

NC 24-27
From NC 740 in Albermarle
To the Proposed Troy Bypass (R-623), west of Troy
Stanly and Montgomery Counties
Federal Aid Project STBG-0024(083) – R-2530B
W.B.S. Elements 34446.1.7, 39922.1.1, & 35572.1.1
T.I.P. Projects R-2530B, B-4974, and R-2527

Administrative Action
FINDING OF NO SIGNIFICANT IMPACT

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

Submitted pursuant to the National Environmental Policy Act
42 U.S.C. 4332(2) (c)
And 49 U.S.C.303

APPROVED:

4/6/17
DATE

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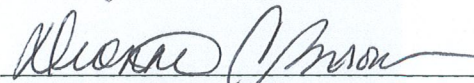
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FINDING OF NO SIGNIFICANT IMPACTS

April 2017

Documentation Prepared in
Project Development and Environmental Analysis Unit By:

4/6/17
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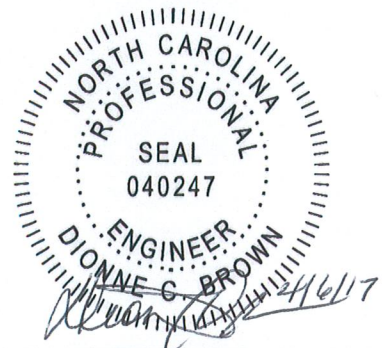


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PROJECT COMMITMENTS

NC 24-27

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TIP Projects R-2530B, B-4974, and R-2527

Current status, changes, or additions to the project commitments as shown in the environmental document for the project are printed in *italics*.

Project Development & Environmental Analysis Unit/ Natural Environmental Unit

NCDOT will coordinate with ~~Progress~~ Duke Energy regarding any requirements of the Federal Energy Regulatory Commission (FERC) ~~regarding~~ approvals. Requirements from the FERC regarding approvals will be met prior to right of way acquisition.

FERC coordination is currently underway and will be completed prior to construction.

Project Development & Environmental Analysis Unit, Roadway Design Unit, Rail Division

In the R-2527 project limits, the Norfolk Southern Railroad bridge crosses NC 24-27 within the Uwharrie National Forest which is under the US Forest Service's jurisdiction. NCDOT will ensure that the US Forest Service is part of the project's railroad design coordination process.

Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will coordinate with the US Forest Service regarding the railroad design and will begin to develop right of way plans for Project R-2527. Results of this coordination will be captured in a consultation document.

Geotechnical Unit

Preliminary site assessments will be conducted for twenty-three potentially contaminated sites within the proposed right of way prior to right of way acquisition.

Site assessments will be determined and completed once final ROW plans become available and prior to ROW acquisition.

Divisions 8 and 10 Construction Units

This project involves construction activities on or adjacent to the Federal Emergency Management Agency (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 structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

This is a standard project commitment.

Division 8 and 10 Construction and Wildlife Resources Commission

NCDOT commits to resurface and pave the Swift Island Boat access facility parking lot with the conditions that a de minimus determination will be rendered for the impacts to the property. WRC commits to allow NCDOT access to the property to complete these construction activities.

Hydraulics Unit

The Hydraulics Unit will coordinate with the Floodplain Mapping Program (FMP), the delegated state agency for administering FEMA's National Flood Insurance Program, 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 commitment will be addressed during final design.

Division of Bicycle and Pedestrian Transportation, Project Development & Environmental Analysis Unit, Roadway Design Unit

Fourteen foot outside travel lanes will be utilized for bicycle accommodations from NC 740 in Albemarle to SR 1731, Sweet Home Church Road. Four foot paved shoulders will be utilized for bicycle accommodations from SR 1731, Sweet Home Church Road to the proposed Troy Bypass, west of Troy.

The current design illustrates this commitment.

Bicycle and pedestrian accommodations will be further coordinated with the City of Albemarle prior to final project design. In accordance with the NCDOT Pedestrian Policy, NCDOT will bear the full cost to replace any existing sidewalks to be relocated by the project along existing streets. The City of Albemarle will participate in the cost of new sidewalks in areas where sidewalks do not currently exist. A municipal agreement will be prepared prior to project construction.

The City of Albemarle has committed to participate in sidewalk accommodations. The municipal agreement will be prepared prior to construction. Five-foot sidewalks are proposed on both the north and south sides of NC 24-27-73, within the Albemarle city limits and the southwest quadrant of NC 24-27-73 (Spaulding Street) and SR 1625 (Raleigh Highway) for approximately 325 feet.

