 158. While widening US 158 by approximately 140 feet will create a longer crossing and likely a greater delay for bicyclists crossing US 158 along this portion of NC Bicycle Route 3, the median refuge as part of Alternative 2B is anticipated to improve safety at this crossing for cyclists.

**g. Recreation**

***Section 3 (Alternatives 3B and 3C)***

Alternative 3B bisects Morgan’s Corner Pulling Park located on the south side of US 158 near Morgan’s Corner.

Alternative 3C traverses the southern portion of River City Motocross Park located on the north side of US 158 near Morgan’s Corner.

**h. Community Safety and Emergency Response**

Several citizens expressed concerns regarding safety at the 2007 and 2011 Citizens Informational Workshops. It was noted that the existing US 158 roadway lacks the shoulders need to safely pull off the roadway, safety is also a concern when traveling on Acorn Hill Road and crossing US 158, and curves in the existing roadway are too sharp and contribute to accidents. Improvements to US 158 are intended to address the safety issues.

Emergency Medical Services (EMS) representatives in Gates and Pasquotank Counties anticipate moderate to high temporary impacts on emergency response services during construction of this highway project. The Gates County EMS official indicated that detour routes around the US 158 / NC 32 junction in Sunbury are “quite lengthy”, and that the Sunbury Volunteer Fire Department located on NC 32 south of US 158 has response districts north of US 158. The Pasquotank County EMS official stated that US 158 is a “major artery to many

secondary roads” in the northern area of their response range, which is an area of moderate call volume. Pasquotank County EMS often provides paramedic mutual aid to Gates County EMS and they often meet along US 158 to assist ambulances with critical patients. The Pasquotank County EMS official indicated that most secondary roads in the area are typically very passable; however, these roads often flood during heavy rains and may be problematic if detour routes are required. The Pasquotank County EMS official indicated that County EMS can typically work around any issues as long as they are updated with route changes and construction progress in advance. Lane closures during construction will be minimized through coordination with the contractor.

**i. School Bus Routes**

The Gates County public schools transportation official indicated that six Gates County schools buses make a total of nine daily trips along the studied portion of US158. In addition, the Elizabeth City-Pasquotank County public schools transportation official stated that nine county schools buses make a total of 18 daily trips along the studied portion of us 158. Both school officials indicated that any temporary closure of US 158 would be a concern when school is in session.

The Gates County school official indicated that using Bosley Road near Sunbury as a detour route for school buses would be a concern due to existing bridge problems on this road.

**j. Recurring Community/ Neighborhood Impacts**

It does not appear that any of the DCIA has been previously impacted by transportation or other development projects. The widening of US 17 in Pasquotank County appears to have had no negative effects and does not appear to have impacted development patterns in the area. Therefore, recurring community / neighborhood impacts are not anticipated as a result of STIP Project R-2579.

**k. Environmental Justice**

***Section 1 (Alternatives 1C, 1D and 1F)***

For Alternatives 1C and 1D, census data indicates a notable presence of an Environmental Justice population (minority) at the block group level (Census Tract 9701, Block Group 3). This block group is located in the Gates County portion of the DSA south of US 158. Although minority communities were not observed within the DCIA during the site visit, the Gates County planner indicated that minority populations are sporadic throughout the southwestern portion of Gates County. However, the Gates County planner indicated that there are no minority or low income communities or clusters within the DCIA or near any of the proposed alignments. Therefore, while adverse community impacts are anticipated with Alternatives 1C and 1D, impacts appear to affect all populations equivalently; 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.

For Alternative 1F, the Gates County planner indicated that there are no minority or low-income communities or clusters within the DCIA or near any of the proposed alignments, but indicated that some minority and/or low-income families may live in the unnamed mobile home park on the east side of NC 32 that would be relocated as a result of Alternative 1F and may impact a potential Environmental Justice population. Additionally, it appears that most of the residential relocations associated with Alternative 1F are located in the mobile home park. Therefore, notable adverse community impacts are anticipated with Alternative 1F and these effects appear to affect potential Environmental Justice populations notably more than the general population; thus, impacts to potential minority and/or low-income populations appear to be disproportionately high and adverse. With this alternative, benefits and burdens resulting from the project are not anticipated to be equitably distributed through the community. Local citizens (including this affect group) have been notified of previous public meeting meetings for this project through the local media, supplemental small group meetings will be held with these potential relocatees (by invitation) prior to the next Public Hearing to determine the severity of the effects. Mitigation would then be considered.

### ***Section 2 (Alternative 2B)***

Census data indicates a notable presence of an Environmental Justice population (minority) at the block group level (Census Tract 9701, Block Group 3). This block group is located in the Gates County portion of the DSA south of US 158. According to the Gates County Planner, a few minority families may live on Emory Lane, which is located east of Sunbury within the aforementioned block group. Based on site visit observations, three homes are located on Emory Lane and no minority populations were observed. It appears that the two single family homes on the southeast and southwest quadrants of US 158 / Emory Lane may be impacted as a result of Alternative 2B. Given that Alternative 2B is anticipated to relocate 27 residences, notably adverse community impacts are anticipated with Alternative 2B but appear to affect all populations equivalently; 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.

### ***Section 3 (Alternative 3B)***

Although there are no notable Environmental Justice populations at the DSA level or block group level in the Pasquotank County portion of the DSA, the Pasquotank County Planner indicated that some minority (African American) families are located along Millpond Road and Brothers Lane. The Relocation Report (dated June 19, 2012) documented that 21 residential relocations are anticipated with Alternative 3B, of which 8 would be minority. A minority relocation rate of 38% is consistent with the 2010 Census Black or African American county-wide rate of 37.8%. Therefore, while adverse community impacts are anticipated with Alternative 3B, impacts appear to affect all populations equivalently; 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. Public involvement and outreach activities must ensure full and fair participation of all potentially affected communities in the transportation decision-making process.

### ***Section 3 (Alternative 3C)***

Although there are no notable Environmental Justice populations at the DSA level or block group level in the Pasquotank County portion of the DSA, the Pasquotank County Planner indicated that some minority (African American) families are located along Millpond Road and Brothers Lane.

As previously mentioned, the proposed cul-de-sac on Morgan's Corner Road just north of US 158 has the potential to be a barrier to the single family homes, including Morgan's Corner Mobile Home Park and Forbes Mobile Home Park, located along Morgan's Corner Road, by changing their access to US 158 and removing direct access to the Morgan's Corner community that was previously more accessible. Although not indicated by the local planner, Morgan's Corner Mobile Home Park and Forbes Mobile Home Park may be potential indicators of low-income populations.

Notably adverse community impacts are anticipated with Alternative 3C and these effects appear to have higher adverse effects on the potential Environmental Justice populations than on the general population; thus impacts to potential low-income populations appear to be disproportionately high and adverse. Benefits and burdens resulting from Alternative 3C are not anticipated to be equitably distributed throughout the community. Local citizens (including this affect group) have been notified of previous public meeting meetings for this project through the local media, supplemental small group meetings will be held with these potential relocatees (by invitation) prior to the next Public Hearing to determine the severity of the effects. Mitigation would then be considered.

### ***Section 3 (Alternative 3D)***

Although there are no notable Environmental Justice populations at the DSA level or block group level in the Pasquotank County portion of the DSA, the Pasquotank County Planner indicated that some minority (African American) families are located along Millpond Road and Brothers Lane. Very few, if any, single family homes on Millpond Road and Brothers Road would be relocated as a result of Alternative 3D. The homes within close proximity to the proposed alignment's crossing of Millpond Road and Brothers Lane would experience visual impacts and increased traffic noise.

Moderately adverse community impacts are anticipated with Alternative 3D but appear to affect all populations equivalently; 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.

### **I. Limited English Proficiency (LEP)**

The DSA data indicate there are no language groups within the DSA in which more than 5% of the adult population or 1,000 persons speak English less than “Very Well”. Therefore, demographic assessment does not indicate the presence of LEP language groups that exceed the Department of Justice’s Safe Harbor threshold. However, NCDOT will include notice of Right of Language Access for future meetings for this project and may include other measures deemed necessary to ensure meaningful participation.

### **F. Indirect And Cumulative Effects**

Despite the relatively large amount of available land, local officials indicate that the lack of centralized sewer system and poor soils is a considerable constraint to development. Local officials indicate that there are no approved site plans for any type of development in the Future Land Use Study Area, other than an occasional single-family. In addition, the environmental features located within the Future Land Use Study Area appear to be incorporated in local protections. While development is not totally restricted in or near these environmental features, there are regulations to protect these features in the study area.

### **G. Traffic Noise Analysis**

In accordance with Title 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (Title 23 CFR 772) and the North Carolina Department of Transportation Traffic Noise Abatement Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed Federal or Federal-aid highway projects for construction of a highway or interchange on new location, improvements of an existing highway that significantly changes the horizontal or vertical alignment or increases the vehicle capacity, or projects that involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM®) approved by the Federal Highway Administration and by following procedures detailed in Title 23 CFR 772 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 *US 158 from West of Sunbury to US 17* can be viewed in the Project Development & Environmental Analysis Unit, Century Center Building A, 1010 Birch Ridge Drive, Raleigh.

## **1. 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 the table below. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria (NAC) or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Abatement Policy.

Correlating to the traffic noise impact threshold for FHWA NAC “B” land uses, the 71 dB(A) noise level contour is predicted to occur 66 feet from the center of the proposed US 158 alignment and the 66 dB(A) noise level contour is predicted to occur 100 feet from the center of the proposed US 158 alignment (Alternatives 1C, 1D, and 1F). The 71 dB(A) noise contour is predicted to occur 55 feet from the center of the proposed US 158 alignment (Alternative 2B) and the 66 dB(A) noise level contour is predicted to occur 107 feet from the center of the proposed US 158 alignment. The 71 dB(A) noise contour is predicted to occur 69 feet from the center of the proposed US 158 alignment (Alternatives 3B, 3C, and 3D) and the 66 dB(A) noise level contour is predicted to occur 127 feet from the center of the proposed US 158 alignment. Table 16 shows the results of the traffic noise analysis.

**Table 16: Predicted Traffic Noise Impacts by Alternative**

Alternative	Approximate # of Impacted Receptors Approaching or Exceeding FHWA NAC <sup>2</sup>							Substantial Noise Level Increase <sup>3</sup>	Impacts Due to Both Criteria <sup>4</sup>	Total Impacts Per 23 CFR 772 <sup>5</sup>
	A	B	C	D	E	F	G			
Alt. 1C <sup>6</sup>	0	5	0	0	0	0	0	0	0	5
Alt. 1D <sup>6</sup>	0	5	0	0	0	0	0	0	0	5
Alt. 1F <sup>6</sup>	0	4	0	0	0	0	0	0	0	4
Alt. 2B <sup>6</sup>	0	14	0	0	0	0	0	0	0	14
Alt. 3B <sup>6</sup>	0	11	0	0	0	0	0	2	0	11
Alt. 3C <sup>6</sup>	0	38	0	0	0	0	0	0	0	38
Alt. 3D <sup>6</sup>	0	15	0	0	0	0	0	5	0	15
<p>1. This table presents the number of build-condition traffic noise impacts as predicted for the build-condition alternative presently under consideration.</p> <p>2. Predicted traffic noise level impact due to approaching or exceeding NAC (refer to Table 3, pg 6 of noise report).</p> <p>3. Predicted “substantial increase” traffic noise level impact (refer to Table 4, pg 7 of the noise report).</p> <p>4. Predicted traffic noise level impact due to exceeding NAC <i>and</i> “substantial increase” in build-condition noise levels.</p> <p>5. The total number of predicted impacts is not duplicated if receptors are predicted to be impacted by more than one criterion.</p> <p>6. The number of build-condition impacts is lower than the no-build condition due to receptors acquired as right-of-way.</p>										

## **2. No Build Alternative**

The Traffic Noise Analysis also considered traffic noise impacts for the No-Build alternative. If the proposed project does not occur, 100 receptors are predicted to experience traffic noise impacts and the future traffic noise levels will increase by approximately 3 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.



### **3. 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 allowable abatement measure quantity (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 quantity value of \$37,500 per benefited receptor, causing this abatement measure to be unreasonable.

### **4. 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 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. 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 significant change in the project scope, vehicle capacity or alignment.

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 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.

## **H. Air Quality Analysis**

### **1. Introduction**

A project-level qualitative air quality analysis was prepared for this project. This project is not anticipated to create any adverse effects on the air quality of this attainment area. A copy of the unabridged version of the full technical report entitled Revised Air Quality Analysis, dated February 27, 2013 can be viewed at the Project Development & Environmental Analysis Unit, Century Center Building A, 1010 Birch Ridge Drive, Raleigh.

### **2. Attainment Status**

This project is located in Gates and Pasquotank Counties, which has been determined to comply with the National Ambient Air Quality Standards. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

### **3. Mobile Source Air Toxics (MSAT)**

#### **a. Background**

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. The entire MSAT report is located in Appendix I.

**b. Consideration of MST 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; or
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.

**c. Projects with Higher Potential MSAT Effects**

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. We expect a limited number of projects to meet this two-pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;

And also

- Proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts, including completion of a quantitative analysis to forecast local-specific emission trends of the priority MSAT for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of a project-level air quality analysis. If the analysis for a project in this category indicates meaningful differences

in levels of MSAT emissions among alternatives, mitigation options should be identified and considered.

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.

#### **d. Qualitative MSAT Analysis**

A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

[www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm](http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm)

For each alternative in this SEA, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for this project is not available. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 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 in nearly all cases.

The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along US 158, from SR 1429 (Sugar Run Road) to SR 1002 (Acorn Hill Road) under Alternatives 2A and 2B, and from SR 1363 (School House Road) to US 17 under Alternative 3C. 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 there would be higher MSAT emissions in the study area relative to the No Build Alternative due to increased VMT. There also could be increases in MSAT levels in a few localized areas where VMT increases. However, EPA's vehicle and fuel regulations will bring about lower MSAT levels for the area in the future than today.

**e. 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.

**4. Construction Air Quality**

Air Quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. During construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the Contractor. Any burning done will be done in accordance with applicable local laws and ordinances and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. Care will be taken to ensure burning will be done at the greatest distance practical from dwellings and not when atmospheric conditions are such as to create a hazard to the public. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits. Burning will be performed under constant surveillance. Also during construction, measures will be taken to reduce the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents.

**5. Summary**

Vehicles are a major contributor to decreased air quality because they emit a variety of pollutants into the air. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. New highways or the widening of existing highways increase localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion and because vehicle emissions will decrease in areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly.

The project is located in Gates and Pasquotank Counties,, 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.

## **I. Hazardous Materials**

Based on the Geographical Information Systems (GIS) technology and a field reconnaissance study, 14 sites were identified that may formerly or presently contain petroleum underground storage tanks (USTs) within the project limits. A machine shop, welding shop and a feed and seed store were also identified within the proposed project corridor. NCDOT anticipates low to non-existent monetary and scheduling impacts will result from these sites. No other geo-environmental concerns were found within the project limits. Table 17 (See Appendix G) lists all sites. All of the sites listed in the table are anticipated to present low geoenvironmental impacts to the project.

No hazardous waste sites or landfills were identified within the project limits.

## **VI. COMMENTS AND COORDINATION**

### **A. Public Involvement**

On February 6, 2007, a Citizens Informational Workshop (CIW) was held at the Newland Providence Ruritan Club in Morgans Corner to introduce this project to the public and obtain their comments and suggestions about the improvements. Approximately 182 people attended. A second CIW was held on May 23, 2011 at the Newland Providence Ruritan Club. Approximately 93 citizens attended the second CIW. Maps showing study alternative corridors were displayed at the more recent CIW.

Some of the comments expressed at both CIW's were as follows:

- The existing roadway lacks the shoulders needed to safely pull off of the roadway.
- Safety is a concern when travelling on SE 1002 (Acorn Hill Road) and crossing US 158.
- Curves in the existing roadway are too sharp and contribute to accidents.
- Attendees wanted to know how their property would be affected by the proposed alignments.

### **B. NEPA/404 Merger Process**

The merger process is a process to streamline the project development and permitting processes, agreed to by the USACE, NCDENR (DWQ, DCM), FHWA and NCDOT and supported by other stakeholder agencies and local units of government. To this effect, the Merger 01 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/SEPA decision-making phase of transportation projects. The merger process allows agency representatives to work more efficiently (quicker and comprehensive evaluation and resolution of the issues) by providing a common forum for them to discuss and find ways to comply with key elements of their agency's mission. The merger process helps to document how competing agency mandates are balanced during a shared decision-making process, which results in agency representatives reaching a "compromise based decision" to the regulatory and individual mandates.

The concurrence and precursor meetings held to date are summarized below.

### **Purpose and Need (Concurrence Point 1):**

On May 24, 2007 Merger Team met to discuss concurrence on Purpose and Need/Study Area (Concurrence Point 1). The purpose and need of the project was defined as follows:

**“To improve safety along US 158, increase capacity and to enhance the function of the highway as a Strategic Highway Corridor and Hurricane Evacuation Route.”**

Also, the team concluded that the study corridor would be increased to 2000 feet in the vicinity of the Great Dismal Swamp Wildlife Refuge.

### **Detailed Study Alternatives (Concurrence Point 2):**

On November 16, 2011 the Merger Team met to discuss Alternatives (CP 2). The Team agreed Alternatives 1C, 1D, 1F, 2A, 2B, 3B, 3C and 3D would be carried forward for further study. The Division of Coastal Management requested the Alternative 2B description be revised.

Alternative 2B description has been revised to: “constructing four new lanes to the south of existing roadbed in the area of Great Dismal Swamp Wildlife Refuge, to avoid impact to the refuge.” Alternatives 2A and 2B are a “best fit” in areas outside the refuge.

### **Bridging Decisions (Concurrence Point 2A):**

The Merger Team met at the project site on October 4, 2012 and reached concurrence on bridging options for high quality wetlands and major hydraulic crossings for the project (see Table 2). The team also agreed to drop Alternative 2A.

### **C. Public Hearing**

A public hearing will be held following the circulation of this document. This public hearing will provide more detailed information to the public about the proposed improvements. The public will be invited to make additional comments or voice concerns regarding the proposed project.



#### **D. Other Agency Coordination**

Federal, state, and local agencies were consulted during the preparation of this SEA. Written comments were received and considered from agencies noted with an asterisk (\*) during the preparation of this assessment.

- U.S. Army Corps of Engineers
- U.S. Environmental Protection Agency
- U.S. Fish and Wildlife Service
- \* State Clearinghouse
- \* N.C. Department of Cultural Resources
- \* N.C. Department of Environment and Natural Resources
- N.C. Department of Public Instruction
- \* N.C. Wildlife Resources Commission
- N.C. Division of Environmental Health
- \* N.C. Division of Forest Resources
- N.C. Division of Parks and Recreation
- \* N.C. Division of Coastal Management
- \* County of Pasquotank
- \* Gates County Planner

These comments and related issues, included in Appendix B, have been addressed in this document.