Project Development & Environmental Analysis Unit – Natural Environment Section

Due to the presence of Schweinitz's sunflower within the project area as well as within 1-mile of the project area, a biological conclusion of "May affect, likely to adversely affect" has been given. Additional surveys will be required prior to project construction, and this biological conclusion will necessitate further coordination and consultation with the US Fish and Wildlife Service. A Biological Assessment and a Biological Opinion will be completed prior to the completion of the final environmental document.

A Biological Assessment will be completed once surveys are updated for the proposed project. A Biological Opinion will be completed prior to construction.

Schweinitz's sunflower surveys for Project R-2530B will occur Fall 2017. Schweinitz's sunflower surveys for Project R-2527 will not occur until 2020.

The proposed projects will have no effect on the smooth coneflower. However, due to the presence of potential habitat within the project area, additional surveys will be required prior to construction.

Surveys for smooth coneflower will be conducted this Fall. An update to this species will be available prior to construction.

Additional bald eagle surveys may be required within Montgomery County and Stanly County prior to project construction as specified by the Bald and Golden Eagle Protection Act. However, these surveys will be restricted to 660 feet from the edge of the project boundaries.

This commitment will be addressed prior to construction.

This project may impact individuals of the three S and LR species (smooth coneflower, large witch alder and glade wild quinine), but will not affect the viability of any of the three species across the forest. Discussions will occur with the USFS to determine avoidance and minimization options.

Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Updated Forest Services survey will occur in 2017 and 2018 for TIP Project

R-2527. NCDOT will coordinate with the Forest Service and will begin to develop right of way plans for Project R-2527. Results of this coordination and the new surveys will be captured in a consultation document prior to R/W acquisition for project R-2527.

The Northern Long-Eared Bat has been added to the species list since the completion of the EA. NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for Northern Long-Eared Bat.

Project Development & Environmental Analysis Unit, Roadway Design Unit

~~The proposed project will have “no adverse effect” on Bridge No. 51 if a responsible party agrees to take ownership of Bridge No. 51 and preserves it in place. A Section 4(f) evaluation and a Memorandum of Agreement (MOA) will be required for B-4974, Alternative 1 if a responsible party does not agree to take ownership of Bridge No. 51 and for B-4974, Alternative 4 since Bridge No. 51 will be removed.~~

Bridge No. 51 is proposed to be rehabilitated. Coordination with the SHPO and NCDOT Historic Architecture Section, rendered a no adverse effect determination for this improvement.

Project Development & Environmental Analysis Unit–Human Environment Section

Multilingual public outreach measures will be taken on an “as needed” basis.

This commitment was satisfied during out public involvement process.

Divisions 8 and 10 Construction Units, Utilities Unit – Relocation of Utilities

All relocation of utilities including but not limited to power lines, water and sewer lines, and communication lines located on NFS lands must be coordinated with the USFS. Utility companies cannot use the easement granted to the North Carolina Department of Transportation for construction and operation of the highway for their uses. All utility companies must work directly with the USFS to modify their existing special use permits on relocations within the project area.

Divisions 8 and 10 Construction Units, Roadside Environmental – Landscaping and Erosion Control

Landscaping and erosion control plants and seed mixes to be used on NFS lands must be discussed with the FS and disclosed in this document.

Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Coordination is needed with the US Forest Service and NCDOT Roadside Environmental Unit regarding erosion control plants and seed mixes to be used on NFS lands.

Roadside Environmental Unit, Division Resident Engineer – High Quality Waters

Given the potential for impacts to the resources during the project implementation, NCDWQ requests that NCDOT strictly adhere to North Carolina regulations entitles Design Standards in Sensitive Watersheds (15A NCAC 04B .0124) throughout design and construction of the project. This would apply for any area that drains to streams having WS CA (Water Supply Critical Area) classifications.

Standard Procedure. This commitment will be implemented during construction.

Project Development & Environmental Analysis Unit – Archaeological Section

*Six National Register of Historic Places (NRHP) eligible archaeological sites (31Mg1806, 31Mg1629, 31Mg321, 31St195, 31St196 and 31St204/204**) will be adversely effected by the undertaking per the 2014 Notification of Adverse Effect Finding. A Memorandum of Agreement (MOA) will be prepared by NCDOT in consultation with the Historic Preservation Office, the United States Forest Service (USFS) and other consulting parties that may be identified and invited by FHWA to participate. The MOA will detail the measures NCDOT plans to carry out to mitigate adverse effects to these sites. USFS is requiring actual Right-of-Way (ROW) widths to identify the actual impacts to archaeological resources present in the project area(s) and to prescribe mitigation for projection of historic resources. All required data recovery mitigation efforts will be initiated after ROW acquisition is completed relative to each site. No construction related activities are permitted within an individual site's limits until the field investigation/ mitigation requirements relative to that site have been completed. Each site will require six months after their respective ROW acquisition is complete in order to complete their respective field investigation/ mitigation requirements*

Project Development & Environmental Analysis Unit – Human Environment Section – Traffic Noise & Air Quality Group

A Design Noise Report (DNR) will be completed during final design.

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I. Type of Action

This is a Federal Highway Administration (FHWA) administrative action, Finding of No Significant Impact (FONSI).

The North Carolina Department of Transportation (NCDOT) and FHWA have determined this project will not have any significant impact on the human or natural environment. This FONSI is based on the December 23, 2011 Environmental Assessment (EA) which has been independently evaluated by the FHWA and determined to adequately and accurately disclose the environmental issues and impacts of the proposed project. The EA, together with the information contained in this FONSI (including responses to comments on the EA), provides sufficient evidence and analysis for determining that an Environmental Impact Statement (EIS) is not required.

II. Description of Proposed Action

A. General Project Description

The proposed projects involve widening NC 24-27 from NC 740 in Albemarle located in Stanly County to the Proposed Troy Bypass (R-623), west of Troy in Montgomery County. TIP project R-2530B involves widening existing NC 24-27 from west of NC 740 to the Pee Dee River in Stanly County from a two to three-lane facility to a four-lane divided facility. R-2530B will include a 23-foot raised median from NC 740 to SR 1731 (Sweet Home Church Road) and transition to a 46-foot depressed median from east of SR 1731 to the Pee Dee River in Stanly County. Project R-2530B will also involve a superstreet design in the areas where curb and gutter is proposed and also in the open shoulder segment at STA 153+00. TIP project B-4974 involves rehabilitating existing Bridge No. 51 over the Pee Dee River on the Stanly / Montgomery County line. TIP project R-2527 involves widening existing NC 24-27 from a two-lane facility to a four-lane divided facility with a 46-foot depressed median from the Pee Dee River to the proposed Troy Bypass, west of Troy in Montgomery County. The total length of the proposed projects is approximately 14.6 miles long. See Figure 1 for the project vicinity.

It is anticipated approximately 150 to 250 feet of right of way plus easements will be required to accommodate these facilities. Partial control of access is proposed for the

projects. All intersecting roadways will cross the highway at grade; no grade separations or interchanges are proposed.

B. Project Cost

The latest cost estimates for the projects are listed in Table 1 below.

TABLE 1: LATEST PROJECT COST ESTIMATES*

Project Number	Right of Way/ Utility Cost	Construction Cost	Mitigation Cost	Project Cost
R-2530B:	\$15,900,000	\$29,200,000	\$1,174,118	\$46,274,118
B-4974 Rehab Alternative:	\$2,025,000	\$28,000,000	\$403,538	\$30,428,538
R-2527	\$9,437,000	\$46,200,000	\$1,722,622	\$57,359,622
Total Cost	\$27,362,000	\$103,400,000	\$3,300,278	\$134,062,278

*Based off of NCDOT STIP January 2017 and March 2017

C. Project Schedule

Right of way acquisition and construction for R-2530B and B-4974 are scheduled for SFY 2017 and SFY 2019, respectively. The Right of way acquisition and construction schedule for R-2527 in the Draft 2018-2027 STIP is 2020 and 2022, respectively.

III. Preferred Alternative

The “Best Fit” alignment alternative was analyzed in the Environmental Assessment (EA) for projects R-2530B and R-2527. This alternative widens NC 24-27 at locations that “best fit” the current road location and surrounding land uses. “Best fit” locations were evaluated and selected to improve the existing road alignment, minimize impacts, and permit maintenance of traffic during construction. Two alternatives were analyzed in the EA for project B-4974, see Figure 2. Alternative 1 consists of replacing Bridge No. 51 with a new bridge south of the existing bridges, and Alternative 4 consists of removing the National Register-Eligible Bridge No. 51 and replacing it with a new bridge along the existing roadway alignment.

On November 21, 2013, the Land Trust for Central North Carolina offered to take ownership of Bridge No. 51 once NC 24-27 was widened and a replacement bridge was constructed. On August 18, 2014, the Land Trust for Central North Carolina withdrew their offer due to the additional financial burden specified by state legislation.

A Bridge No. 51 Rehabilitation Alternative was developed for consideration since both B-4974, Alternatives 1 and 4 required removal of Bridge No. 51. This alternative proposed to keep part of the existing National Register-Eligible Bridge No. 51 intact, replace and widen the bridge deck, and rehabilitate the arch ribs and arch piers while

preserving the historic and architectural character of the original structure. The rehabilitation alternative is preferred for improving Bridge No. 51.