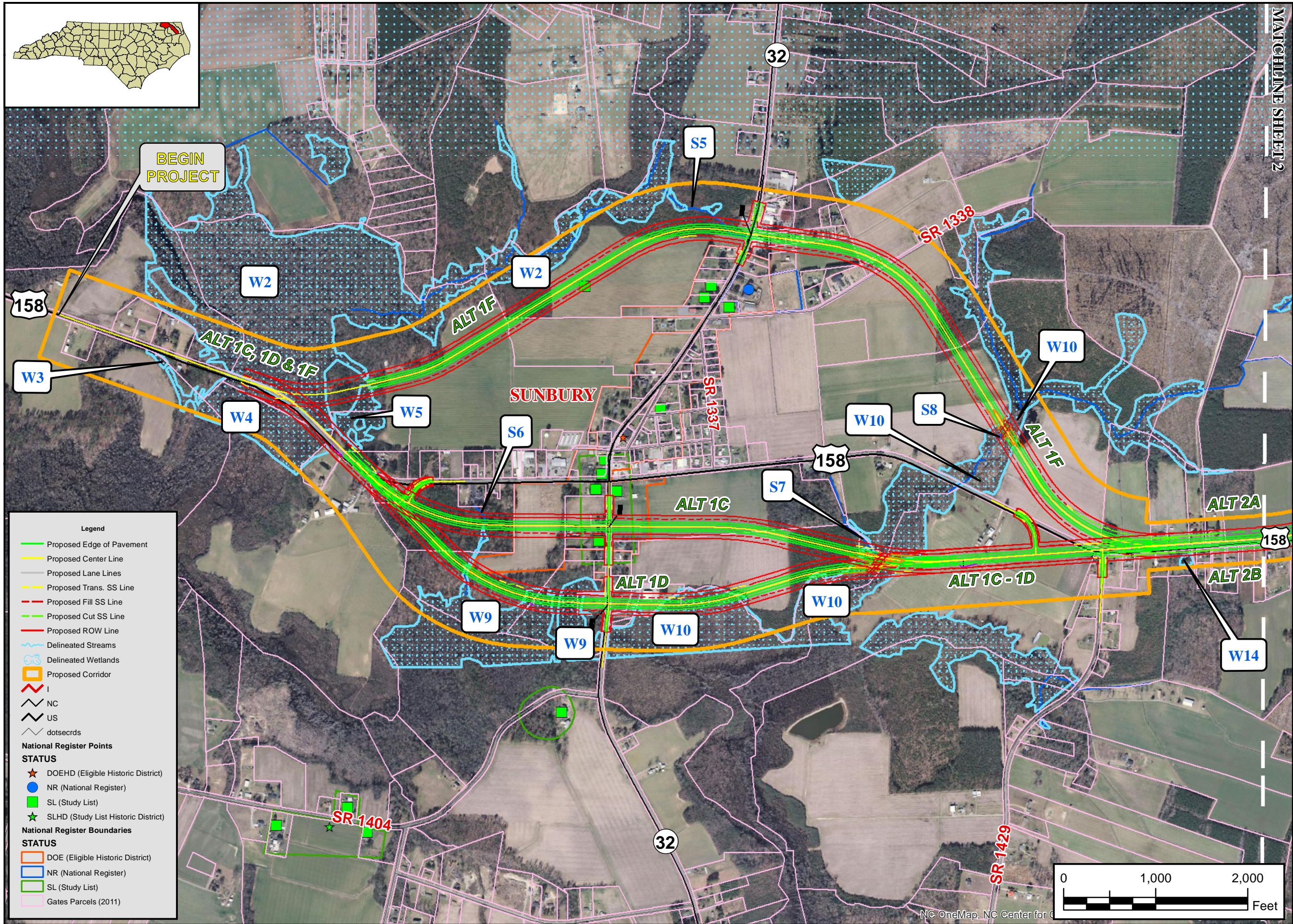
# **Appendix A**

## **Figures**









BY:  
J.TORTORELLA



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

**PROJECT ALTERNATIVE MAP**  
**US 158 WIDENING**  
**FROM NC 32 IN SUNBURY TO US 17**  
**AT MORGAN'S CORNER**  
GATES & PASQUOTANK COUNTIES  
TIP PROJECT R-2579



County: **GATES & PASQUOTANK**

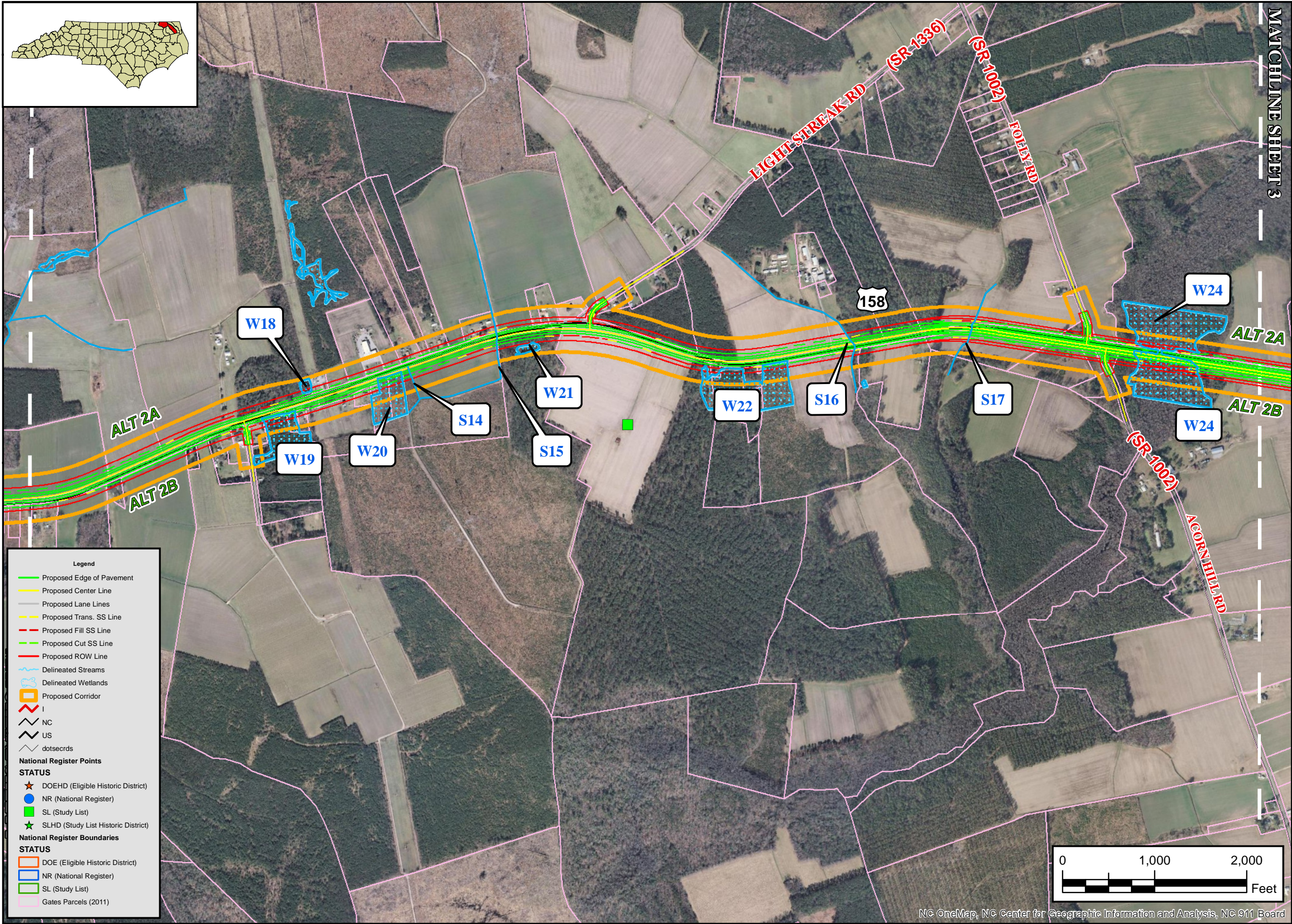
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Date: December 2013

**Figure**  
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**Sheet 1 of 7**





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

PROJECT ALTERNATIVE MAP  
US 158 WIDENING  
FROM NC 32 IN SUNBURY TO US 17  
AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTIES  
TIP PROJECT R-2579



County: **GATES & PASQUOTANK**

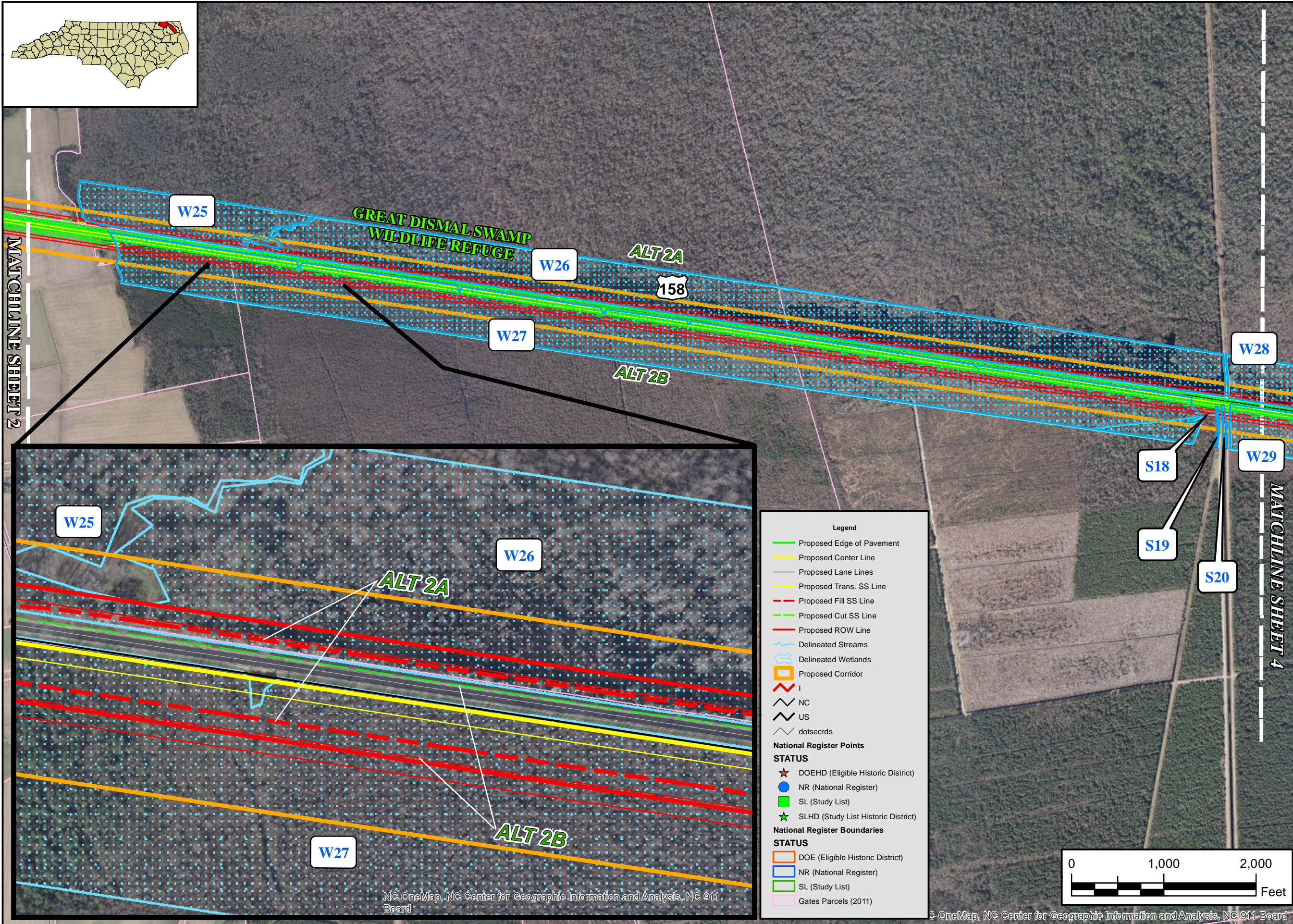
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Date:  
December 2013

**Figure**  
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**Sheet 2 of 7**





BY:  
J.TORTORELLA



NORTH CAROLINA DEPARTMENT  
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DIVISION OF HIGHWAYS  
PROJECT DEVELOPMENT AND  
ENVIRONMENTAL ANALYSIS UNIT

PROJECT ALTERNATIVE MAP  
US 158 WIDENING  
FROM NC 32 IN SUNBURY TO US 17  
AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTIES  
TIP PROJECT R-2579B



County: **GATES & PASQUOTANK**

Div: 1 TIP# R-2579

WBS: 38805.1.1

Date: December 2013

**Figure**  
**2**  
Sheet 3 of 7

**Legend**

- Proposed Edge of Pavement
- Proposed Center Line
- Proposed Lane Lines
- Proposed Trans. SS Line
- Proposed Fill SS Line
- Proposed Cut SS Line
- Proposed ROW Line
- Delineated Streams
- Delineated Wetlands
- Proposed Corridor
- I
- NC
- US
- dotsecrds

**National Register Points**

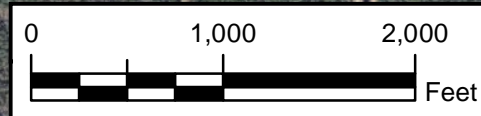
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- DOEHD (Eligible Historic District)
- NR (National Register)
- SL (Study List)
- SLHD (Study List Historic District)

**National Register Boundaries**

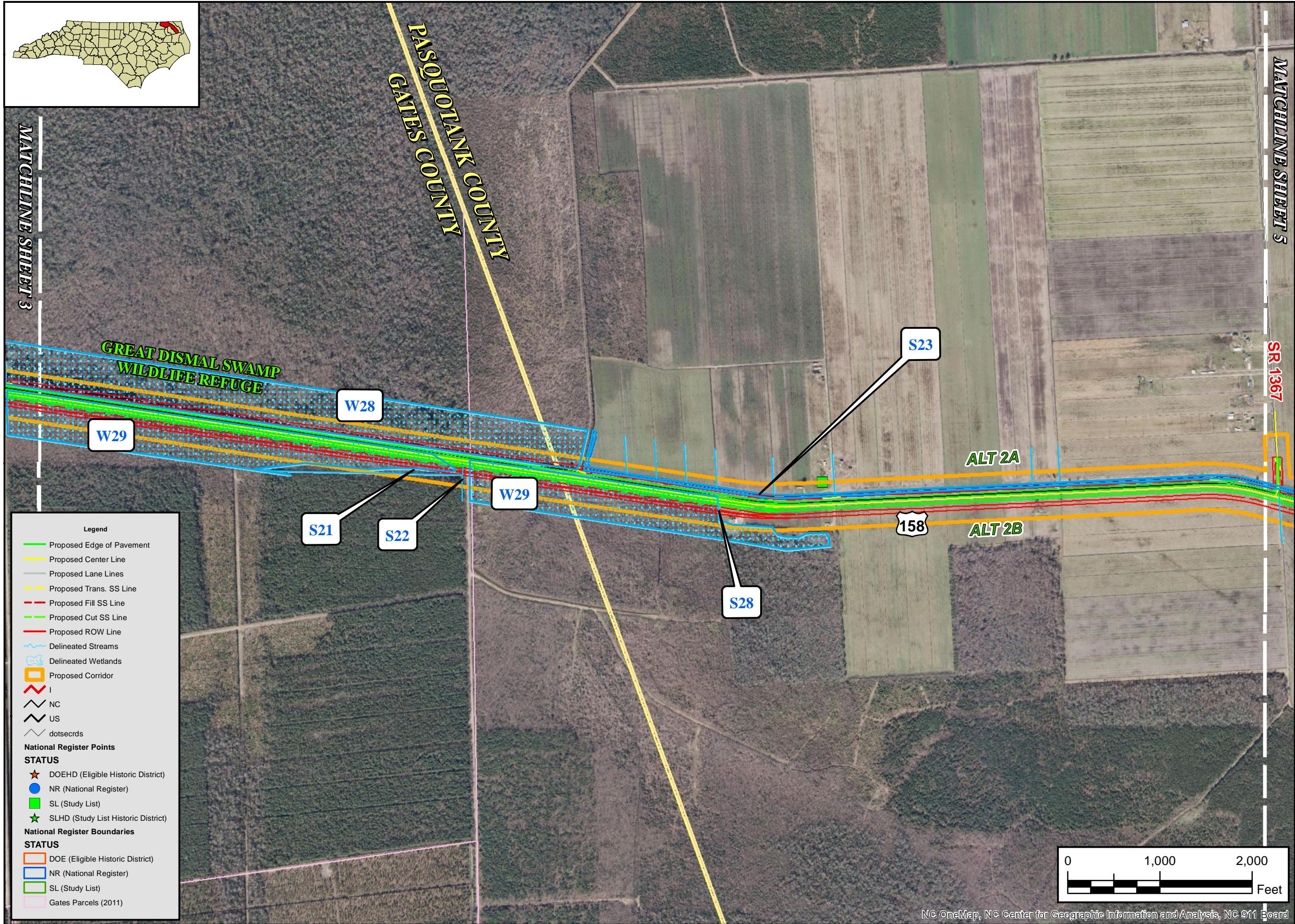
**STATUS**

- DOE (Eligible Historic District)
- NR (National Register)
- SL (Study List)
- Gates Parcels (2011)



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ENVIRONMENTAL ANALYSIS UNIT

PROJECT ALTERNATIVE MAP  
US 158 WIDENING  
FROM NC 32 IN SUNBURY TO US 17  
AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTIES  
TIP PROJECT R-2579



County: **GATES & PASQUOTANK**

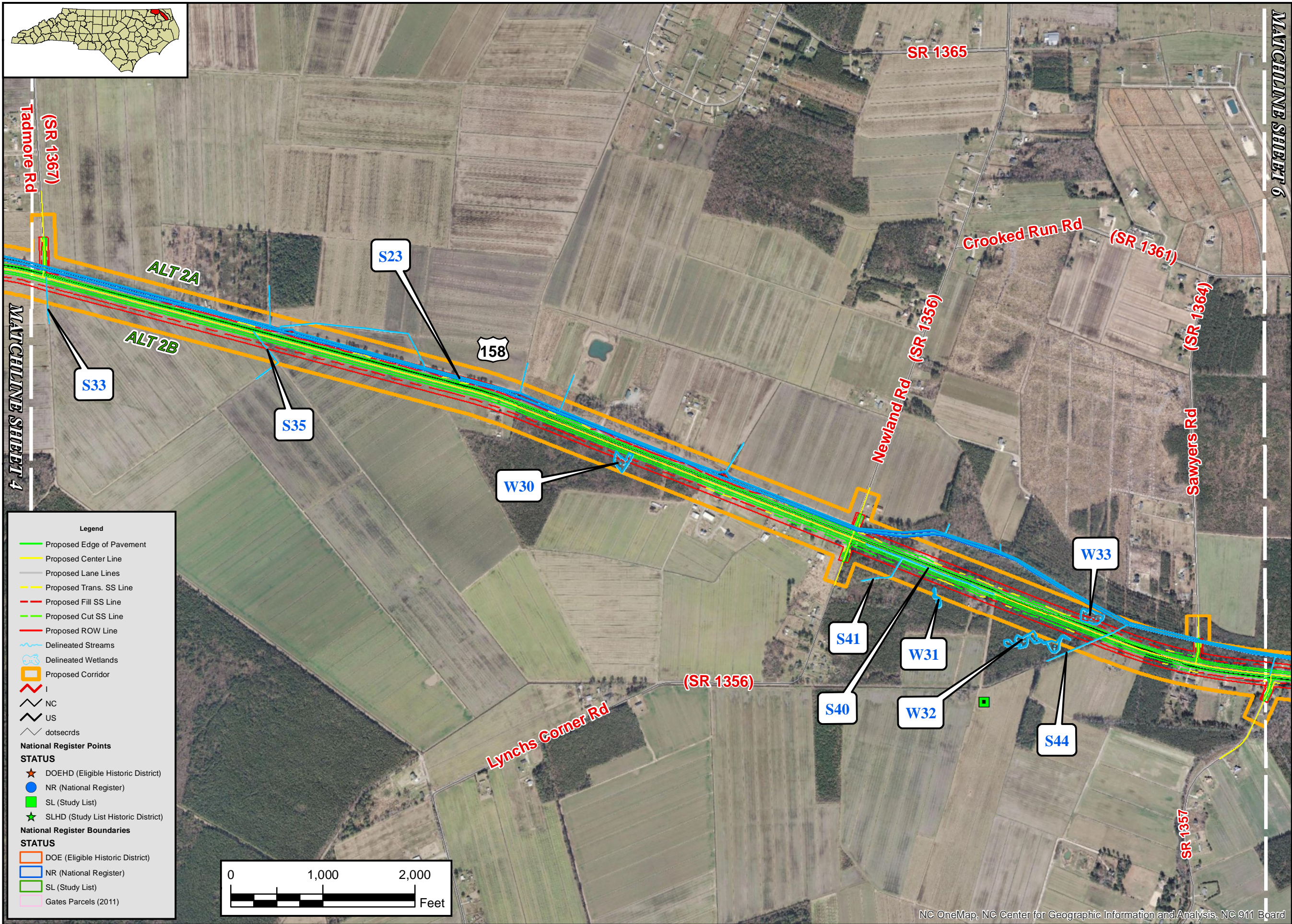
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Sheet 4 of 7





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DIVISION OF HIGHWAYS  
PROJECT DEVELOPMENT AND  
ENVIRONMENTAL ANALYSIS UNIT

CP 2A MEETING MAP  
US 158 WIDENING  
FROM NC 32 IN SUNBURY TO US 17  
AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579



County: **GATES & PASQUOTANK**

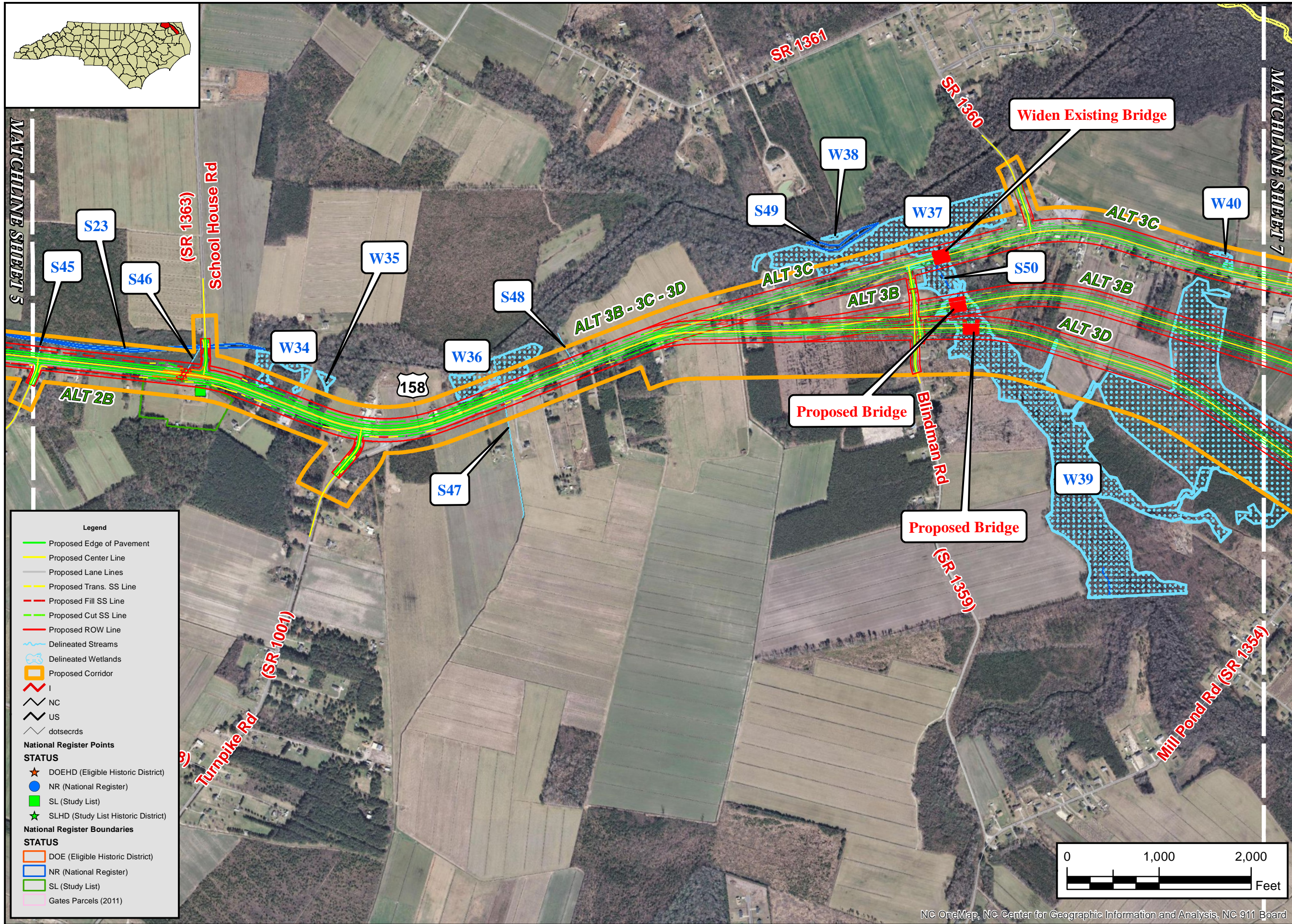
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**Figure**  
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**Sheet 5 of 7**





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DIVISION OF HIGHWAYS  
PROJECT DEVELOPMENT AND  
ENVIRONMENTAL ANALYSIS UNIT

PROJECT ALTERNATIVE MAP  
US 158 FROM  
WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579



County: **GATES &  
PASQUOTANK**

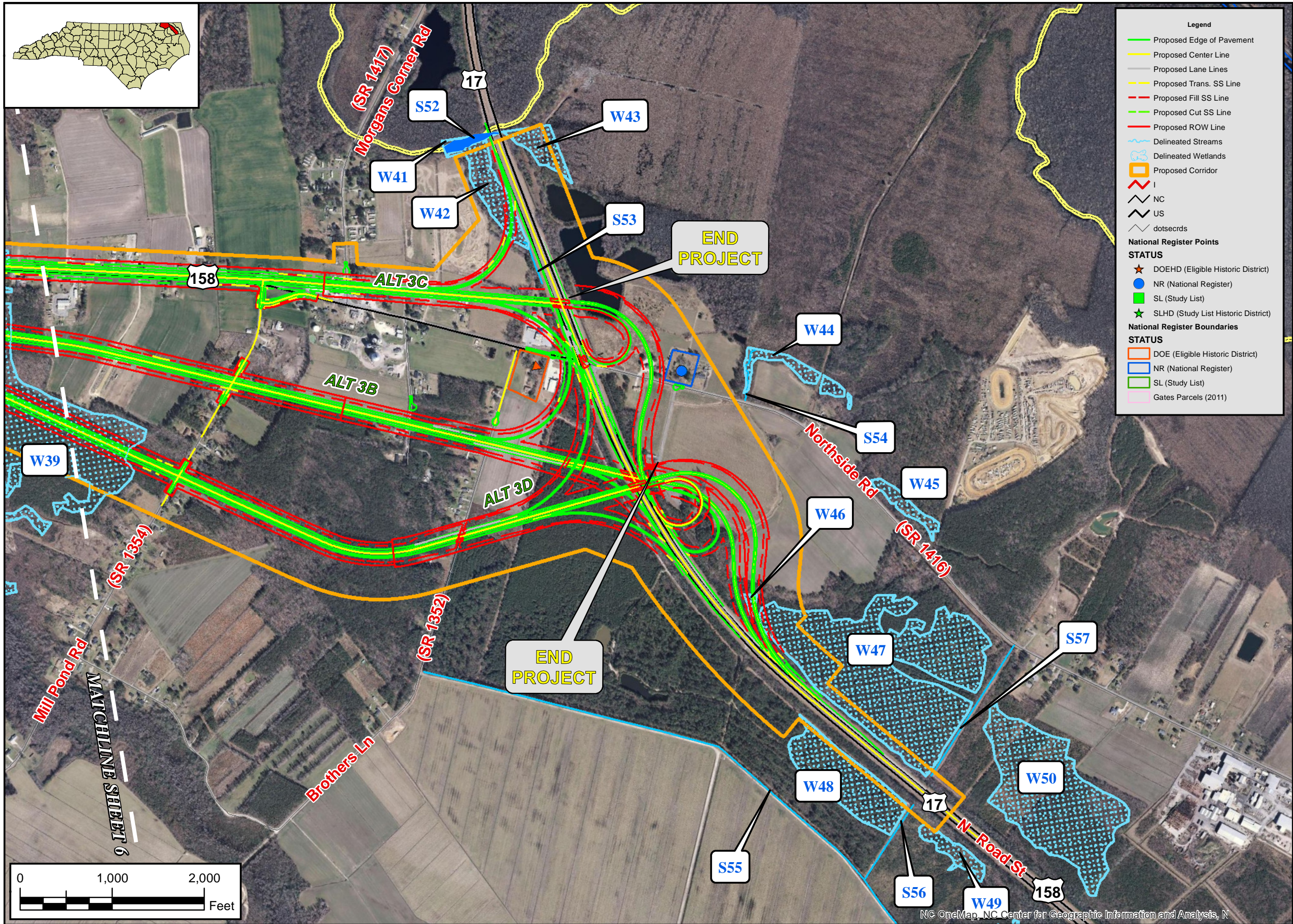
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Date: December 2013

**Figure  
2**  
Sheet 6 of 7



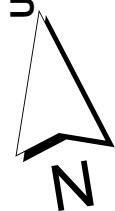


BY:  
J.TORTORELLA



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

PROJECT ALTERNATIVE MAP  
US 158 FROM  
WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579



County: **GATES & PASQUOTANK**

Div: 1 TIP# R-2579

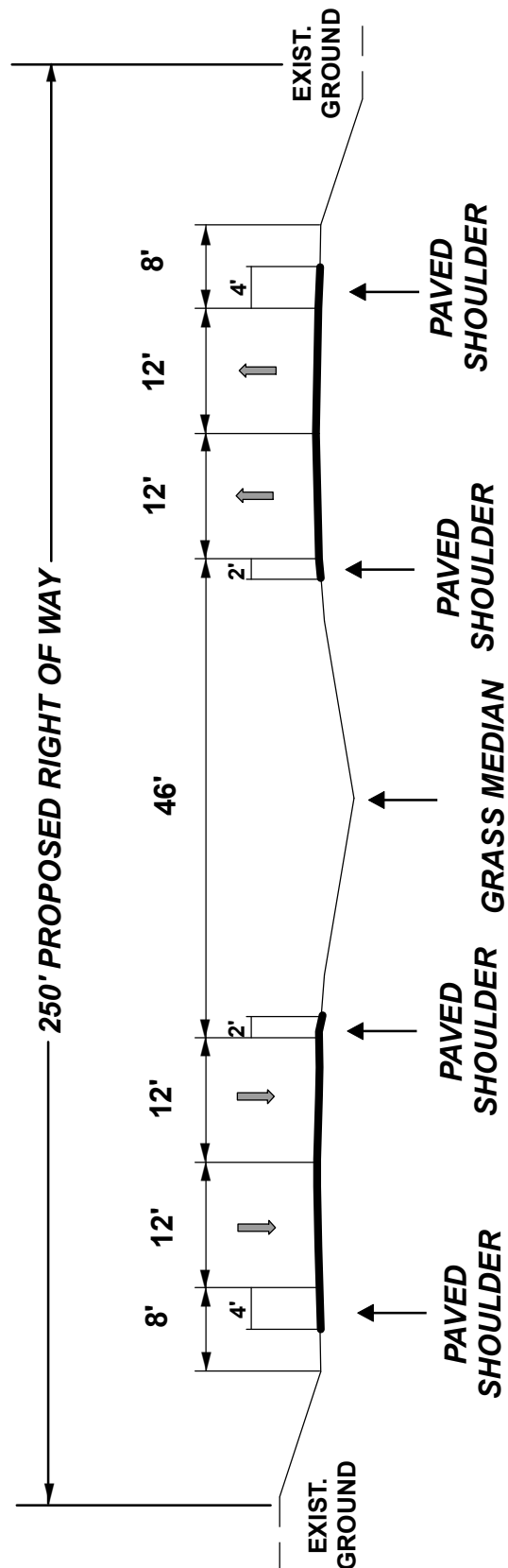
WBS: 38805.1.1

Date: December 2013

Figure  
**2**  
Sheet 7 of 7

NC OneMap, NC Center for Geographic Information and Analysis, N





NOT TO SCALE

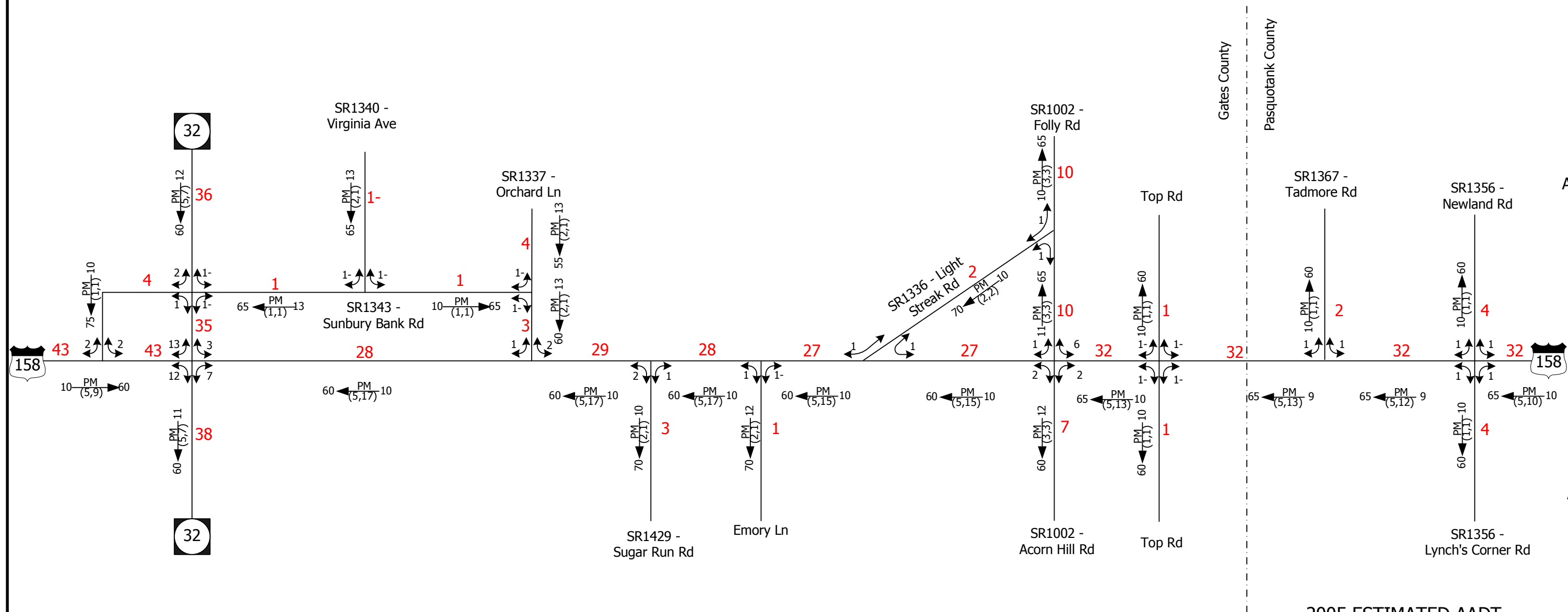


NORTH CAROLINA DEPARTMENT  
OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
PROJECT DEVELOPMENT AND  
ENVIRONMENTAL ANALYSIS UNIT

ROADWAY TYPICAL SECTION  
US 158 FROM  
WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

County: GATES & PASQ.	
Div: 1	TIP# R-2579
WBS: 38805.1.1	
Date: FEB 2013	

Figure  
3



2005 ESTIMATED AADT



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

### TRAFFIC FORECAST MAP

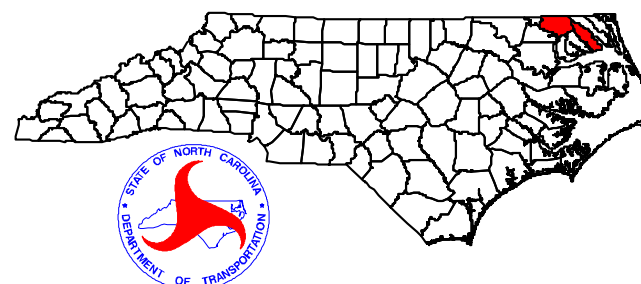
US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

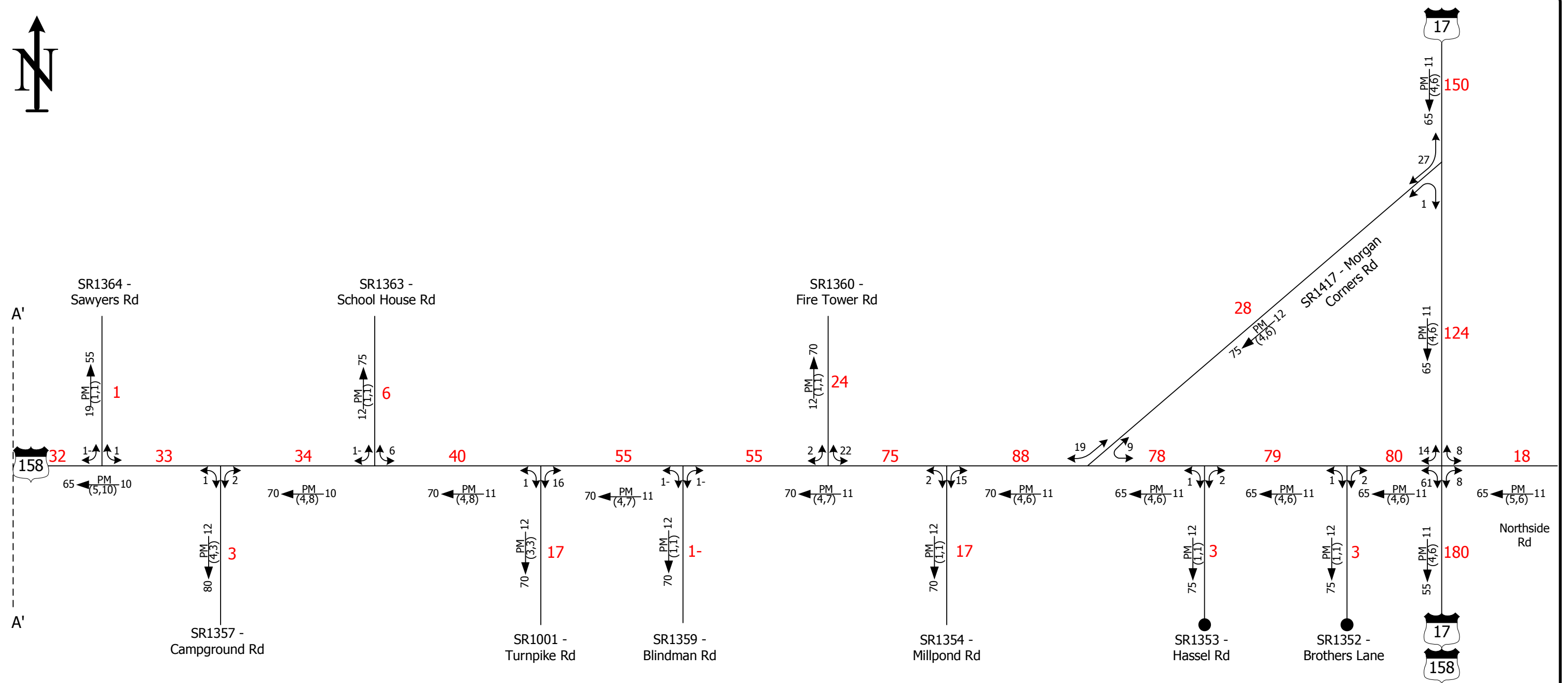
JANUARY 2013

FIGURE 4a

### LEGEND

### VPD---# OF VEHICLES PER DAY IN 100'S  
### - MUCH LESS THAN ### VPD  
X MOVEMENT PROHIBITED  
→ ONE-WAY MOVEMENT  
DHV  $\frac{PM}{(d,t)}$  → D  
DHV DESIGN HOURLY VOLUME (%) = K30  
K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME  
PM PM PEAK PERIOD  
D DIRECTIONAL SPLIT (%)  
→ INDICATES DIRECTION OF D  
REVERSE FLOW FOR AM PEAK  
(d,t) DUALS, TT-ST'S (%)





## 2005 ESTIMATED AADT



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

## TRAFFIC FORECAST MAP

US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER

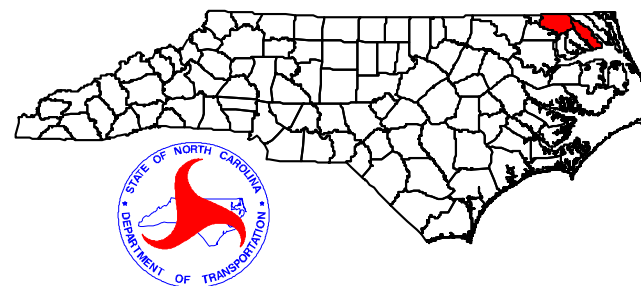
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