IV. Summary of Environmental Effects

The environmental impacts associated with the proposed project are listed in Section V of the Environmental Assessment (EA). A summary of impacts for the proposed project is shown in Table 2 below.

TABLE 2: SUMMARY OF ENVIRONMENTAL EFFECTS

Impact Category	Project Study Alternative				Total Impacts
		A	Rehab	C	
	No Build	R-2530B	B-4974,	R-2527	A+Rehab+C
			Rehab Alt.		
Natural Resources Impacts					
Federal Listed Species Habitat	No	Yes	Yes	Yes	Yes
100-Year Flood Plain and Floodway Impacts	No	No	Yes	Yes	Yes
Wetlands (number of crossings/acres)	0	3 / 0.82	1 / 0.02	26 / 0.89	30 / 1.73
Stream Crossings (number / linear feet)	0	15 / 3,842	9 / 1,356	25 / 5,695	49 / 10.893
Water Supply Critical Areas	No	Yes	Yes	Yes	Yes
Rare Plants *	No	Yes	No	Yes	Yes
USFS Forest Land (acres) **	0	0	0	50	50
Human Environment Impacts					
Residential Relocations (number)	0	19	5	8	32
Business Relocations (number)	0	18	3	2	23
Low Income/Minority Population	No	No	No	No	No
Cemeteries/Graves (number of graves impacted)	0	Yes / 0	No	No	Yes / 0
Historic Structures ***	0	0	1	0	1
Archaeological Sites	0	3	0	3	6
Section 4(f) Impacts	0	No	Yes	Yes	Yes
Traffic Noise Impacts (receptors) ****	0	15	0	11	26
Air Quality	Within an Attainment area				
Physical Environment Impacts					
Railroad Crossings (number)	0	0	0	1	1
Farmland	No	No	No	No	No
Potentially Hazardous Materials Sites (number)	0	17	2	4	23

NOTES:

All impacts, but the USFS Forest Land acreage, are based on preliminary design slope stake limits plus 25 feet. The USFS Forest Land acreage is based on preliminary proposed right of way limits.

* Rare plants include Schweinitz's Sunflower, Georgia Aster, Large Witch Alder and Smooth Sunflower.
 ** USFS Forest Land acreage was recalculated based on updated forest boundaries.
 *** The Swift Island Ferry / James B. Garrison Bridge (Existing Bridge 51) is eligible for the National Register of Historic Places.
 **** The values are based on results of the Traffic Noise Analysis (December 5, 2011) and screened against the Traffic Noise Policy (October 6, 2016). A Design Noise Report (DNR) will be completed during final design.

V. Coordination and Comments

A. Circulation of the Environmental Assessment

The Environmental Assessment was approved by the N.C. Division of Highways and the FHWA on December 23, 2011. The approved Environmental Assessment was circulated to the following federal, state, and local agencies for review and comments. An asterisk (*) indicates a written response was received from the agency. Copies of the correspondence received are included in Appendix D of this Document.

- *U.S. Department of the Army- Corps of Engineers
- * U.S. Department of Agriculture- Forest Service
- *U.S. Department of the Interior- Fish and Wildlife Services
- *U.S. Environmental Protection Agency
- *N.C. Department of Administration
- *N.C. Department of Agriculture and Consumer Services
- * N.C. Department of Environmental and Natural Resources
- *N.C. Department of Environmental and Natural Resources- Division of Water Quality
- *N.C. Department of Environmental and Natural Resources- Division of Environmental Health
- * N.C. Department of Environmental and Natural Resources- Office of Conservation, Planning, and Community Affairs
- *N.C. Wildlife Resources Commission
- * N.C. Department of Environmental and Natural Resources- Division of Water Resources
- * N.C. Department of Environmental and Natural Resources- Division of Soil and Water Conservation
- *N.C. Department of Environmental and Natural Resources- Forest Service
- N.C. Department of Cultural Resources- State Historic Preservation Office
- *N.C. Department of Crime Control and Public Safety- Division of Emergency Management
- *Stanly County
- *Stanly County Board of Commissioners
- *City of Albemarle
- Rocky River RPO
- Piedmont Triad RPO
- *FRA – Office of Policy & Communication
- *Montgomery County Board of Commissioners

B. Comments Received on the Environmental Assessment

Comments received on the Environmental Assessment are noted in this section. Additionally, any comments that resulted in a revision to the Environmental Assessment are addressed in **Section VI** of this document.

1. Agency Comments received on the Environmental Assessment

U.S. Army Corps of Engineers

Comment: Stream St-W should be removed from the impact table and the EA. During the February 2, 2011 CP 2a field meeting, Stream St-W was determined to an ephemeral feature that is not subject to the permit requirement of the section 404 of Clean Water Act.

Response: Stream St-W has been removed from the impact table and the EA. See Table 3 below for updated impacts for streams for B-4974.

TABLE 3: STREAM IMPACTS IN THE B-4974 PROJECT STUDY AREA

STREAM ID	STREAM NAME	NCDENR STATUS CLASSIFICATION	DWQ SCORE	STREAM LENGTH IN STUDY AREA (FEET)	PRELIMINARY DESIGN STREAM IMPACTS (FEET) REHABILITATION ALTERNATIVE: 4
St-T	UT, Pee Dee River	Perennial	29	821	213
St-U	UT, Pee Dee River	Perennial	33	1445	303
St-V	UT, Pee Dee River	Perennial	34.5	1255	328
SG	UT, Pee Dee River	Intermittent	26	242	65
SH	UT, Pee Dee River	Perennial	32.5	386	72
SA-1	UT, Rocky Creek	Intermittent	--	832	201
SA	Rocky Creek	Perennial	42.5	1,123	174
TOTAL STREAM IMPACTS FOR B-4974					1,356

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet

Comment: The EA should explain why a 46' median is being proposed along portions of the project and a 23' median is being proposed along other portions of the project. Median widths can be further discussed at the CP 4A meeting.

Response: Using the North Carolina functional classification system, NC 24-27 within the Albemarle city limits (R-2530B) is classified as an urban principal arterial. Through the remainder of the project area (R-2530B, B-4974 and R-2527), NC 24-27 is classified as a rural minor arterial. The strategic highway corridor vision for NC 24-27 in the project area is that NC 24-27 be improved to an expressway. The proposed typical section from NC 740 to SR 1731 (Sweet Home Church Road) within the Albemarle city limits is a four-lane divided facility with a 23-foot raised median which transitions to the proposed typical section for the remainder of the project area which is a four-lane divided facility with a 46-foot depressed median from SR 1731 to the proposed Troy Bypass, west of Troy. Median widths were discussed at the merger meeting and was agreed upon.

U.S. Department of Agriculture, Forest Service

Comment: The Environmental Assessment (EA) is lacking in the analysis of effects to most environmental resources present in the study area. It is very difficult to review analysis that is not present in the document. Direct, indirect, and cumulative effects to all biological resources must be disclosed in the EA.

Response: The proposed improvements to R-2527 will not impact any S or LR aquatic species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. The proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.

The proposed project will potentially impact E, S and LR plant species. The Biological Conclusion for Schweinitz's sunflower is May Affect, Likely to Adversely Affect. Therefore, formal consultation with the U.S. Fish and Wildlife Service is required.

This project may impact individuals of the three S and LR species (smooth sunflower, large witch alder and glade wild quinine), but will not affect the viability of any of the three species across the forest. Discussions will occur with the USFS to determine avoidance and minimization options. NCDOT will coordinate with the Forest Service regarding avoidance and minimization options and will begin to develop right of way plans for Project R-2527. Updated USFS surveys will occur in 2017 and 2018. Results of this coordination and the new surveys will be captured in a consultation document prior to right of way acquisition for Project R-2527.

The proposed improvements to R-2527 are not likely to adversely affect any S or LR terrestrial species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. The proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.

Formal consultation will be finalized prior to construction.

Comment: All references in the document to "National Forest Service lands" need to be referred to as to "National Forest System lands" and thereafter, NFS lands.

Response: Comment noted.

Comment: All maps contained in the EA should note the location of NFS lands on the Uwharrie National Forest (UNF) in relation to the project. It appears that the UNF boundaries depicted on the maps included in the document are the proclamation boundary and not the actual property boundaries. The proclamation boundary includes all land both public and private within which the UNF can legally acquire property.

Response: Figures 3A to 3K were updated for the FONSI to include the actual UNF boundary.

Comment: Evaluation of impacts on NFS lands need to be addressed specifically in the document i.e. not imbedded in the discussion of impacts to the entire project area in accordance with our Forest Plan.

Response: The following tables lists streams and wetlands within the UNF boundary. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Coordination is needed with the US Forest Service. Table 4 list stream impacts and Table 5 list the wetland impacts within the NFS land boundary.