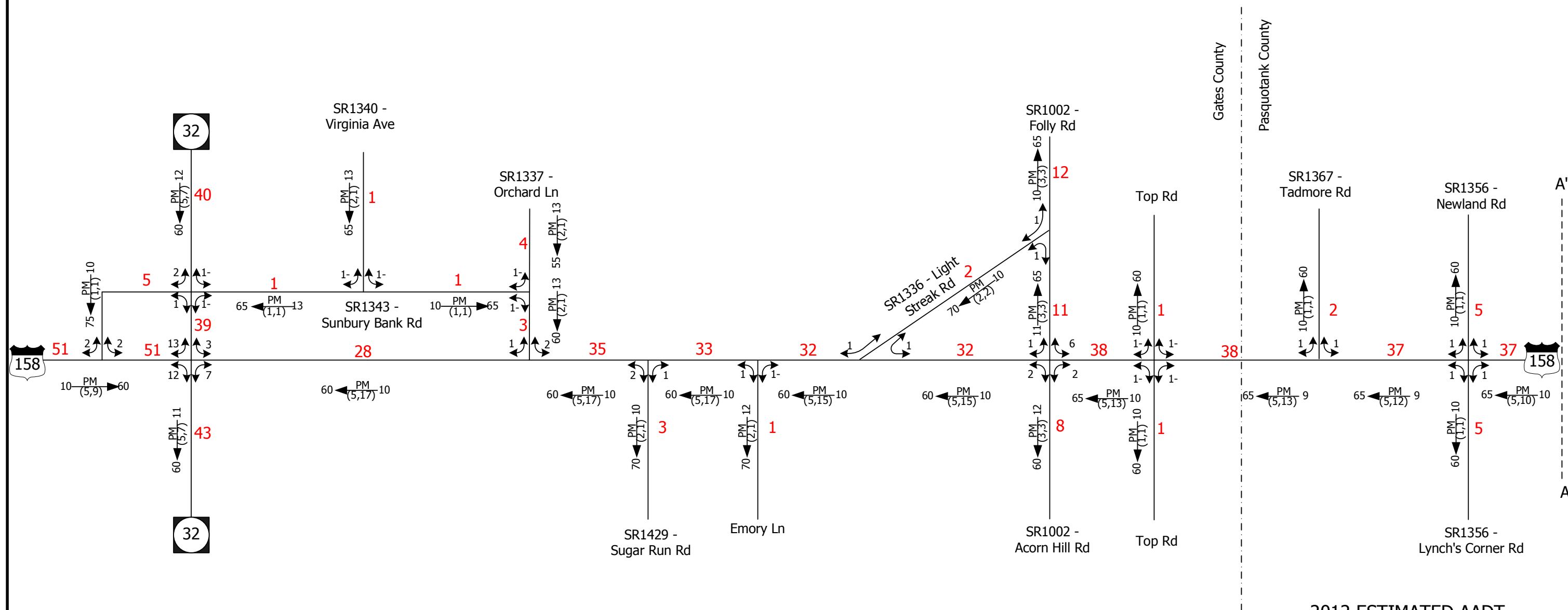
JANUARY 2013

FIGURE 4b

## LEGEND

### VPD---# OF VEHICLES PER DAY IN 100'S  
### - MUCH LESS THAN ### VPD  
X MOVEMENT PROHIBITED  
→ ONE-WAY MOVEMENT  
DHV  $\frac{PM}{(d, t)}$  → D  
DHV DESIGN HOURLY VOLUME (%) = K30  
K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME  
PM PM PEAK PERIOD  
D DIRECTIONAL SPLIT (%)  
→ INDICATES DIRECTION OF D  
REVERSE FLOW FOR AM PEAK  
(d,t) DUALS, TT-ST'S (%)





2012 ESTIMATED AADT



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

### TRAFFIC FORECAST MAP

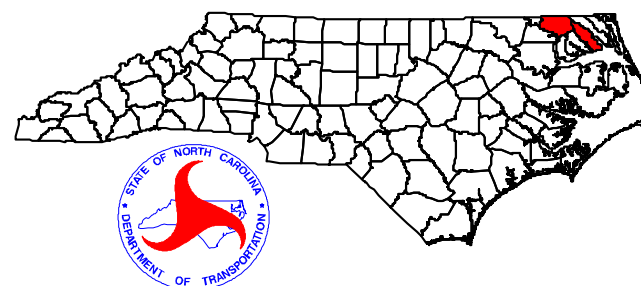
US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER  
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

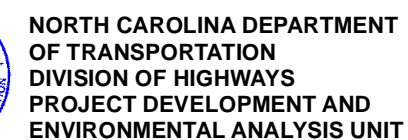
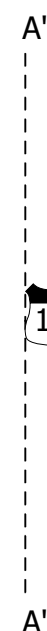
JANUARY 2013

FIGURE 4c

### LEGEND

### VPD---# OF VEHICLES PER DAY IN 100'S  
### - MUCH LESS THAN ### VPD  
X MOVEMENT PROHIBITED  
→ ONE-WAY MOVEMENT  
DHV  $\frac{PM}{(d,t)}$  → D  
DHV DESIGN HOURLY VOLUME (%) =  $K_{30}$   
K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME  
PM PM PEAK PERIOD  
D DIRECTIONAL SPLIT (%)  
→ INDICATES DIRECTION OF D  
REVERSE FLOW FOR AM PEAK  
(d,t) DUALS, TT-ST'S (%)





**US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER**

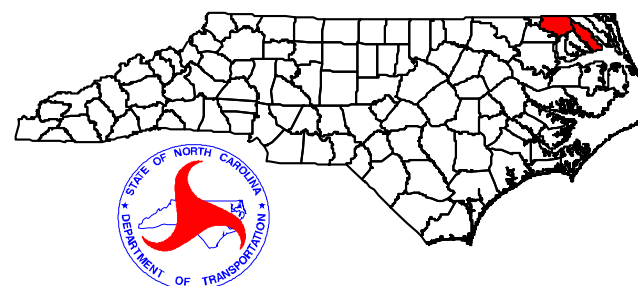
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

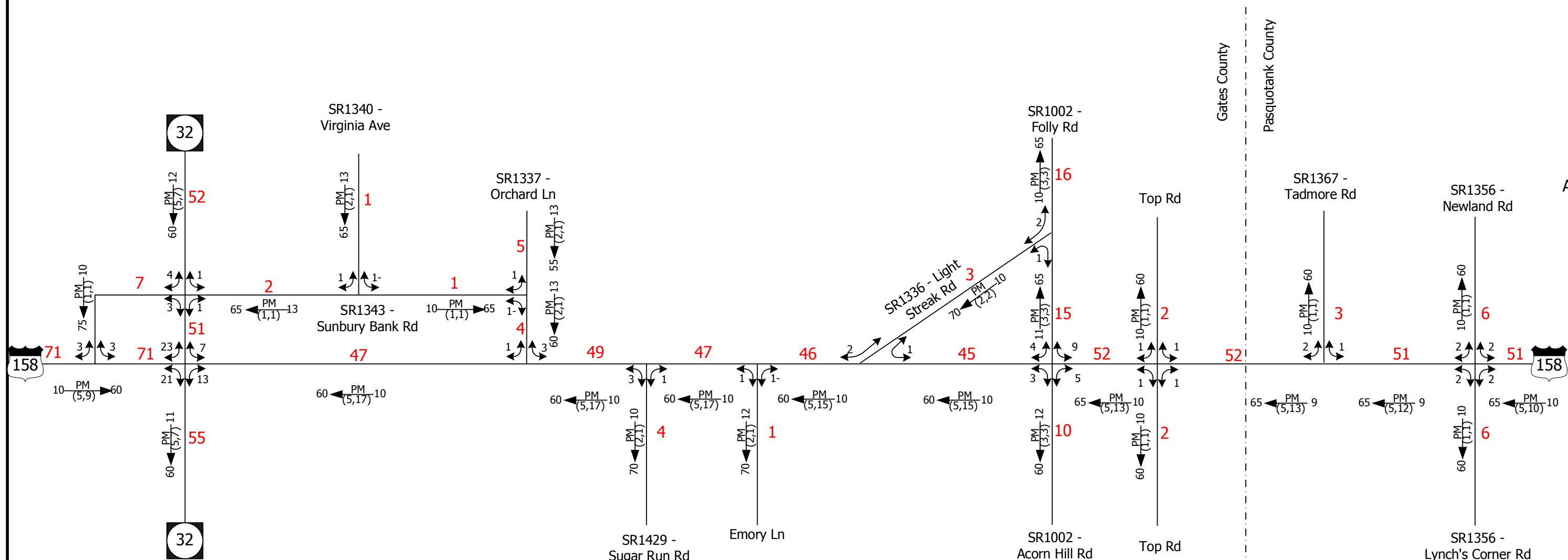
JANUARY 2013

**FIGURE 4d**

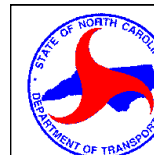
## LEGEND

**### VPD---# OF VEHICLES PER DAY IN 100'S**  
**### - MUCH LESS THAN ### VPD**  
**X MOVEMENT PROHIBITED**  
**➔ ONE-WAY MOVEMENT**  
  
**DHV  $\xrightarrow[\text{(d, t)}]{\text{PM}}$  D**  
**DHV DESIGN HOURLY VOLUME (%) = K30**  
**K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME**  
**PM PM PEAK PERIOD**  
**D DIRECTIONAL SPLIT (%)**  
**➔ INDICATES DIRECTION OF D**  
  
**REVERSE FLOW FOR AM PEAK**  
**(d,t) DUALS, TT-ST'S (%)**





2030 ESTIMATED AADT



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

### TRAFFIC FORECAST MAP

US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER

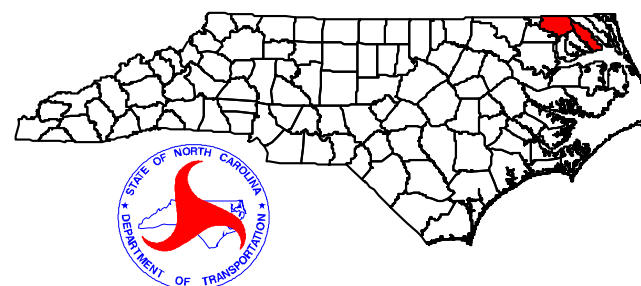
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

JANUARY 2013

FIGURE 4e

### LEGEND

### VPD---# OF VEHICLES PER DAY IN 100'S  
### - MUCH LESS THAN ### VPD  
X MOVEMENT PROHIBITED  
→ ONE-WAY MOVEMENT  
DHV  $\frac{PM}{(d, t)}$  → D  
DHV DESIGN HOURLY VOLUME (%) = K30  
K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME  
PM PM PEAK PERIOD  
D DIRECTIONAL SPLIT (%)  
→ INDICATES DIRECTION OF D  
REVERSE FLOW FOR AM PEAK  
(d, t) DUALS, TT-ST'S (%)

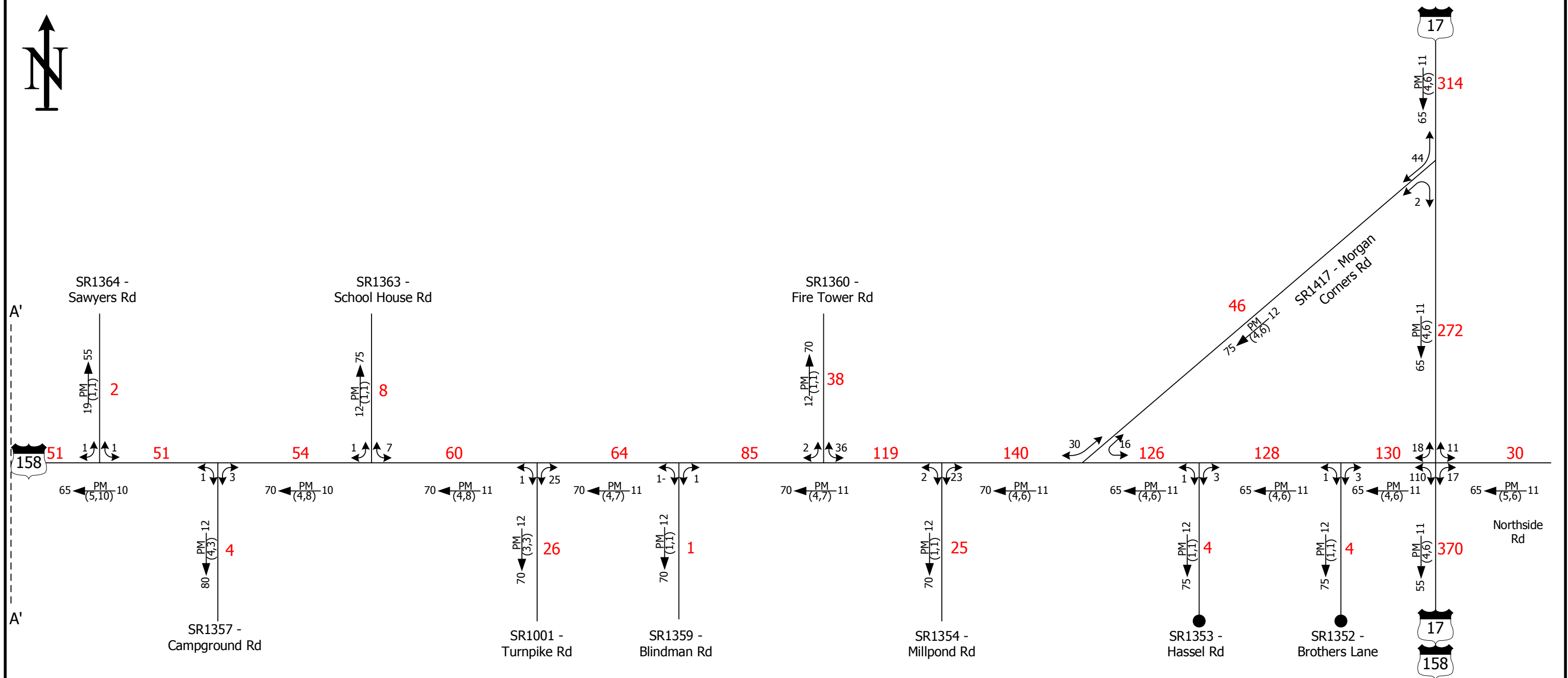






A'

A'



## 2030 ESTIMATED AADT



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

## TRAFFIC FORECAST MAP

US 158  
FROM WEST OF NC 32 IN SUNBURY TO  
US 17 AT MORGAN'S CORNER

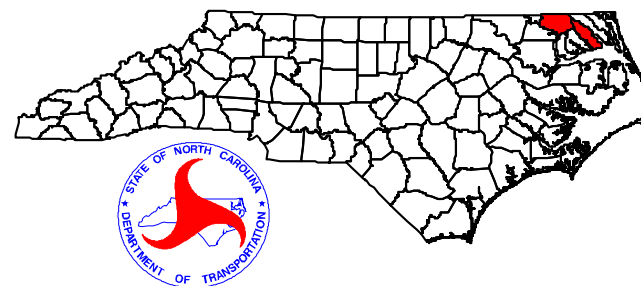
GATES & PASQUOTANK COUNTY  
TIP PROJECT R-2579

JANUARY 2013

FIGURE 4f

## LEGEND

### VPD---# OF VEHICLES PER DAY IN 100'S  
###- MUCH LESS THAN ### VPD  
X MOVEMENT PROHIBITED  
→ ONE-WAY MOVEMENT  
DHV  $\frac{PM}{(d,t)}$  → D  
DHV DESIGN HOURLY VOLUME (%) = K30  
K30 = 30<sup>TH</sup> HIGHEST HOURLY VOLUME  
PM PM PEAK PERIOD  
D DIRECTIONAL SPLIT (%)  
→ INDICATES DIRECTION OF D  
REVERSE FLOW FOR AM PEAK  
(d,t) DUALS, TT-ST'S (%)



# **Appendix B**

**Comments from Federal, State, and Local Agencies**



## North Carolina Department of Administration

Michael F. Easley, Governor

Gwynn T. Swinson, Secretary

January 19, 2006

Ms. Beth Smyre  
NC Department of Transportation  
Project Development & Environmental  
1548 Mail Service Center  
Raleigh, NC 27699-1548

Dear Ms. Smyre:

Re: SCH File # 06-E-4220-0149; Scoping; Widening of US 158 from NC 32 in Sunbury to a multi-lane facility to US 17 at Morgans Corner. TIP No. R-2579

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act. Attached to this letter for your consideration are the comments made by agencies in the course of this review.

If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

Should you have any questions, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads "Chrys Baggett / 1576".

Ms. Chrys Baggett  
Environmental Policy Act Coordinator

Attachments

cc: Region R

*Mailing Address:*  
1301 Mail Service Center  
Raleigh, NC 27699-1301

*Telephone: (919)807-2425*  
Fax (919)733-9571  
State Courier #51-01-00  
*e-mail Chrys.Baggett@ncmail.net*

*Location Address:*  
116 West Jones Street  
Raleigh, North Carolina





RECEIVED  
Division of Highways

MAY 11 2010

Preconstruction

Project Development and  
Environmental Analysis Branch

North Carolina Department of Cultural Resources  
State Historic Preservation Office

Peter B. Sandbeck, 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

May 5, 2010

MEMORANDUM

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

FROM: Peter Sandbeck *PSS for Peter Sandbeck*

SUBJECT: Historic Architectural Resources Survey Report, Final Identification and Evaluation,  
Widening of US 158 from NC 32 to US 17, R-2579, Gates & Pasquotank Counties, ER05-2597

This memorandum is to provide comments on the above referenced report, which we received on February 22, 2010, a corrected map received on March 30, 2010, and a follow-up meeting with members of your staff on May 5, 2010 to clarify several items.

We concur that the **Hinton-Morgan House** (PK1, listed on National Register of Historic Places) remains eligible for listing in the Register and that the adjusted boundaries appear appropriate to better define the limits of the historic property. Please provide the number of acres contained within the boundary recommended for this property.

While we concur that the **Sunbury School** (GA 318, listed on National Register of Historic Places) remains eligible for listing, we do not concur with the proposed new boundary since the entire listed tract is contained within the boundaries of the proposed Sunbury Historic District and the three ancillary buildings contribute to the school's significance for Education. Current ownership of the three buildings is not relevant to their significance or listing.

Expansion of the **Sunbury Historic District** (GA 390, on the State Study List) appears to be appropriate and better addresses the historical development of the town and its architectural heritage. Thus, we concur that the Sunbury Historic District is eligible for listing in the Register under Criterion A for Community Planning and Development and Commerce as well as under Criterion C for Architecture. As discussed on May 5, you will provide us with a revised map that shows the historic district as discontinuous with the small 1870s to 1960s community cemetery (Property #92) as a contributing element to the district, but dropping properties #91 and #123. Properties #104 - the William Graham Byrum House (GA 90), #113 - the Philadelphia Methodist Church (GA 262), and #115 - the C. C. Edwards House (GA111), which are on the State Study List are, thereby, included within the boundaries of the eligible Sunbury Historic District.

We concur that the **Moses R. White, Jr. House** (PK996) is eligible for listing in the National Register under Criterion C for Architecture and very possibly eligible under Criterion B for its association with Moses



Rountree White, Jr. Given that the mature landscaping along the road is integral to the setting, history and integrity of the property, we agreed on May 5th that the boundary for the property should extend to the edge of the pavement of US 158. Please provide a revised map for this property.

On May 5<sup>th</sup> you delivered to us an article from the *Daily Advance* reporting that the **Mount Carmel Missionary Baptist Church** (PK 730) had been destroyed by fire. The photograph accompanying the article clearly indicates that the property has lost its integrity and is no longer eligible for listing in the Register.

Having reviewed the evaluations for the following properties, we concur that they are not eligible for listing in the National Register for the reasons outlined in the report.