TABLE 4: STREAM IMPACTS IN THE UNF BOUNDARY FOR R-2527 PROJECT STUDY AREA

STREAM ID	STREAM NAME	NCDENR STATUS CLASSIFICATION	DWQ SCORE	STREAM LENGTH IN STUDY AREA (FEET)	PRELIMINARY DESIGN STREAM IMPACTS (FEET) ALTERNATIVE: BEST FIT
SD	Clarks Creek	Perennial	41.5	531	145
SL-A	UT, Cattail Creek	Perennial	33.5	627	114
SW-A	UT, Cattail Creek	Intermittent	25	782	20
SJ	UT, Wood Run	Intermittent	20	210	109
SX	UT, Lick Fork Creek	Perennial	37.5	1,567	339
SY-A	UT, Rocky Creek	Perennial	40.5	2,335	729
SF-B	Rocky Creek	Perennial	48.5	517	155
SW-B	UT, Lick Fork Creek	Intermittent	29	672	147
TOTAL STREAM IMPACTS FOR R-2527					1,738

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.

**TABLE 5: WETLAND IMPACTS IN THE UNF BOUNDARY FOR R-2527
PROJECT STUDY AREA**

WETLAND ID	WETLAND TYPE	WETLAND RATING	WETLAND AREA IN STUDY AREA (Acres)	PRELIMINARY DESIGN WETLAND IMPACTS (ACRES) ALTERNATIVE: BEST FIT
WH	Riverine	18	0.007	0.01
WJ	Riverine	18	0.003	<0.01
WSS	Riverine	37	0.061	<0.01
WHH	Riverine	31	0.019	0.02
WFF	Riverine	31	0.601	0.04
WGG	Non-Riverine	22	0.251	0.05
WPP	Non-Riverine	18	0.057	<0.01
WEE	Non-Riverine	18	0.308	0.04
WOO	Riverine	31	0.028	0
WQQ	Riverine	18	0.114	0
WXX	Riverine	28	0.233	0
WYY	Riverine	16	0.008	0
TOTAL WETLAND IMPACTS FOR R-2527				0.19

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.

Comment: The EA does not discuss any mitigation options for loss of NFS lands or stream or wetlands impacts on NFS lands as a result of the proposed actions. The US Forest Service (USFS) would like to discuss possible mitigation for lost resources and unavoidable impacts to resources.

Response: Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Coordination is needed with the US Forest Service to discuss possible mitigations for lost resources and unavoidable impacts to resources. NCDOT will coordinate with the Forest Service and will begin to develop right of way plans for Project R-2527. Mitigation costs are captured in this document.

Comment: The determination of effect for Schweinitz's sunflower is still being consulted on with the United States Fish and Wildlife Service (USFWS). USFWS has not yet agreed with the determination of effect for this species.

Response: Approximately 35 individuals of the federally endangered plant species Schweinitz's sunflower (*Helianthus schweinitzii*) were found adjacent to the railroad in the activity area. This population of Schweinitz's sunflower could be affected by the proposed project.

There are approximately 450 individuals of T and E, S or LR plant species within the 500 ft wide project study corridor. Approximately 100 individuals of the S plant species large

witch alder (*Fothergilla major*), 300 individuals of the LR plant species smooth sunflower (*Helianthus laevigatus*), 35 individuals of the E plant species Schweinitz's sunflower (*Helianthus schweinitzii*) and several (less than 20) individuals of the LR plant species glade wild quinine (*Parthenium auriculatum*) were found in the activity area. It is not anticipated that all of these individuals will be affected or impacted (direct, indirect or cumulative) since construction will not occur throughout the entire 500 ft wide project study corridor. Updated surveys for Schweinitz's sunflower will be conducted this Fall. Once surveys are completed a Biological Assessment will be completed and a Biological Opinion will be rendered prior to construction. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will coordinate with the USFWS and will begin to develop right of way plans for Project R-2527. Results of this coordination will be captured in a consultation document. Forest Service surveys will occur in 2017 and 2018. See appendix for activity regarding Schweinitz's sunflower through WRC coordination with NCDOT.

Comment: Disclose the impacts to wetlands (acres), streams (linear feet), federally listed species habitat, flood plain impacts, rare plants, archeological sites, traffic noise impacts, railroad crossings, and potentially hazardous material sites located on NFS lands. Table S1: There will be "0" acres of NFS lands impacted by project B-4974 and the acres of impact on NFS for project R-2527 is overestimated. As noted in general comments, make sure that NFS acres are evaluated using the actual property boundaries not the proclamation boundary.

Response: Updated tables are included in this document with impacts to Forest Service lands. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will coordinate with the Forest Service and updated proposed impacts within the UNF as right of way plans for Project R-2527 are being developed.