Property #8 – Beulah Baptist Church  
Property #20 – Pearce House  
Property #23 – Whitmel Hill House  
Property #24 – Pierce House  
Property #25 – James Hill Farm  
Property #35 – Black Acre Farm  
Property #40 – William J. Spence House  
Property #42 – Johnnie Temple Farm  
Property #55 – Newland United Methodist Church  
Property #69 – Bruce and Hilda Sawyer House  
Property #70 – John Ira Winslow House  
Property #72 – Perry-Harris-Jones Store

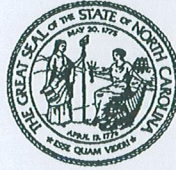
We further concur that the properties listed in Appendix II (beginning on page 162) do not appear to be eligible for listing in the National Register and do not warrant additional study, barring new information to the contrary.

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





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

January 4, 2006

MEMORANDUM

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

FROM: Peter Sandbeck *PBS for Peter Sandbeck*

SUBJECT: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgans Corner,  
WBS No. 38805, TIP No. R-2579, Gates and Pasquotank Counties, ER 05-2597



Thank you for your Memorandum of November 2, 2005. We have reviewed the project listed above and offer the following comments.

We have conducted a search of our maps and files and located the following structures of historical or architectural importance within the general area of this project:

(PK 629) Black Acre Farm, N side NC 158, 5 miles E of Gates County Line.

(PK 712) Walter K. Jones Farm, S side US 158, 0.7 mile NW with SR 1307.

(PK 994) William Spence House.

(PK 799) Johnnie Temple Farm, S side US 158 with SR 1363, on the State Study List.

(PK 666) Bailey J. Forbes Farm, N side US 158, 0.4 mile E of SR 1001.

(PK 730) Mount Carmel Baptist Church, n side US 158, 0.7 mile W of SR 1360.

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

Most of the proposed improvements are located within the Great Dismal Swamp. The western and eastern ends of the project, however, are located in the uplands adjacent to the swamp. These areas west and east of the swamp have never been formally surveyed for cultural resources. Two previously recorded archaeological sites, 31GA34/34\*\* and 31GA49, are located within the general area of the project. Both of these sites are

ADMINISTRATION  
RESTORATION  
SURVEY & PLANNING

Location  
507 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



located near the western end of the project in the vicinity of Acorn Hill, near where Highway 158 crosses the Great Dismal Swamp. Neither of these sites has been formally assessed for eligibility potential for inclusion on the NRHP. Both of these sites should be relocated to determine if they are to be impacted by the proposed undertaking and assessed for NRHP eligibility potential if they are within the APE.

We recommend that NCDOT develop and implement a Scope of Work (SOW) to conduct an archaeological survey of the high probability areas along the western and eastern segments of this corridor. These areas include those segments of the proposed project to the west and to the east of the Great Dismal Swamp. Archaeological survey of the segment of the corridor within the swamp itself is not included as a part of this recommendation. Included also in the SOW should be the testing of 31GA34/34\*\*, 31GA49, if warranted, and any other newly recorded site in order to determine the NRHP eligibility potential of each resource. NCDOT should also develop and implement a mitigation plan for each site within the APE determined to be eligible for inclusion on the NRHP. It is also recommended that NCDOT consult with the Office of State Archaeology regarding the development of the SOW and any mitigation plan resulting from this work prior to its implementation in the field.

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

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

cc: Matthew T. Wilkerson, NCDOT  
Mary Pope Furr, NCDOT  
Beth Smyre, NCDOT  
Chrys Baggett, State Clearinghouse





## 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 *jk*  
Project Review Coordinator

RE: 06-0149 Scoping, Widening US 158 from NC 32 in Sunbury to US  
17 at Morgans Corner in Gates and Pasquotank Counties

DATE: January 12, 2006

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.

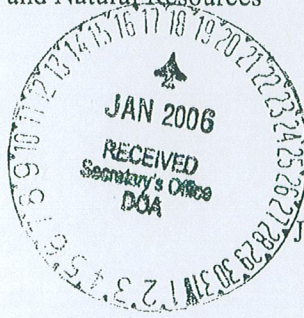
Thank you for the opportunity to respond. If during the preparation of the environmental document, additional information is needed, the applicant is encouraged to notify our respective divisions.

Attachments



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

Michael F. Easley, Governor  
William G. Ross Jr., Secretary  
Manly S. Wilder, Director



January 4, 2006

**MEMORANDUM:**

**TO:** Melba McGee

**FROM:** David Harrison *DSH*

**SUBJECT:** Improvements for US 158 from NC 32 to US 17. Gates and Pasquotank Counties.  
Project # 06-0149.

The NC Department of Transportation is studying widening of US 158 in Gates and Pasquotank Counties.

Any acquisition of additional right-of-ways for increase size, capacity or changes in approach could affect Prime or Statewide Important Farmland. In that case, the environmental assessment should include information on adverse impacts.

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.



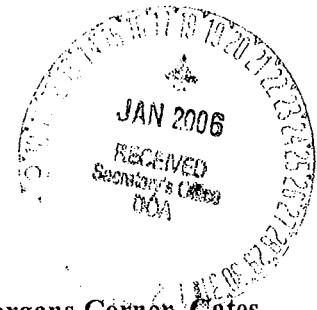
## North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

January 16, 2006

Melba McGee  
Environmental Coordinator  
Office of Legislative and Intergovernmental Affairs  
1601 Mail Services Center  
Raleigh, NC 27699-1601



**Subject: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgans Corner, Gates and Pasquotank Counties. WBS No 38805, TIP Project No. R-2579**

Dear Ms McGee:

The North Carolina Natural Heritage Program appreciates the opportunity to participate in the evaluation of potential environmental impacts of the proposed project. A portion of the proposed project occurs adjacent to the Great Dismal Swamp National Wildlife Refuge, a Nationally Significant natural area Registered with the North Carolina Natural Heritage Program.

There are observed occurrences of Nonriverine Swamp Forest, an uncommon or rare wetland natural community in the area of the proposed project. What are potential impacts of proposed project to natural habitats? Perhaps the greater issue to the potential hydrologic impact of the proposed project. Will it affect current hydrology or future hydrologic restoration efforts within the National Wildlife Refuge? One other consideration that is perhaps not as important, but worth keeping in mind: Are there opportunities to correct current hydrologic alterations and promote natural ecological processes as part of the project?

Please contact me at 919-715-8696 if I can provide more information.

Sincerely,

Scott Pohlman  
Natural Heritage Program



DEPARTMENT OF ENVIRONMENT AND  
NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL HEALTH

Project Number <b>06-0149</b>
County <b>Gates &amp; Pasquotank</b>

Inter-Agency Project Review Response

Project Name NC DOT Type of Project Widening of US 158 from NC 32 in Sunbury to US 17 at Morgans Corner.

- ☐ 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 (919) 733-6407.
- ☐ 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.

\_\_\_\_\_  
Reviewer

\_\_\_\_\_  
Section/Branch

\_\_\_\_\_  
Date

DEPARTMENT OF ENVIRONMENT AND  
NATURAL RESOURCES  
DIVISION OF ENVIRONMENTAL HEALTH

Project #  
06-0149  
County  
Gates & Pasquotank

Inter-Agency Project Review Response

Project Name: NC DOT Type of Project: Widening of US 158  
from NC 32 in  
Sunbury to US 17 at  
Morgan's Corner

Comments provided by:

- ☐ Regional Program Person  
☒ Regional Supervisor for Public Water Supply Section  
☐ Central Office program person

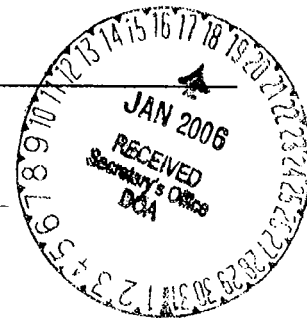
Name: Fred Hill - Washington Telephone #: (252) 946-6481 Date Rec'd: 12/07/05  
Date Rev'd: 12-12-05

Program within Division of Environmental Health:

- ☒ Public Water Supply  
☐ Other, Name of Program \_\_\_\_\_

Response (check all applicable):

- ☒ No objection to project as proposed  
☐ No comment  
☐ Insufficient information to complete review  
☐ Comments attached  
☒ See comments below



Potable water distribution lines exist within the project boundary. Engineering plans and specifications must be submitted to the Public Water Supply Plan Review Section for approval prior to any modifications or relocation.

Please coordinate with the appropriate public water supply system, including Gates County Water and Pasquotank County Water Departments.

Return to :  
Public Water Supply Section  
Environmental Review Coordinator for the Division of Environmental Health

NORTH CAROLINA STATE CLEARINGHOUSE  
DEPARTMENT OF ADMINISTRATION  
INTERGOVERNMENTAL REVIEW

STATE NUMBER: 06-E-4220-0149

F02

DATE RECEIVED: 11/04/2005

AGENCY RESPONSE: 01/09/2006

REVIEW CLOSED: 01/13/2006

MS RENEE GLEDHILL-EARLEY  
CLEARINGHOUSE COORD  
DEPT OF CUL RESOURCES  
ARCHIVES-HISTORY BLDG - MSC 4617  
RALEIGH NC

REVIEW DISTRIBUTION  
ALBEMARLE REG PLANNING COMM  
CC&PS - DEM, NFIP  
DEHNR - COASTAL MGT  
DENR LEGISLATIVE AFFAIRS  
DEPT OF AGRICULTURE  
DEPT OF CUL RESOURCES  
DEPT OF TRANSPORTATION

PROJECT INFORMATION

APPLICANT: NC Department of Transportation

TYPE: National Environmental Policy Act

ERD: Scoping

DESC: Widening of US 158 from NC 32 in Sunbury to a multi-lane facility to US 17 at Morgans Corner. TIP No. R-2579.

The attached project has been submitted to the N. C. State Clearinghouse for intergovernmental review. Please review and submit your response by the above indicated date to 1301 Mail Service Center, Raleigh NC 27699-1301.

If additional review time is needed, please contact this office at (919)807-2425.

AS A RESULT OF THIS REVIEW THE FOLLOWING IS SUBMITTED:

☐ NO COMMENT

☒ COMMENTS ATTACHED

SIGNED BY:

Renee Gledhill-Earley

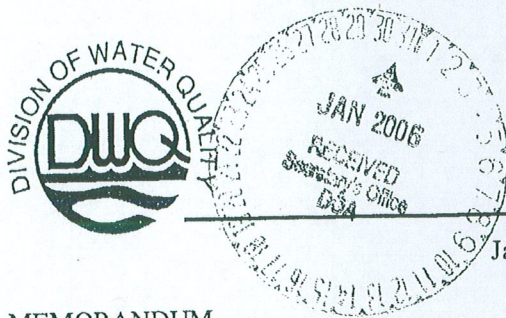
DATE:

1-4-06



NOV 10 2005





Michael F. Easley, Governor  
William G. Ross Jr., Secretary  
North Carolina Department of Environment and Natural Resources  
Alan W. Klimek, P.E. Director  
Division of Water Quality

January 20, 2006

MEMORANDUM

To: Melba McGee, Environmental Coordinator, Office of Legislative and Intergovernmental Affairs

From: Brian L. Wrenn, Transportation Permitting Unit, NCDWQ *BLW*

Subject: Request for Scoping Comments for the Proposed Widening of US 158 from NC 32 in Gates County to US 17 in Pasquotank County, TIP Project No. R-2579, State Clearinghouse Project No. 06-0149.

This office has reviewed the referenced document. The Division of Water Quality (DWQ) is responsible for the issuance of the Section 401 Water Quality Certification for activities that impact Waters of the U.S., including wetlands. Based on a preliminary review of the project study area, tributaries, wetlands and riparian buffers associated with the following named streams could be impacted by the proposed project:

Stream Name	River Basin	Stream Classification	Stream Index Number
Raynor Swamp	Chowan	C; NSW	25-17-2
Newland Drainage Canal	Pasquotank	C; Sw	30-3-1.5
Pasquotank River	Pasquotank	WS-V; Sw	30-3-(1)

DWQ has the following comments:

Project Specific Comments:

1. A portion of the proposed widening of US 158 would take place in the Dismal Swamp National Wildlife Refuge. Not only is this a federally managed wildlife refuge, but it also has tens of thousands of acres of high quality wetlands. DOT should intensely avoid and minimize impacts to these wetland areas. This may include narrower travel lanes, steeper fill slopes, retaining walls, bridging, reduced median widths, etc.
2. Because this project will be constructed in coastal counties and will disturb more than one acre of land, it will require a state storm water permit. All storm water plans should be designed to meet the requirements of 15A NCAC 2H .1005. All storm water BMPs in the Raynor Swamp drainage area should meet the requirements for Nutrient Sensitive Waters of the State.

General Comments:

1. DWQ prefers spanning structures. Spanning structures usually do not require work within the stream and do not require stream channel realignment. The horizontal and vertical clearances provided by bridges allows for human and wildlife passage beneath the structure, does not block fish passage, and does not block navigation by canoecists and boaters.



2. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506(b)(6)}, mitigation will be required for impacts of greater than 150 linear feet to any single perennial stream. In the event that mitigation is required, the mitigation plan should be designed to replace appropriate lost functions and values. In accordance with the Environmental Management Commission's Rules {15A NCAC 2H.0506 (h)(3)}, the NC Ecosystem Enhancement Program may be available for use as stream mitigation. A discussion of potential mitigations strategies should be included in the EA.
3. Bridge deck drains should not discharge directly into the stream. Stormwater should be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to NCDOT Best Management Practices for the Protection of Surface Waters
4. Live concrete should not be allowed to contact the water in or entering into the stream. Concrete is mostly made up of lime (calcium carbonate) and when in a dry or wet state (not hardened) calcium carbonate is very soluble in water and has a pH of approximately 12. In an unhardened state concrete or cement will change the pH of fresh water to very basic and will cause fish and other macroinvertebrate kills.
5. Sedimentation and erosion control measures sufficient to protect water resources must be implemented prior to any ground disturbing activities. Structures should be *maintained regularly*, especially following rainfall events.
6. Bare soil should be stabilized through vegetation or other means as quickly as feasible to prevent sedimentation of water resources.
7. Sediment and erosion control measures should not be placed in wetlands.
8. Borrow/waste areas should avoid wetlands to the maximum extent practicable. Impacts to wetlands in borrow/waste areas could precipitate compensatory mitigation.
9. If foundation test borings are necessary; it should be noted in the document. Geotechnical work is approved under General 401 Certification Number 3027/Nationwide Permit No. 6 for Survey Activities.
10. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.
11. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams. This equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Brian Wrenn 919-733-5715.

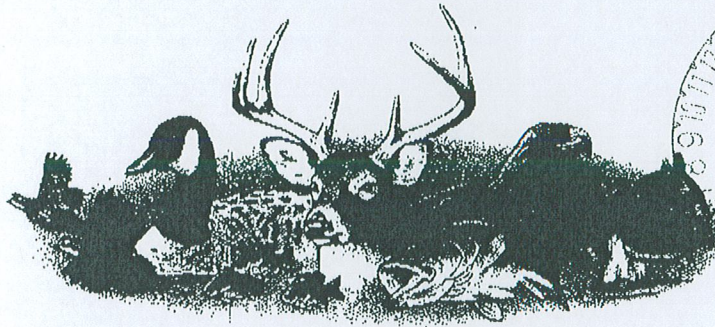
January 20, 2006

Page 3

pc: Bill Biddlecome, USACE Washington Field Office  
Garcy Ward, NCDWQ, Washington Regional Office  
Chris Militscher, USEPA  
Travis Wilson, NCWRC  
Gary Jordan, USFWS  
File Copy








☒ North Carolina Wildlife Resources Commission ☒

MEMORANDUM

Richard B. Hamilton, Executive Director

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

FROM: Travis Wilson, Highway Project Coordinator   
Habitat Conservation Program

DATE: January 3, 2006

SUBJECT: Response to the start of study notification from the N. C. Department of Transportation (NCDOT) regarding fish and wildlife concerns for the proposed widening of US 158 from NC 32 in Sunbury to US 17 at Morgans Corner, Gates and Pasquotank Counties, North Carolina. TIP No. R-2579, SCH Project No. 06-0149.

This memorandum responds to a request from 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 improvements. Our comments are provided in accordance with certain provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The Great Dismal Swamp Wildlife Refuge is located within the Vicinity of this project; NCDOT should obtain accurate boundary line data for this resource and avoid impacts to this area. 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:

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



and,

[WWW.ncsparks.net/nhp](http://WWW.ncsparks.net/nhp)

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 we can further assist your office, please contact me at (919) 528-9886.

Federal Aid #:n/a

TIP#: R-2579

County: Gates & Pasquotank

**CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS**

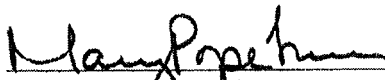
*Project Description:* Widen US 158 from NC 32 @ Sunbury to US 17 @ Morgan's Corner

On 9/18/2012, representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☒ US Army Corps of Engineers (USACE)
- ☒ North Carolina State Historic Preservation Office (HPO)
- ☐ Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

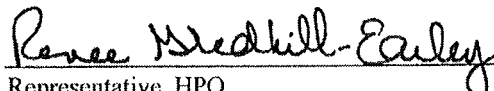
Signed:

  
Representative, NCDOT

9-18-2012  
Date

  
Representative, USACE

9-18-2012  
Date

  
Representative, HPO

9/18/12  
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  
December 8, 2005



MEMORANDUM

TO: Melba McGee, Office of Legislative Affairs

FROM: Bill Pickens, NC Division Forest Resources *Bill Pickens*

SUBJECT: DOT Scoping for Widening US 158 from NC 32 in Sunbury to US 17 at Morgans Corner in Gates and Pasquotank Counties

PROJECT #: 06-0149 and TIP # R-2579

The North Carolina Division of Forest Resources has reviewed the referenced scoping document and submits the following comments concerning impacts to woodlands to address in the EA.

1. List, by timber type, the total forest land acreage that is removed or taken out of forest production as a result of the project so that we can evaluate construction impact. If no impacts will occur, please state so in the document. The widening of an existing roadway usually has fewer impacts to forest resources than a new location project.
2. Additionally, 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
3. The EA should include a summary of the potential productivity of the forest stands affected by the proposed project. Potential productivity is quantified by the soil series, and is found in the USDA Soil Survey for the county involved.
4. 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.

1616 Mail Service Center, Raleigh, North Carolina 27699-1601

Phone: 919 - 733-2162 \ FAX: 919 - 733-0138 \ Internet: [www.dfr.state.nc.us](http://www.dfr.state.nc.us)

AN EQUAL OPPORTUNITY \ AFFIRMATIVE ACTION EMPLOYER - 50% RECYCLED / 10% POST

5. If woodland 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. Gates and Pasquotank Counties are classified as high hazard counties, and G.S. 113-60.23 requiring a special burning permit would apply. This permit is issued by the local Forest Service Ranger
6. 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.
7. 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. Contact me at 919-553-6178 x 233 or by email at [bill.pickens@ncmail.net](mailto:bill.pickens@ncmail.net).

cc: Barry New





North Carolina Department of Environment and Natural Resources

**Division of Coastal Management**

Michael F. Easley, Governor

Charles S. Jones, Director

William G. Ross Jr., Secretary

January 11, 2006

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

Dear Dr. Thorpe,

**SUBJECT: Comments to TIP Project No. R-2579, WBS No. 38805. Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner, Gates and Pasquotank Counties.**

I visited the above project site to respond to your request to identify potential environmental impacts of the project and any permits or approvals that may be required by this agency.

Preliminary observations reveal that US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner crosses over several water bodies. Most of the water bodies are not navigable; however, one water body, located approximately 1.7 miles west of Morgan's Corner, was acknowledged as navigable. This water body is of unknown origin at this time. In addition, several bridges and culverts are situated along this corridor. Drainage ditches were observed that run parallel to US 158, as well as multiple irrigation ditches running perpendicular to US 158. Coastal marsh plant species were also noted.

These initial findings suggest that the proposed project will affect **Division of Coastal Management Areas of Environmental Concern (AECs)** and would likely require a **CAMA Major Permit** for development in subject transportation corridor.

Thank you for coordinating with DCM regarding TIP Project #R-2579. Please contact me at 252-264-3901 if I can be of further assistance.