Comment: Only project R-2527 will require a special use permit from the USFS for the proposed projects. The USFS does not own any property that will be affected by project B-4974; therefore, a permit is not required. The wording "permit from the USFS will be required to provide land for the proposed project" needs to clearly reflect that the USFS will only be permitting use of the land and not actually transferring ownership of the land to the North Carolina Department of Transportation.

Response: Comment noted.

Comment: Include the length of the road corridor that bisects NFS lands within the UNF.

Response: The length of road corridor that bisects NFS lands within the UNF is 3.91 miles.

Comment: The EA needs to state which power lines, water and sewer lines, and communication lines are located on the UNF. This can be done in the narrative or on maps that show both the line locations and the UNF boundaries.

Response: Power lines, water and sewer lines, communication lines within the UNF boundary are shown on Figures 3A to 3K.

Comment: The document states “In the year 2010, average daily traffic along NC 24-27 will likely range between 7,200 vehicles per day and 14,100 vehicles per day”. If this is actual data, the document need to say “ranges” instead of “will likely range”. If these are truly estimates it would be better to include actual data if known since the date shown is in the past.

Response: The traffic volume information presented in the Environmental Assessment are estimated numbers based on growth factors and other constraints for the project area. The information is presented in a standard format for traffic volumes.

Comment: Traffic Service levels should be disclosed for the various projects not lumped together. The narrative makes it appear that the entire 14.6 mile project area is currently operating at LOS E. It is clear from Tables 7 and 8 in Section IV.F that only short sections of the road are operating at LOS E. The document states “In 2010, the existing intersection operates at Level of Service (LOS) E...”. What intersection is being discussed, there appears to be text missing from the document.

Response: The tables within the EA illustrated the intersection analysis along the mainline of NC 24-27. Some intersections listed in the table showed LOS better than E. However, the overall capacity analysis results for the mainline indicates that the existing two-lane facility is expected to operate at LOS E or better in 2010 and LOS E or better in 2035. A table of this information was not included in the Environmental Assessment.

Comment: The Land and Resource Management Plan for the Uwharrie National Forest (here after, Forest Plan) (May 2012) should be listed. This land use plan explains how the USDA Forest Service proposes to manage the Uwharrie National Forest over the next 15 years. Information is provided that describes what activities will be implemented, what public benefits are anticipated, and what will be the long-term conditions of the national forest as a result of implementing the plan.

Response: Comment noted. The May 2012 Land and Resource Management Plan Forest Plan UNF can be found at:

<http://www.fs.usda.gov/detail/nfsnc/landmanagement/planning/?cid=stelprdb5194766> for information regarding management of the Uwharrie National Forest over the next 15 years, activities to be implemented, public benefits and long-term conditions of the National Forest as a result of implementing the plan.

Comment: If the largest number of accidents is occurring due to animal/vehicle collisions, how is upgrading the road to a 4-lane highway and mostly likely increasing speeds going to result in fewer collisions and a safer road condition?

Response: Upgrading the roadway to four lanes will provide safer conditions for the traveling public. Four lanes have been proven to be safer than two (2) lanes for vehicular travel. This supports the purpose for the project.

Comment: While it is true that the “No Build” alternative would not meet the purpose and need; that is true of any well designed project where a good case for purpose and need have been established. However, that is not really a good reason not to carry the “No Build” alternative throughout the document. In the true spirit of NEPA an environmental document compares the environmental impacts of various alternatives. In the case of projects R-2530B and R-2527 there is really only one alternative fully analyzed in the EA. When the USFS concurred with Concurrence Point 2 (Detailed Study Alternatives Carried Forward); it was not our intention to support dropping the “No Build” alternative from full analysis in the EA.

Response: NC 24-27 is a two-lane to three-lane facility within the Albemarle city limits (R-2530B). NC 24-27 is a two-lane facility throughout the remainder of the project area except at the Pee Dee River crossing where there are two travel lanes in the eastbound direction and one travel lane in the westbound direction (R-2530B, B-4974 and R-2527). The no build alternative does not meet the purpose and need of the project. Carrying the no build alternative discussion through to the FONSI only validates the preferred alternative. A comparison of the No-Build alternative is discussed in the Revisions To The EA section of this document.

Comment: There is no NFS lands located in project B-4974. Acres of NFS lands impacted in R-2527 needs to reflect actual USFS property boundaries.

Response: Comment noted. Impacts to the NFS lands is approximately 50 acres. Impacts to wetlands and streams within the Forest Service boundary is included in Tables 4 and 5. Additional impacts within the Forest Service boundary will be coordinated with the Forest Service and captured in a consultation document to be completed prior to right of way acquisition.