Best regards,

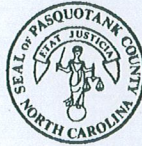
Wanda S. Gooden  
DOT Project Coordinator/Division One

cc: Cathy Brittingham, DCM-Raleigh



**COMMISSIONERS**

Cecil Perry, Chairman  
Lloyd E. Griffin III, Vice-Chairman  
Matt Wood  
Bill Trueblood  
John "Hank" Krebs  
Marshall H. Stevenson, Jr.  
Jeff Dixon



**COUNTY MANAGER**

Randy Keaton

**COUNTY ATTORNEY**

R. Michael Cox

**CLERK TO THE BOARD**

Karen Jennings

**COUNTY OF PASQUOTANK**

Post Office Box 39  
Elizabeth City, North Carolina 27907-0039  
(252)335-0865  
Fax (252)335-0866

January 13, 2006

Beth Smyre  
Project Development Engineer  
N.C. Department of Transportation  
1548 Mail Service Center  
Raleigh, NC 27699-1548

Dear Ms. Smyre:

I am writing on behalf of the Pasquotank County Board of Commissioners in regard to comments for the project development, environmental and engineering studies for TIP Project No. R-2579 which consists of widening of US 158 from NC 32 in Sunbury to US 17 at Morgans Corner. The Pasquotank County Board of Commissioners would like the following comments added to the preliminary engineering studies for this project:

1. Include drainage culverts under the section of four-lane road that crosses a portion of the Dismal Swamp between Pasquotank County and Gates County. The current road acts as a dam which forces all of the drainage in that area of the Dismal Swamp to accumulate on the north side of U.S. 158 which has caused flooding problems in the Newland Area of Pasquotank County.
2. The Board of Commissioners would like to request that a right of way for a future greenway be included in the planning for the widening of this highway. A greenway is currently being planned through a number of counties in the Northeast to connect with greenways in Virginia to provide a north-south corridor. An east-west corridor would greatly expand bike trails and other greenways throughout the Northeast.
3. Residents along the Pasquotank County portion of U.S. 158 have raised questions as to whether the road will be a limited access or a non-limited access highway.

Ms. Beth Smyre  
Page 2  
January 13, 2006

4. Pasquotank County has created a drainage district in the northern portion of Pasquotank County which borders the existing U.S. 158. A drainage committee has also been established to correct drainage issues in that area. We would encourage the Department of Transportation to work with the drainage committee as drainage is developed for the expanded highway.

I would like to be included in the scoping meeting when it is held and I would like to request that any information be sent to my office so that I or someone from my staff can attend that meeting. We look forward to working with the Department of Transportation as the widening of U.S. 158 is being planned. If you have any questions, please do not hesitate to contact me.

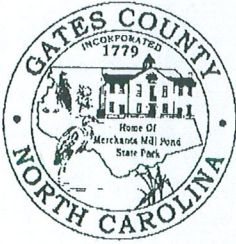
Sincerely yours,

A handwritten signature in black ink, appearing to read 'Randy Keaton', with a large, sweeping flourish extending to the left.

Randy Keaton  
County Manager

RK/ksj





**GATES COUNTY**  
**RANDALL K. CAHOON, PLANNER**  
**INSPECTIONS & PLANNING DEPARTMENT**  
P.O. Box 411      Gatesville, NC 27938  
Ph: (252) 357-0122      Fax (252) 357-4577  
gatescoplanner@earthlink.net

January 4, 2006

NC Department of Transportation  
Project Development and Environmental Analysis  
1548 Mail Service Center  
Raleigh, NC 27699-1548

Re: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner,  
Gates and Pasquotank Counties. WBS No. 38805, TIP Project No. R-2579

Dear Dr. Thorpe:

This letter is in response to your request for information regarding the widening of US 158 as part of the proposed Strategic Corridor from Winston-Salem to Kitty Hawk/Nags Head. My only comment on the environmental impacts of such an undertaking is to remind you that the runoff from adding impervious surface in the Dismal Swamp will create Stormwater considerations regarding flooding, nutrients (Nitrogen and Phosphorus) to marshy areas in addition to petroleum based contaminants collected by a wider roadway should be taken into account. There is also the minor consideration of decreasing habitat and corridors for wildlife by dedicating what is now essentially wilderness for highway purposes, but that concern needs to be weighed against the fact that the existing road is too narrow and poses numerous safety issues.

One factor you may well want to consider in justifying the need for this project is the state funded \$3.6 million Visitors Center being built at the Merchants Millpond State Park, 71 US Highway 158 East, which is expected to open in 2006. This Visitors Center will include an auditorium, exhibit area, and classrooms, as well as a picnic area. As US 158 is widened across Gates County, and the master plan of creating the proposed Strategic Corridor from Kitty Hawk/Nags Head to Winston-Salem unfolds, Gates County will be able to advertise this rare ecological community as an "eco-tourism" attraction. Along with this improvement, there will be increased traffic on US 158. This is among many reasons why county government here is fully supportive of this proposed transportation improvement.

If you have any questions, please call me at (252) 357-0122.

Sincerely,

  
Randall K. Cahoon, County Planner



# **APPENDIX C**

## **Capacity Analysis Tables (Table 4)**

**Table 4: 2030 No Build and Build Intersection Analysis**

Intersection		Direction	2030 No-Build (AM/PM)	2030 Build (AM/PM)
US 158	NC 32	EB	B/B	B/B
		EB	B/B	B/B
		WB	B/B	B/B
		WB	B/B	B/B
		NB	B/B	B/B
		NB	B/B	B/B
		SB	A/B	A/B
		SB	B/B	B/B
	Intersection LOS:		B/B	B/B
US 158	Orchard Lane	EB	A/A	A/A
		SB	B/B	B/B
US 158	Sugar Run Rd	WB	A/A	A/A
		NB	B/B	B/B
US 158	Emory Lane	NB	B/B	B/B
US 158	Light Streak Rd	EB	A/A	A/A
		SB	A/B	A/B
US 158	Folly Rd	EB	A/A	A/A
		WB	A/A	A/A
		NB	B/B	B/B
		SB	B/B	B/C
US 158	Top Rd	EB	A/A	A/A
		WB	A/A	A/A
		NB	B/B	B/B
		SB	A/B	A/A
US 158	Tadmore Rd	EB	A/A	A/A
		SB	A/B	A/B
US 158	Newland Rd	EB	A/A	A/A
		WB	A/A	A/A
		NB	B/B	B/B
		SB	B/B	B/B
US 158	Sawyers Rd	EB	A/A	A/A
		SB	B/B	B/B
US 158	Campground Rd	WB	A/A	A/A
		NB	B/B	B/B
US 158	School House Rd	EB	A/A	A/A
		SB	B/B	B/B
US 158	Turnpike Rd	WB	A/A	A/A
		NB	C/B	B/B
US 158	Blindman Rd	WB	A/A	A/A
		NB	B/A	B/A
US 158	Fire Tower Rd	EB	A/A	A/B
		SB	E/C	F/E
US 158	Millpond Rd	WB	B/A	B/A
		NB	F/C	C/C
US 158	Morgan Corners Rd	EB	B/B	B/B

**Table 4: 2030 No Build and Build Intersection Analysis (continued)**

Intersection		Direction	2030 No-Build (AM/PM)	2030 Build (AM/PM)
		SB	F/F	F/F
US 158	Hassel Rd	WB	A/A	B/A
		NB	C/B	C/B
US 158	Brothers Lane	WB	A/A	B/A
		NB	C/B	C/B
US 158	US 17	EB	D/E	D/D
		EB	F/E	F/E
		WB	F/F	F/F
		WB	D/E	E/D
		NB	F/F	E/F
		NB	F/C	F/C
		NB	D/C	C/B
		SB	F/F	F/F
		SB	F/F	D/F
		SB	E/E	D/D
	Intersection LOS:		F/F	F/E
US 17	Morgan Corners Rd	NB	B/D	B/D
		EB	F/F	F/F
Folly Road	Light Streak Rd	NB	A/A	A/A
		EB	A/A	A/A
Sunbury Bank Road	NC 32	EB	B/B	B/B
		WB	B/B	B/B
		NB	A/A	A/A
		SB	A/A	A/A



# **APPENDIX D**

**Natural Resources Tables (Tables 7,8,11)**

**Table 7: Invasive Species Threat Levels within Project Area**

Common Name	Threat Level
Chinese privet	Severe Threat to Habitat and Natural Areas
Japanese grass	Severe Threat to Habitat and Natural Areas
Japanese honeysuckle	Threat to Habitat and Natural Areas
bamboo	Threat to Habitat and Natural Areas

**Table 8: Water Resources in the Project Study Area**

Stream Name	Map ID	DWQ Index Number	Best Usage Classification
Unnamed Tributary (UT) to Harrell Swamp	S1	25-17-2-1 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Harrell Swamp	S2	25-17-2-1 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Harrell Swamp	S3	25-17-2-1 <sup>1</sup>	C; NSW <sup>2</sup>
Harrell Swamp	S4	25-17-2-1	C; NSW
UT to Harrell Swamp	S5	25-17-2-1 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S6	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S7	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S8	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S9	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S10	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S11	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S12	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Raynor Swamp (Hunters Millpond)	S13	25-17-2 <sup>1</sup>	C; NSW <sup>2</sup>
UT to Jones Pond	S14	30-3-2-1-4 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Jones Pond	S15	30-3-2-1-4 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Jones Pond	S16	30-3-2-1-4 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Jones Pond	S17	30-3-2-1-4 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Perquimans River	S18	30-6-(1) <sup>1</sup>	C; Sw <sup>2</sup>
UT to Perquimans River	S19	30-6-(1) <sup>1</sup>	C; Sw <sup>2</sup>
UT to Perquimans River	S20	30-6-(1) <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S21	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S22	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
Newland Drainage Canal	S23	30-3-1.5	C; Sw
UT to Newland Drainage Canal	S24	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S25	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S26	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S27	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S28	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S29	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S30	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S31	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S32	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S33	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S34	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S35	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S36	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S37	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>

Notes: <sup>1</sup> – NCDWQ Stream Index Numbers are assigned only to named streams. UTs to the named streams assume the named stream's NCDWQ Stream Index Number (NCDWQ 2004).

<sup>2</sup> – Best Use Classification not specified for stream and is therefore assumed to be that of the nearest receiving stream that has been assigned a Best Use Classification (NCDWQ 2004).



**Table 8: Water Resources in the Project Study Area (continued)**

<b>Stream Name</b>	<b>Map ID</b>	<b>DWQ Index Number</b>	<b>Best Usage Classification</b>
UT to Newland Drainage Canal	S38	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S39	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S40	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S41	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S42	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S43	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S44	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S45	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S46	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S47	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S48	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
Newland Drainage Canal	S49	30-3-1.5	C; Sw
UT to Newland Drainage Canal	S50	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
UT to Newland Drainage Canal	S51	30-3-1.5 <sup>1</sup>	C; Sw <sup>2</sup>
Pasquotank River	S52	30-3-(1)	WS-V; Sw
UT to Pasquotank River	S53	30-3-(1) <sup>1</sup>	WS-V; Sw
UT to Pasquotank River	S54	30-3-(1) <sup>1</sup>	WS-V; Sw
UT to Pasquotank River	S55	30-3-(1) <sup>1</sup>	WS-V; Sw
UT to Pasquotank River	S56	30-3-(1) <sup>1</sup>	WS-V; Sw
UT to Pasquotank River	S57	30-3-(1) <sup>1</sup>	WS-V; Sw

Notes: <sup>1</sup> – NCDWQ Stream Index Numbers are assigned only to named streams. UTs to the named streams assume the named stream's NCDWQ Stream Index Number (NCDWQ 2004).

<sup>2</sup> – Best Use Classification not specified for stream and is therefore assumed to be that of the nearest receiving stream that has been assigned a Best Use Classification (NCDWQ 2004).

**Table 11: Federally Listed Species for Gates and Pasquotank Counties**

<b>Scientific Name</b>	<b>Common Name</b>	<b>Federal Status</b>	<b>Habitat Present</b>	<b>Biological Conclusion</b>
Alligator mississippiensis	American alligator	T(S/A)	Yes	N/A
Picoides borealis	Red-cockaded woodpecker	E	Yes	No Effect
Acipenser brevirostrum	Shortnose sturgeon	E	Yes	No Effect
Acipenser oxyrinchus oxyrinchus	Atlantic Sturgeon	E	Yes	No Effect
Trichechus manatus	West Indian manatee	E	Yes	No Effect

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

# **APPENDIX E**

## **Historic Concurrence Forms**



Federal Aid #: n/a TIP#: R-2579

County: Gates &amp; Pasquotank

Property and Status	Alternative	Effect Finding	Reasons
Hinton-Morgan House (NR, C)	3C	Adverse Effect	Changes to setting & large interchange directly adjacent to house. Visual impacts - possible noise impacts
	3B & 3D	No Adverse Effect	Interchange shifted south & not directly adjacent limited access @ Northside Rd & US17
Moses-White House (DE, B&C)	3C	No Adverse Effect	Ramp north of property but @ grade - landscaping
	3B	No Adverse Effect w/ commitments	Ramp east of property but @ grade - need landscaping @ US 158 & property
	3D	No Adverse Effect	Ramp east of property but @ grade & within wooded buffer
Sunbury Historic District (DE, A&C)	1C	Adverse Effect	Direct impacts to contributing resource structures & farmland within the historic district
	1D & 1F	No Adverse Effect	1D - Small impact to corner of farmland & no impacts to cemetery - (at grade crossing) 1F - Small impacts to intersection of NC 52 - (at grade crossing) no contributing structures impacted.

Initialed:

NCDOT mpUSACE mpHPO use

# **APPENDIX F**

**Community Impacts Tables (Tables 13,14)**

**Table 13: Historic Architectural Resources**

Name	Status	Alternate Location	Effects
Sunbury Historic District	ENR	1C	Adverse Effect
Sunbury Historic District	ENR	1D, 1F	No Adverse Effect
Moses R. White, Jr. House	ENR	3B*, 3C & 3D	No Adverse Effect
Hinton-Morgan House	NR	3B, 3D	No Adverse Effect
Hinton-Morgan House	NR	3C	Adverse Effect

\*No adverse effect with landscaping commitments

ENR-Eligible for the National Register of Historic Places

NR- National Register of Historic Places

**Table 14: Population Growth, 2000-2010**

Population	2000	2010	Difference	% Change
Census Tract 9701, Block Group 1 (Gates Co.)	908	997	89	9.8%
Census Tract 9701, Block Group 2 (Gates Co.)	947	1,144	197	20.8%
Census Tract 9701, Block Group 3 (Gates Co.)	1,271	1,407	136	10.7%
Census Tract 9605.01, Block Group 1 (Pasquotank Co.)	N/A	1,372	N/A	N/A
Census Tract 9605.01, Block Group 1 (Pasquotank Co.)	N/A	2,699	N/A	N/A
<b>DSA Aggregate</b>	N/A	7,619	N/A	N/A
Gates County	10,516	12,197	1,681	16.0%
Pasquotank County	34,897	40,661	5,764	16.5%
North Carolina	8,049,313	9,535,483	1,486,170	18.5%

Source: US Census Bureau, Census 2010 and Census 2000, Summary File 1 100% data, Table P1 and P001 "Total Population"



# **APPENDIX G**

## **Relocation/Displacement Policies & Relocation Reports**

## **NCDOT's Relocation/Displacement Policies**

NCDOT's policy regarding relocations involves providing assistance to those affected by transportation improvements per the Federal Uniform Relocation Assistance and Real Properties Acquisition Policies Act. All alternatives under evaluation will result in the displacement of homes and/or businesses. Some residents in the DCI Study Area appear to be low-income. If so, and if they are displaced, the Last Resort Housing Program established by the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (PL 91-646) may be used.

The Division of Highways offers a Relocation Assistance Program to help minimize the effects of displacement on families and businesses. The occupants of the affected residences or businesses may qualify for aid under one or more of the NCDOT relocation programs.

It is the policy of the NCDOT to ensure that comparable replacement housing will be available prior to construction of state and federally assisted projects. Furthermore, the North Carolina Board of Transportation has the following three programs to minimize the inconvenience of relocation:

Relocation Assistance

Relocation Moving Payments

Relocation Replacement Housing Payments or Rent Supplement

The Relocation Assistance Program provides experienced NCDOT staff to assist displacees with information such as availability and prices of homes, apartments, or businesses for sale or rent and financing or other housing programs. The Relocation Moving Payments Program provides for payment of actual moving expenses encountered in relocation. Where displacement will force an owner or tenant to purchase or rent property of higher cost or to lose a favorable financing arrangement (in cases of ownership), the Relocation Replacement Housing Payments or Rent Supplement Program will compensate up to \$22,500 to owners who are eligible and qualify and up to \$5,250 to tenants who are eligible and qualify.

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 (Public Law 91-646), and 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 officer is assigned to each highway project for this purpose.

The relocation officer will determine the needs of displaced families, individuals, businesses, non-profit organizations, and farm operations for relocation 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 that meets decent, safe, and sanitary standards. The displacees are given at least a 90-day written notice after NCDOT purchases the property. Relocation of displaced persons will be offered in areas not generally less desirable in regard to public utilities and commercial facilities. Rent and sale



prices of replacement property will be within financial means of the families and individuals displaced, and will be reasonably accessible to their places of employment. The relocation officer will also assist owners of displaced businesses, non-profit organizations, and farm operations in searching for and moving to replacement property.

All tenant and owner residential occupants who may be displaced will receive an explanation regarding all available options, such as (1) purchase of replacement housing, (2) rental of replacement housing, either private or public, or (3) moving existing Owner-occupant housing to another site (if possible). The relocation officer will also supply information concerning other state or federal programs offering assistance to displaced persons and will provide other advisory services as needed in order to minimize hardships to displaced persons in adjusting to a new location.

The Moving Expense Payments Program is designed to compensate the displacee for the costs of moving personal property from homes, businesses, non-profit organizations, and farm operations acquired for a highway project. Under the Replacement Program for Owners, NCDOT will participate in reasonable incidental purchase payments for replacement dwellings such as attorney's fees, surveys, appraisals, and other closing costs and, if applicable, make a payment for any increased interest expenses for replacement dwellings. Reimbursement to owner-occupants for replacement housing payments, increased interest payments, and incidental purchase expenses may not exceed \$22,500 (combined total), except under the Last Resort Housing provision.

A displaced tenant may be eligible to receive a payment, not to exceed \$5,250, to rent a replacement dwelling or to make a down payment, including incidental expenses, on the purchase of a replacement dwelling. The down payment is based upon what the state determines is required when the rent supplement exceeds \$5,250.

It is the policy of the state that no person will be displaced by the 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 before displacement. 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 the Social Security Act or any other federal law.

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 latitudes in methods of implementation by the state so that decent, safe, and sanitary replacement housing can be provided. Last Resort Housing may be used if necessary.



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT: 38805.1.1 COUNTY Gates Alternate 1C Of 1 Alternate

T.I.P. No.: R2579

DESCRIPTION OF PROJECT: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties

## ESTIMATED DISPLACEES

## INCOME LEVEL

Type of Displacees	Owners	Tenants	Total	Minorities																
					0-15M		15-25M		25-35M		35-50M		50 UP							
Residential	9	3	12	3	0		1		1		1		9							
Businesses	0	0	0	0	VALUE OF DWELLING								DSS DWELLING AVAILABLE							
Farms / PP (personal property move)*	1 (p.p. only)	0	1	1	Owners			Tenants			For Sale			For Rent						
Non-Profit	0	0	0	0	0-20M		0		\$ 0-150		0		0-20M		0		\$ 0-150		0	

## ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
	X	1. Will special relocation services be necessary?
	X	2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
	X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
X		5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
	X	11. Is public housing available?

20-40M	0	150-250	0	20-40M	0	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	1	400-600	0	70-100M	0	400-600	0
100 UP	8	600 UP	3	100 UP	15+	600 UP	5-7
TOTAL	9		3		20+		7

## REMARKS (Respond by Number)

3. No business relocation involved but there are available business sites in the heart of Sunbury in the business district; closed business sites available for rehabilitation or immediate occupancy.

6. Internet and local contact revealed limited housing in the immediate Sunbury area but resources reveal housing counts listed above.

8. Approximately 17% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.

9. Residential dwellings appear average in size but 1 dwelling contained a wheelchair ramp (parcel 021) and some of observed occupants were elderly.

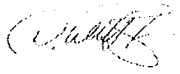
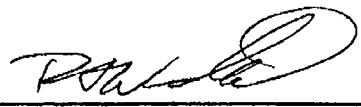
5 and 12. See cover memo for further explanation. Housing is minimal in the immediate area of Gates County / City of Sunbury so any impact will be significant. However resources have been located in surrounding area.

13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.



X		12. Is it felt there will be adequate DSS housing	14. There are no businesses impacted on this alternative; however, suitable amount of vacant / closed businesses available. See number 3. Source: field inspection
		housing available during relocation period?	
X		13. Will there be a problem of housing within	15. Typical relocation time-frame should be sufficient to accommodate identified impacts.
		financial means?	
X		14. Are suitable business sites available (list source).	*Personal property move for pole barn on farm operation
X		15. Number months estimated to complete	
		RELOCATION? 18	

		6/4/12	
D. Wade Brown, SR/WA, R/W-RAC Right of Way Agent		Date	
		6/26/12	
Relocation Coordinator		Date	

FRM15-E

# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S.      ☐ CORRIDOR      ☐ DESIGN

WBS ELEMENT:		38805.1.1		COUNTY	Gates		Alternate	1D	Of	1	Alternate
T.I.P. No.:		R2579									
DESCRIPTION OF PROJECT:				Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties							

ESTIMATED DISPLACEES					INCOME LEVEL							
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP			
Residential	8	2	10	2	0	0	1	1	8			
Businesses	0	0	0	0								
Farms / PP*	1	8	9	0								
Non-Profit**	1	0	1	0								

ANSWER ALL QUESTIONS											
Yes	No	Explain all "YES" answers.									
X		1. Will special relocation services be necessary?									
	X	2. Will schools or churches be affected by displacement?									
X		3. Will business services still be available after project?									
	X	4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.									
X		5. Will relocation cause a housing shortage?									
X		6. Source for available housing (list).									
	X	7. Will additional housing programs be needed?									
X		8. Should Last Resort Housing be considered?									
X		9. Are there large, disabled, elderly, etc. families?									
	X	10. Will public housing be needed for project?									
	X	11. Is public housing available?									
X		12. Is it felt there will be adequate DSS housing									

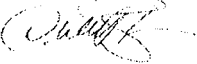
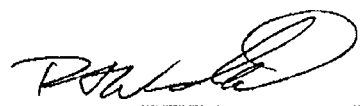
  

VALUE OF DWELLING								DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent					
0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0				
20-40M	0	150-250	0	20-40M	0	150-250	0				
40-70M	0	250-400	0	40-70M	5	250-400	0				
70-100M	1	400-600	0	70-100M	0	400-600	0				
100 UP	7	600 UP	2	100 UP	15+	600 UP	5-7				
TOTAL	8		2		20+		7				

REMARKS (Respond by number)	
*1. 8 cemetery plots from the 1800's (pcl 009) accounted in Farms / Personal Property; and **Sunbury Volunteer Fire Department Station 40 (pcl 012) identified as non-profit.	
3. No business relocation involved but there are available business sites in the heart of Sunbury in the business district; closed business sites available for rehabilitation or immediate occupancy. Sufficient area to construct new fire house station.	
6. Internet and local contact revealed limited housing in the immediate Sunbury area but resources reveal housing counts listed above.	
8. Approximately 17% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.	
9. Residential dwellings appear average in size but 1 dwelling contained a wheelchair ramp (parcel 016) and some of observed occupants were elderly.	
5 and 12. See cover memo for further explanation. Housing is minimal in the immediate area of Gates County / City of Sunbury so any impact will be significant. However resources have been located in surrounding area.	
13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.	



		housing available during relocation period?	14. There are no businesses impacted on this alternative; however, suitable amount of vacant / closed businesses available. See number 3. Source: field inspection.	
X		13. Will there be a problem of housing within financial means?	15. Typical relocation time-frame should be sufficient to accommodate identified impacts; however, fire station should be addressed initially to allow time to construct new station and all specialty requirements, codes, etc. that will be involved.	
X		14. Are suitable business sites available (list source).		
X		15. Number months estimated to complete RELOCATION?	18-24 months	
		6/4/12		
D. Wade Brown, SR/WA, R/W-RAC Right of Way Agent		Date	Date	

FRM15-E

# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S.      ☐ CORRIDOR      ☐ DESIGN

WBS ELEMENT:	38805.1.1	COUNTY	Gates	Alternate	1F	Of	1	Alternate
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T.I.P. No.: R2579

DESCRIPTION OF PROJECT: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties

## ESTIMATED DISPLACEES

## INCOME LEVEL

Type of Displacees	Owners	Tenants	Total	Minorities	INCOME LEVEL				
					0-15M	15-25M	25-35M	35-50M	50 UP
Residential	4	13	17	4	0	0	12	1	4
Businesses	4	1	5	0					
Farms / PP* (pers. Prop)	0	5	5	0					
Non-Profit	0	0	0	0					

## ANSWER ALL QUESTIONS

Yes	No	Explain all "YES" answers.
X		1. Will special relocation services be necessary?
X		2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
X		5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
	X	11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing

## VALUE OF DWELLING

## DSS DWELLING AVAILABLE

Owners		Tenants		For Sale		For Rent	
0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0
20-40M	0	150-250	0	20-40M	0	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	0	400-600	0	70-100M	0	400-600	0
100 UP	4	600 UP	13	100 UP	15+	600 UP	5-7
<b>TOTAL</b>	<b>4</b>		<b>13</b>		<b>20+</b>		<b>7</b>

## REMARKS (Respond by Number)

\*1 and 2. 5 cemetery plots from St. Paul Baptist Church cemetery.

3. There are available business sites in the heart of Sunbury in the business district; closed business sites available for rehabilitation and/or immediate occupancy.

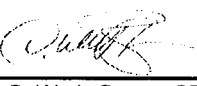

4. See cover memo for business displacement description.

6. Internet and local contact revealed limited housing in the immediate Sunbury area but resources reveal housing counts listed above.

8. Approximately 17% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.

9. Residential dwellings appear average in size but some of observed occupants were elderly.

5 and 12. See cover memo for further explanation. Housing is minimal in the immediate area of Gates County / City of Sunbury so any impact will be significant. However resources have been located in surrounding area. On this alternative, a mobile home park is being impacted. So, no immediate housing shortage but no other mobile home parks identified in the area. Replacement housing may involve purchase of mobile homes that cannot be moved due to structural limitations and placed on available land for sale or rent in the immediate area. For relocation costs calculated in this segment, it is assumed that mobile homes are owned and can be moved, and lot is rented.

		housing available during relocation period?	
X		13. Will there be a problem of housing within financial means?	13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.
X		14. Are suitable business sites available (list source).	14. Suitable amount of vacant / closed businesses available. See number 3. Source: field inspection.
X		15. Number months estimated to complete	15. Typical relocation time-frame should be sufficient to accommodate identified impacts.
		RELOCATION? <b>18 months</b>	
		6/4/12	
D. Wade Brown, SR/WA, RW-RAC Right of Way Agent		Date	6/26/12 Date

FRM15-E



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

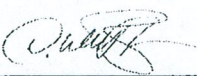
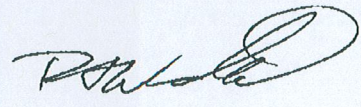
WBS ELEMENT:	38805.1.1	COUNTY	Gates	Alternate	2B	Of	2	Alternate
T.I.P. No.:	R2579							
DESCRIPTION OF PROJECT:		Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties						

ESTIMATED DISPLACEES					INCOME LEVEL								
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP				
Residential	24	3	27	3	0	1	4	12	10				
Businesses	3	0	3	1	VALUE OF DWELLING				DSS DWELLING AVAILABLE				
Farms / PP (pers. Prop)	4	0	4	0	Owners		Tenants		For Sale		For Rent		
Non-Profit	0	1	1	0	0-20M	1	\$ 0-150	0	0-20M	0	\$ 0-150	0	
					20-40M	2	150-250	0	20-40M	0	150-250	0	
					40-70M	9	250-400	0	40-70M	0	250-400	0	
					70-100M	2	400-600	0	70-100M	20+	400-600	10+	
					100 UP	10	600 UP	3	100 UP	20+	600 UP	15+	
					TOTAL	24		3		40+		25+	

ANSWER ALL QUESTIONS		
Yes	No	Explain all "YES" answers.
X		1. Will special relocation services be necessary?
	X	2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
X		5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?
	X	10. Will public housing be needed for project?
	X	11. Is public housing available?
X		12. Is it felt there will be adequate DSS housing available during relocation period?

REMARKS (Respond by Number)	
1. Pasquotank Newland Volunteer Fire Dept. Medium size move and sufficient land to accommodate new station; special move for any specialized equipment.	
3. Rural corridor between Sunbury and Morgan's Corner spanning across the Great Dismal Swamp. Mostly farms with scattered business sites. No services such as retail, food or health businesses were identified along the corridor nor any such being displaced..	
4. See cover memo for business displacement description.	
5. See item 3 above regarding corridor makeup. Based on this rural makeup, development is limited where any displacement of this count will cause shortage but land is available for construction or to relocate homes onto remainder.	
6. Internet and local contact revealed limited housing in the immediate Sunbury area but sufficient housing in Elizabeth City to the southeast within 10 - 15 miles.	
8. Approximately 17%-18% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.	
9. Residential dwellings appear average in size but some of observed occupants were elderly with at least one observed dwelling containing a wheelchair ramp (parcel 016).	



X	13. Will there be a problem of housing within financial means?	12. See cover memo for further explanation. Housing is minimal in the immediate area of Segment 2 but resources are available in Elizabeth City approximately 10 miles to the east.
X	14. Are suitable business sites available (list source).	13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.
X	15. Number months estimated to complete	14. See number 3 above. Limited business sites observed but minimal impact to businesses on this project. Of those impacted businesses, more than sufficient land to relocate to for new construction or available business sites available further east in Morgan's Corner. Source: field inspection.
	RELOCATION?	15. Typical relocation time-frame should be sufficient to accommodate identified impacts; however, fire station should be addressed initially to allow time to construct new station and all specialty requirements, codes, etc. that will be involved
	18-24 months	
		
D. Wade Brown, SRWA, RW-RAC Right of Way Agent		6/4/12 Date
		6/26/12 Date

FRM15-E



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S.      ☐ CORRIDOR      ☐ DESIGN

WBS ELEMENT:	38805.1.1	COUNTY	Gates	Alternate	3B	Of	3	Alternate
T.I.P. No.:	R2579							
DESCRIPTION OF PROJECT:		Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties						

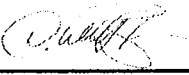
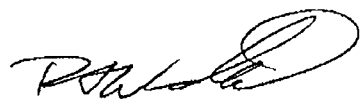
ESTIMATED DISPLACEEES					INCOME LEVEL								
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M		15-25M		25-35M		35-50M		50 UP
Residential	19	2	21	8	0		2		7		7		5
Businesses	1	1	2	0	VALUE OF DWELLING					DSS DWELLING AVAILABLE			
Farms / PP* (pers. Prop)	3	0	3	1	Owners		Tenants			For Sale		For Rent	
Non-Profit	0	0	0	0	0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0	0

ANSWER ALL QUESTIONS											
Yes	No	Explain all "YES" answers.									
	X	1. Will special relocation services be necessary?									
	X	2. Will schools or churches be affected by displacement?									
X		3. Will business services still be available after project?									
X		4. Will any business be displaced? If so,									

REMARKS (Respond by Number)											
		3. This segment of the corridor consists of developed area known as Morgan's Corner. Minimal business impact and services available in after situation. One business is Morgan's Corner Truck and Tractor Pull that appears to be small move of personal property but requires sufficient area to operate in terms of a replacement site. Field inspection reveals sufficient land area to accommodate new field site for this event place.									
		4. See cover memo for business displacement description.									
		6. Internet and local contact revealed sufficient housing available in Elizabeth City to the southeast of Morgan's Corner.									
		8. Approximately 17%-18% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue									
		9. Residential dwellings appear average in size but some of observed occupants were elderly.									
		12. See cover memo for further explanation. Housing is available in Elizabeth City approximately 10 miles to the east.									
		13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.									

		indicate size, type, estimated number of employees, minorities, etc.									
	X	5. Will relocation cause a housing shortage?									
X		6. Source for available housing (list).									
	X	7. Will additional housing programs be needed?									
X		8. Should Last Resort Housing be considered?									
X		9. Are there large, disabled, elderly, etc. families?									
	X	10. Will public housing be needed for project?									
	X	11. Is public housing available?									
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?									
X		13. Will there be a problem of housing within									



		financial means?		
X		14. Are suitable business sites available (list source).	14. See number 3 above. Business sites are available in the after situation. Source: field inspection.	
X		15. Number months estimated to complete	15. Typical relocation time-frame should be sufficient to accommodate identified impacts	
		RELOCATION?	* Personal property moves typical sheds, etc. but also includes parcel 020 Newland Community Building.	
		18 months		
		6/4/12		
D. Wade Brown, SR/WA, R/W-RAC Right of Way Agent		Date	Date	

FRM15-E



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT: 38805.1.1 COUNTY Gates Alternate 3C Of 3 Alternate  
T.I.P. No.: R2579

DESCRIPTION OF PROJECT: Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties

## ESTIMATED DISPLACEES

## INCOME LEVEL

Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP
Residential	47	10	57	33	0	10	6	16	25
Businesses	4	5	9	4	VALUE OF DWELLING				DSS DWELLING AVAILABLE
Farms / PP (pers. Prop)	9	42	52	0	Owners		Tenants		For Sale
Non-Profit	0	0	0	0	For Rent				
					0-20M	0	\$ 0-150	0	\$ 0-150
					20-40M	0	150-250	0	150-250
					40-70M	20	250-400	0	250-400
					70-100M	21	400-600	0	400-600
					100 UP	6	600 UP	10	100 UP
					TOTAL	47		10	40+

## ANSWER ALL QUESTIONS


Yes	No	Explain all "YES" answers.
X		1. Will special relocation services be necessary?
X		2. Will schools or churches be affected by displacement?
X		3. Will business services still be available after project?
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.
X		5. Will relocation cause a housing shortage?
X		6. Source for available housing (list).
	X	7. Will additional housing programs be needed?
X		8. Should Last Resort Housing be considered?
X		9. Are there large, disabled, elderly, etc. families?

## REMARKS (Respond by number)

1. Large personal property move count due to impact of Morgan's Corner Mini Storage facility that has 42 units eligible for relocation move costs. Also includes Newland Community Building and 6 billboards.
2. Parking and setback will be impacted to Mt. Carmel Baptist Church that could potentially require relocation of the church to operate efficiently. It is considered curable and no relocation in this report, but impact is sufficient to have probability for church to claim inability to operate and relocation determination would need to be made.
3. This segment of the corridor consists of developed area known as Morgan's Corner. Businesses impacted will be significant due to small volume of available businesses in the before situation. Services will be available in the after situation but reduced significantly in this alternative.
4. See cover memo for business displacement description.
5. Much of residential development in this area fronts US 158 and this segment will impact all along the frontage which is significant for this rural area. Approximately 90% of the 56 total residential displacees for this alternative front US 158 that widens on either side of the road. Based on the rural demographic and development of Morgan's Corner, this alternative will significantly impact the residential housing in this market.



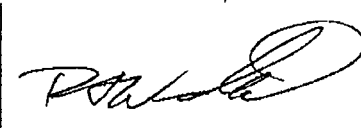
	X	10. Will public housing be needed for project?	6. Internet and local contact revealed sufficient housing available in Elizabeth City to the southeast of Morgan's Corner.
	X	11. Is public housing available?	
X		12. Is it felt there will be adequate DSS housing	8. Approximately 17%-18% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.
		housing available during relocation period?	
X		13. Will there be a problem of housing within	9. Residential dwellings appear average in size but some of observed occupants were elderly.
		financial means?	
X		14. Are suitable business sites available (list	12. See cover memo for further explanation. Housing is available in Elizabeth City approximately 10 miles to the east.
		source).	
X		15. Number months estimated to complete	13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.
		RELOCATION? 24 months	14. See number 3 above. Business sites are available in the after situation. Source: field inspection.
			15. Typical relocation time-frame should be sufficient to accommodate identified impacts.



6/4/12

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D. Wade Brown, SRWA, R/W-RAC  
Right of Way Agent



6/26/12

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Date

FRM15-E



# EIS RELOCATION REPORT

North Carolina Department of Transportation  
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S.      ☐ CORRIDOR      ☐ DESIGN

WBS ELEMENT:	38805.1.1	COUNTY	Gates	Alternate	3D	Of	3	Alternate
T.I.P. No.:	R2579							
DESCRIPTION OF PROJECT:		Widening of US 158 from NC 32 in Sunbury to US 17 at Morgan's Corner in Gates and Pasquotank Counties						

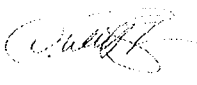

ESTIMATED DISPLACEES					INCOME LEVEL											
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M		15-25M		25-35M		35-50M		50 UP			
Residential	14	2	16	5	0		4		5		3		4			
Businesses	0	0	0	0	VALUE OF DWELLING						DSS DWELLING AVAILABLE					
Farms / PP (pers. Prop)	2		2	0	Owners			Tenants			For Sale			For Rent		
Non-Profit	0	0	0	0	0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0				

ANSWER ALL QUESTIONS									
Yes	No	Explain all "YES" answers.							
	X	1. Will special relocation services be necessary?							
	X	2. Will schools or churches be affected by displacement?							
X		3. Will business services still be available after project?							
	X	4. Will any business be displaced? If so,							

		indicate size, type, estimated number of employees, minorities, etc.							
	X	5. Will relocation cause a housing shortage?							
X		6. Source for available housing (list).							
	X	7. Will additional housing programs be needed?							
X		8. Should Last Resort Housing be considered?							
X		9. Are there large, disabled, elderly, etc. families?							
	X	10. Will public housing be needed for project?							
	X	11. Is public housing available?							
X		12. Is it felt there will be adequate DSS housing housing available during relocation period?							
X		13. Will there be a problem of housing within financial means?							
X		14. Are suitable business sites available (list							

REMARKS (Respond by Number)									
3. This segment of the corridor consists of developed area known as Morgan's Corner. Business services will be available in the after situation as in the before.									
6. Internet and local contact revealed sufficient housing available in Elizabeth City to the southeast of Morgan's Corner.									
8. Approximately 17%-18% of population are considered low income so some probability for super supplement payments to accommodate last resort housing issue.									
9. Residential dwellings appear average in size but some of observed occupants were elderly. Wheelchair ramp observed on parcel 040.									
12. See cover memo for further explanation. Housing is available in Elizabeth City approximately 10 miles to the east.									
13. See number 8 above. It is anticipated based on typical projects such as this along with census data that small percentage of displacees on this segment will involve last resort housing to resolve the relocation impact.									
14. See number 3 above. Business sites are available in the after situation. Source: field inspection.									
15. Typical relocation time-frame should be sufficient to accommodate identified impacts.									



X	source).
	15. Number months estimated to complete
RELOCATION?	18 months
	6/4/12
D. Wade Brown, SR/WA, RW-RAC Right of Way Agent	Date
	6/26/12
	Date

FRM15-E

# **APPENDIX H**

## **Geotech Tables (Table 17)**



**Table 17: Hazardous Materials**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Family Foods 1000 US 158 East Sunbury, NC 27979	Family Foods of Gatesville, Inc. 102 Court St. Gatesville, NC 27938	Family Foods of Gatesville, Inc. PO Box 127 Gatesville, NC 27938- 0127	0-031914
This facility currently operates as a supermarket & gas station. It is located on the north side of US 158 and 160 feet west of the NC 32 intersection. The tank bed is located approximately 50 feet from the US 158 centerline. According to the UST Section registry there are three (3) tanks currently in use. There are no monitoring wells on site. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former Residence Corner of US 158 and NC 32 Sunbury, NC 27979	Gates County 200 Court St PO Box 146 Gatesville, NC 27938	N/A	N/A
This former residence is located on the northwestern quadrant of NC 32 and US 158 in Sunbury. A heating oil UST is located to the west and behind the structure and approximately 55 feet from the US 158 centerline. According to local residents Gates County purchased this parcel and is restoring the structure. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Former Hardware Store 06 NC 32 Sunbury, NC 27979	Gates County 200 Court St PO Box 146 Gatesville, NC 27938	N/A	N/A
The former hardware store and meat processing facility is currently vacant. It is located on the west side of NC 32 and 190 feet north of the US 158 intersection. According to local residents the store had a pump island near the front door and sat approximately 25 feet from the NC 32 centerline. This property does not appear on the UST Section registry. There is no evidence of a pump island or USTs on site. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Holiday Food Store 205 03 NC 32 North Sunbury, NC 27979	Bhaktiraj, LLC 03 NC 32 North Sunbury, NC 27979	Supreme Petroleum, Inc PO Box 1246 Suffolk, VA 23439	0-025052
This gas station and convenience store is located on the northeast corner of the US 158 and NC 32 intersection. According to the UST Section registry there are three (3) USTs currently in use. The fill ports are approximately 100 feet from the medians of both NC 32 and US 158. Two ASTs with kerosene and diesel were also on site. No monitoring wells were noted on this property. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			

**Table 17: Hazardous Materials (cont.)**

<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Gates County Auto Machine Shop 1058 US 158 Sunbury, NC 27979	Jerry & Gloria Moore PO Box 69 Sunbury, NC 27979	N/A	N/A
This machine shop is located 65 feet from the median of US 158 and 0.2 miles from NC 32. The manager indicated that this store has been a machine shop for 25 years. Before that it was an appliance store. There is no evidence of USTs or UST removal. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Sun Feed Store US 158 Sunbury, NC 27979	Anna G. Clifton Family Ltd Partnership 600 Carolina Village Road Hendersonville, NC 28792	N/A	N/A
This closed store was a farm supply store, and is located 0.6 miles east of NC 32. The storefront is located 100 feet from the median of US 158. There is the possibility that this site has pesticide and herbicide contamination. There is no evidence of USTs or UST removal, and the site does not appear on the UST Section's registry. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Peggy's Country Café 586 US 158 Elizabeth City, NC 27909	William Gregory Life Estate 1525 Bradford Rd Virginia Beach, VA 23455	Joel F. Hollowell Oil Co Inc. PO Box 237 Winfall, NC 27985	0-001663
This restaurant is located on US 158 and 0.15 miles east of SR 1001 (Newland Rd). The building is located 75 feet from the median of US 158. There is an old gas station sign post located to the west of the store. According to the UST Section registry three (3) tanks were removed from this parcel in 1990. There are no monitoring wells on site. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
<b>Property Location</b>	<b>Property Owner</b>	<b>UST Owner</b>	<b>Facility ID #</b>
Scott Grading & Land Clearing 740 US 158 Elizabeth City, NC 27909	James G. Scott, Jr. 740 US 158 Elizabeth City, NC 27909	North East Oil Co. PO Box 1386 Ahoskie, NC 27910	0-021851
This property, with an equipment service garage, is located north of US 158 across from the intersection with SR 1001 (Turnpike Road). The office and garage are located 160 feet from the median of US 158. A former UST site is located to the east of the building. According to the UST Section registry two (2) USTs were removed in 1994. Ground Water Incident # 12810 was assigned to this facility at that time. A No Further Action Notice was issued in September 1998 by NCDENR. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			

Property Location	Property Owner	UST Owner	Facility ID #
Aryions Barber Shop 894 US 158 Elizabeth City, NC 27909	Elijah Williams, Jr. 621 Crooked Run Rd. Elizabeth City, NC 27909	Elijah Williams 621 Crooked Run Rd. Elizabeth City, NC 27909	N/A
This former gas station has been converted to a barbershop. The building is located in the NW quadrant of the US 158 and SR 1361 (Fire Tower Rd). The owner of the shop stated that this was the old Williams Amoco gas station. The site does not appear on the UST Section's registry. The pump island and two (2) fill ports are located 20 feet from the median of SR 1361 and 60 feet from the US 158 median. Two (2) vents were also seen on the north side of the building. Two (2) old gas station sign posts are located to the west of the building. There is the possibility that there is a second older gas station site to the west of this structure. There is no other evidence of USTs or UST removal. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Martin Enterprises 941 US 158 Elizabeth City, NC 27909	Martin Enterprises 941 US 158 Elizabeth City, NC 27909	Robert Sawyer 1014 North Road St Elizabeth City, NC 27909	0-002582
This machine shop is on the south side of US 158. The owner stated that the Sawyer Ford Tractor Dealership previously owned this property. Three (3) fill ports are located on the NW side of the building and set back 60 feet from the median of US 158. These (3) USTs were "slurried in place" in 1987 according to the current owner. A pump island is also located at the front of the building. According to the UST Section registry there is one (1) tank currently in use and one (1) tank was removed in 1991. Ground Water Incident # 31952 was assigned to this facility in 2008 and a Notice of Violation was issued by the UST Section in 2009. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Good News Baptist Church 807 US 158 Elizabeth City, NC 27909	Kay W. Weeks 807 US 158 Elizabeth City, NC 27909	FTF	N/A
This church building was converted from a former gas station. It is located on the north side of US 158, and across from the intersection of SR 1154 (Mill Pond Rd). The pump island, with three (3) electrical service conduits, is located at the front of the building. The island is 30 feet from the median of US 158. A kerosene tank site is also located at the front SW corner of the building. A fill port was located 36 feet east of this structure, in the center of the parking lot. A galvanized pipe was located in the ground adjacent to the east side of the building. The area was probed and no UST could be located. Ground Water Incident # 14048 was assigned to the property in 1995. This is a Federal Trust Fund site. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			



Property Location	Property Owner	UST Owner	Facility ID #
Once Again Antique Store 1673 Morgans Corner Rd Elizabeth City, NC 27909	Herbert B. Morgan 1036 US 158 Elizabeth City, NC 27909	N/A	N/A
An antique store operates from this former gas station and is located on the NW corner of the US 158 and SR 1417 (Morgans Corner Road). The store manager stated that this has been an antique store for at least the past 15 years. This site does not appear on the UST Section registry. The building sets back approximately 70 feet from both US 158 and SR 1417. A pump island is at the front of the building and shows evidence of three (3) pump locations. Four (4) vents were seen on the south side of the building and one at the north side. There is no evidence of fill ports or UST removal. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Russell Auto Parts 1015 US 158 Elizabeth City, NC 27909	Gregory Russell 3007 Crystal Lake Drive Elizabeth City, NC 27909	North East Oil Co. PO Box 1386 Ahoskie, NC 27910	0-020534
This former Morgans Corner Texaco gas station site now houses an auto parts business, and is located on the south side of US 158. The front of the building is 50 feet from the median of US 158. The business owner indicated that USTs were removed, and that the monitoring wells are checked once a year. According to the UST Section registry five (5) tanks were removed in 1994 and Ground Water Incident # 12815 was assigned to this facility in September 1994. Two (2) monitoring wells were located NE of the store and one at the NW corner. The asphalt patch over concrete shows evidence of UST removal at the front of the store. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Parkway Ag Supply is located a few hundred feet behind this auto parts business. Several ASTs, one UST, grain storage bins, and propane tanks were noted. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Jones Bros. Grocery & Hardware 1014 US 158 Elizabeth City, NC 27909	Dale & Brady Jones 745 Fire Tower Rd Elizabeth City, NC 27909	North East Oil Co. PO Box 1386 Ahoskie, NC 27910	0-026623
This gas station and convenience store is located on the NE corner of US 158 & SR 1417 (Morgans Corner Rd). According to the UST Section registry there are four (4) tanks currently in use. The USTs are located on the east side of the property approximately 80 feet from the median of US 158. Ground Water Incident # 09802 was assigned to this facility in 1993. Two (2) monitoring wells were originally located east of the fill ports and one new well was added in 2009. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			

Property Location	Property Owner	UST Owner	Facility ID #
Vacant lot at US 158 & SR 1417 Intersection Elizabeth City, NC 27909	Dale & Brady Jones 745 Fire Tower Rd Elizabeth City, NC 27909	N/A	N/A
Local residents indicated that the vacant property to the west of Jones Bros. Grocery was once the site of a gas station and post office. This site is on the northeastern quadrant of the US 158 and SR 1417 intersection. Much of this property has been filled in with construction debris, leaving little evidence of a gas station footprint. Most of area in question is located in the US 158 & SR 1417 right of way. One monitoring well is located between this lot and Jones Bros. Grocery and is outside the plume. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Private Residence 1018 US 158 Elizabeth City, NC 27909	Edna Bagley 1018 US 158 Elizabeth City, NC 27909	N/A	N/A
This private residence and garage is located on the north side of US 158 and east of Jones Bros. Grocery. There are open waste oil containers, drums with unknown contents, and batteries in the front and side of this garage. Several cars and trucks are in the front yard of this site. The owner of this property for 45 years, reports that this location has never been a gas station, and the site does not appear on the UST Section registry. However, a concrete pump island is at the front of the property, under a junked car. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			
Property Location	Property Owner	UST Owner	Facility ID #
Evans Welding Shop 1047 US 158 Elizabeth City, NC 27909	Edward S. Evans 1045 US 158 Elizabeth City, NC 27909	N/A	N/A
This welding and machine shop is located on the south side of US 158 and 450 feet west of SR 1352 (Brothers Lane). The front of the building is 35 feet from the median of US 158. The owner states that there are no USTs on this property and the site does not appear on the UST Section registry. There are several trucks, farm equipment, parts, and ASTs behind this shop. <b>This site is anticipated to present low geoenvironmental impacts to the project.</b>			

# **APPENDIX I**

## **MSAT Report**



## **Mobile Source Air Toxics (MSAT)**

### **Background**

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 Figure 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 significant 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, as shown in Figure 1, 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; significantly lower benzene emissions; significantly higher diesel PM emissions, especially for lower speeds. Consequently, diesel PM is projected to be the dominant component of the emissions total.

## **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.

## **NEPA Context**

The 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.

## **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:

6. No analysis for projects with no potential for meaningful MSAT effects;
7. Qualitative analysis for projects with low potential MSAT effects; or
8. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

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

### **(1) Projects with No Meaningful Potential MSAT Effects, or Exempt Projects.**

The types of projects included in this category are:

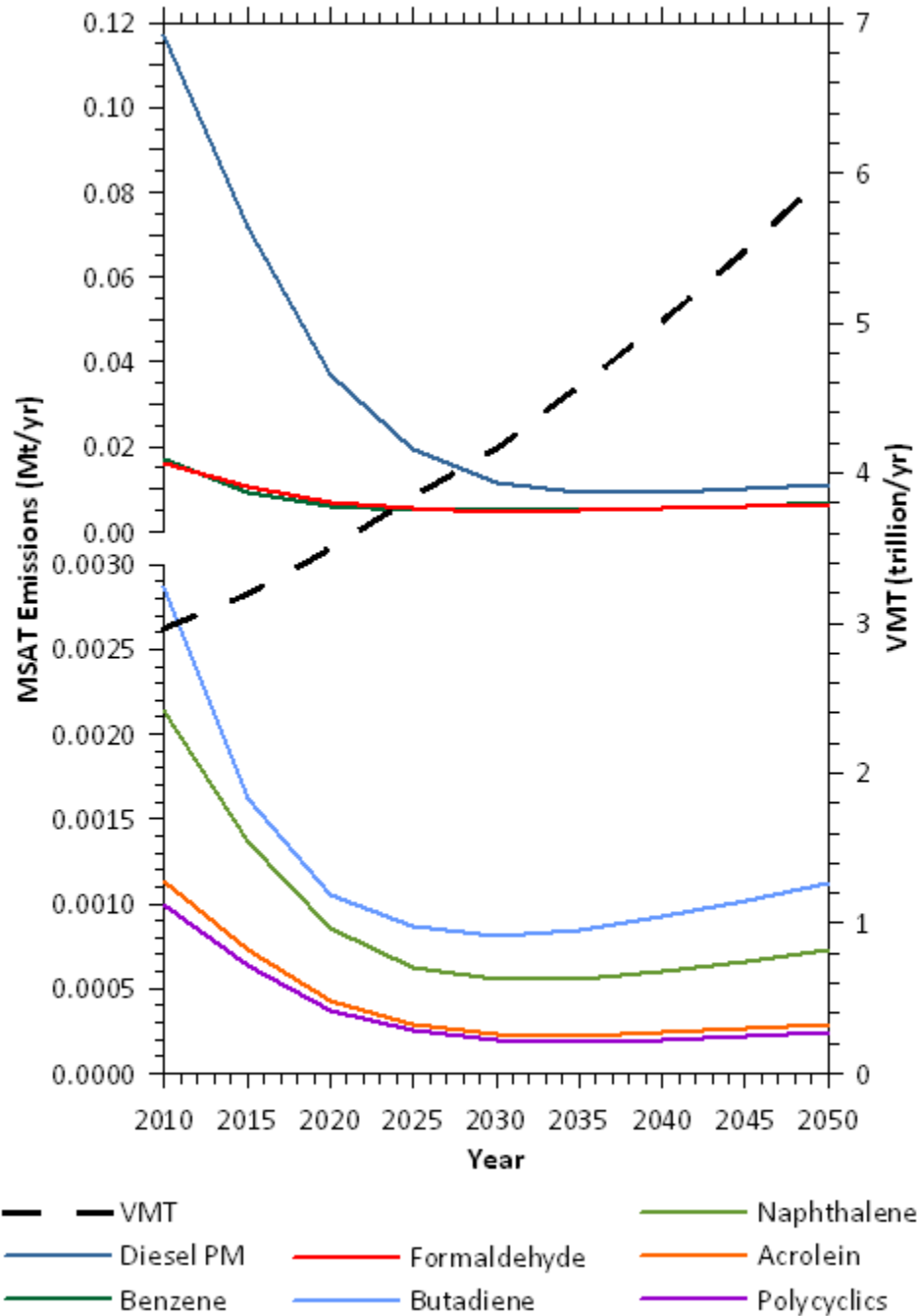
- Projects qualifying as a categorical exclusion under 23 CFR 771.117(c) (subject to consideration whether unusual circumstances exist under 23 CFR 771.117(b));
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

For projects that are categorically excluded under 23 CFR 771.117(c), or are exempt from conformity requirements under the Clean Air Act pursuant to 40 CFR 93.126, no analysis or



**Figure 1**

**National MSAT Emission Trends 1999 – 2050  
For Vehicles Operating On Roadways Using EPA's MOVES2010b Model**



Note: Trends for specific locations may be different, depending on locally derived information representing vehicle-miles travelled, vehicle speeds, vehicle mix, fuels, emission control programs, meteorology, and other factors

Source: EPA MOVES2010b model runs conducted during May - June 2012 by FHWA.

discussion of MSAT is necessary. Documentation sufficient to demonstrate that the project qualifies as a categorical exclusion and/or exempt project will suffice. For other projects with no or negligible traffic impacts, regardless of the class of NEPA environmental document, no MSAT analysis is recommended. The types of projects categorically excluded under 23 CFR 771.117(d) or exempt from certain conformity requirements under 40 CFR 93.127 do not warrant an automatic exemption from an MSAT analysis, but they usually will have no meaningful impact. However, the project record should document the basis for the determination of "no meaningful potential impacts" with a brief description of the factors considered.

## **(2) Projects with Low Potential MSAT Effects**

The types of projects included in this category are those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. This category covers a broad range of projects.

We anticipate that most highway projects that need an MSAT assessment will fall into this category. Any projects not meeting the criteria in category (1) or category (3) below should be included in this category. Examples of these types of projects are minor widening projects; new interchanges, replacing a signalized intersection on a surface street; or projects where design year traffic is projected to be less than 140,000 to 150,000 annual average daily traffic (AADT).

For these projects, a qualitative assessment of emissions projections should be conducted. This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic and the associated changes in MSAT for the project alternatives, including no-build, based on VMT, vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by EPA. Because the emission effects of these projects typically are low, we expect there would be no appreciable difference in overall MSAT emissions among the various alternatives.

In addition to the qualitative assessment, a project-level air quality analysis for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(b)). This discussion should explain how current scientific techniques, tools, and data are not sufficient to accurately estimate human health impacts that could result from a transportation project in a way that would be useful to decision-makers. Also in compliance with 40 CFR 150.22(b), it should contain information regarding the health impacts of MSAT.

## **(3) Projects with Higher Potential MSAT Effects**

This category includes projects that have the potential for meaningful differences in MSAT emissions among project alternatives. We expect a limited number of projects to meet this two-pronged test. To fall into this category, a project should:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, involving a significant number of diesel vehicles for new projects or accommodating with a significant increase in the number of diesel vehicles for expansion projects; or
- Create new capacity or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the AADT is projected to be in the range of 140,000 to 150,000 or greater by the design year;

And also

- Proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts, including completion of a quantitative analysis to forecast local-specific emission trends of the priority MSAT for each alternative, to use as a basis of comparison. This analysis also may address the potential for cumulative impacts, where appropriate, based on local conditions. How and when cumulative impacts should be considered would be addressed as part of a project-level air quality analysis. If the analysis for a project in this category indicates meaningful differences in levels of MSAT emissions among alternatives, mitigation options should be identified and considered.

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.

### **Qualitative MSAT Analysis**

A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. The qualitative assessment presented below is derived in part from a study conducted by the FHWA entitled A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives, found at:

[www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm](http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm)

For each alternative in this SEA, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. The VMT for this project is not available. The emissions increase is offset somewhat by lower MSAT emission rates due to increased speeds; according to EPA's MOVES2010b model, emissions of all of the priority MSAT decrease as speed increases. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent between 2010 and 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 in nearly all cases.



The additional travel lanes contemplated as part of the project alternatives will have the effect of moving some traffic closer to nearby homes, and businesses; therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher under certain Build Alternatives than the No Build Alternative. The localized increases in MSAT concentrations would likely be most pronounced along US 158, from SR 1429 (Sugar Run Road) to SR 1002 (Acorn Hill Road) under Alternatives 2A and 2B, and from SR 1363 (School House Road) to US 17 under Alternative 3C. 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 there would be higher MSAT emissions in the study area relative to the No Build Alternative due to increased VMT. There also could be increases in MSAT levels in a few localized areas where VMT increases. However, EPA's vehicle and fuel regulations will bring about lower MSAT levels for the area in the future than today.

### **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.

The U.S. Environmental Protection Agency (EPA) is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, <http://www.epa.gov/iris/>). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). Two HEI studies are summarized in Appendix D of FHWA's Interim Guidance Update on Mobile source Air Toxic Analysis in NEPA Documents. Among the adverse health effects linked to MSAT compounds at high exposures are; cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI, <http://pubs.healtheffects.org/view.php?id=282>) or in the future as vehicle emissions substantially decrease (HEI, <http://pubs.healtheffects.org/view.php?id=306>).

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts - each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (<http://pubs.healtheffects.org/view.php?id=282>). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA (<http://www.epa.gov/risk/basicinformation.htm#g>) and the HEI (<http://pubs.healtheffects.org/getfile.php?u=395>) have not established a basis for quantitative risk assessment of diesel PM in ambient settings.

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.

## **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.

## **Construction Air Quality**

Air Quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. During construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the project, burned or otherwise disposed of by the Contractor. Any burning done will be done in accordance with applicable local laws and ordinances and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. Care will be taken to ensure burning will be done at the greatest distance practical from dwellings and not when atmospheric conditions are such as to create a hazard to the public. Operational agreements that reduce or redirect work or shift times to avoid community exposures can have positive benefits. Burning will be performed under constant surveillance. Also during construction, measures will be taken to reduce the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents.

## **Summary**

Vehicles are a major contributor to decreased air quality because they emit a variety of pollutants into the air. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. New highways or the widening of existing highways increase localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion and because vehicle emissions will decrease in areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly.

The project is located in Gates and Pasquotank Counties,, 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.