Comment: See comments on Summary of Environmental Effects p. vi. The information (Yes/No) provided for federally listed species habitat and rare plants gives no indication of the actual impact. For instance, for all the action alternatives that have rare plants, will the effects extend to the entire percent of all population or just a small portion? If rare plants are present, how many species and what percentage of the population would be affected?

Response: There are approximately 450 individuals of T and E, S or LR plant species within the 500 ft wide project study corridor. Approximately 100 individuals of the S plant species large witch alder (*Fothergilla major*), 300 individuals of the LR plant

species smooth sunflower (*Helianthus laevigatus*), 35 individuals of the E plant species Schweinitz's sunflower (*Helianthus schweinitzii*) and several (less than 20) individuals of the LR plant species glade wild quinine (*Parthenium auriculatum*) were found in the activity area. It is not anticipated that all of these individuals will be affected or impacted (direct, indirect or cumulative) since construction will not occur throughout the entire 500 ft wide project study corridor. As design is finalized, NCDOT will have a more accurate estimation of how many individuals will be affected. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Coordination is needed with the US Forest Service. NCDOT will coordinate with the Forest Service and will begin to develop right of way plans for Project R-2527. Forest Service surveys will occur in 2017 and 2018.

Comment: The document states "A control of access fence is placed along the entire length of the facility, except at intersections and driveway". What type of fencing and what are the dimensions? This information needs to be disclosed and the impacts of the fencing on wildlife crossing needs to be disclosed in the Environmental Effects section of the document.

Response: NCDOT's standard control of access fencing includes a woven wire fence with a standard height of 4 feet 10 inches. Fencing is not proposed for this project. No impacts to wildlife crossing is anticipated.

Comment: The document needs to give design details on the replacement of the railroad bridge crossing and any realignment of the railroad track that would be required. Norfolk Southern Railway has a right of way across NFS lands to operate their railroad. The bridge and this section of railroad are located on NFS lands and movement of them will need to be coordinated with the USFS.

Response: Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Coordination with the Forest Service will occur regarding the railroad bridge and any proposed realignment of the railroad track.

Comment: The document states "Utilities along the project will be relocated prior to construction." The EA is not clear which, if any, of these utilities are located on the UNF. The types and locations of any utilities on the UNF that will need to be relocated or upgraded as a result of the proposed project must be identified along with a description of the proposed changes.

Response: Project R-2527 is the only portion of the project that is within the UNF boundary. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will coordinate with the Forest Service and will begin to develop right of way plans for Project R-2527. Results of this coordination will be captured in a consultation document. The development of right of way plans will result in identifying utilities for that portion of the project.

Comment: All relocation of utilities including but not limited to power lines, water and sewer lines, and communication lines located on NFS lands must be coordinated with the USFS. Utility companies cannot use the easement granted to the North Carolina Department of Transportation for construction and operation of the highway for their uses. All utility companies must work directly with the USFS to modify their existing special use permits on relocations within the project area.

Response: Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will begin to develop right of way plans for R-2527. The development of right of way plans will result in identifying utilities for that portion of the project. Utility coordination will occur prior to construction. Results of this coordination will be captured in a consultation document.

Comment: The document states “The project will also include standard landscaping as needed for erosion control purposes. No special landscaping is proposed as part of the projects”. Landscaping and erosion control plants and seed mixes to be used on NFS lands must be discussed with the FS and disclosed in this document.

Response: The final landscaping and erosion control will be coordinated during or at the completion of the construction; NCDOT Roadside Environmental Unit will coordinate with NFS prior to any plantings within the NFS.

Comment: For project R-2527 there is little mention of Piedmont longleaf pine woodland, which occurs within the project area on NFS lands on the north and south side of the existing road from SR 1136 to the intersection with NC 109. This is a rare forest community within North Carolina and through its limited range. Restoration of the piedmont longleaf pine community is one of the primary goals of the newly signed Uwharrie Forest Plan. Management of this forest type requires prescribed burning.

Response: Comment noted.

Comment: The information provided on pages 21-26 only describes the existing environment and does not actually disclose the direct, indirect, and cumulative impacts to the natural resources as a result of the project. The section titled “Summary of Anticipated Effects” on page 26 is not really a summary, it is the entire analysis. This analysis is very general, vague and completely inadequate to evaluate the impacts of the project on terrestrial communities, terrestrial wildlife, and aquatic communities. No mention is made of either indirect or cumulative effects as a result of the proposed projects. A more detailed and quantified effects analysis is needed to adequately evaluate the impacts of the proposed project.

Response: The proposed improvements to R-2527 will not impact any S or LR aquatic species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. The

proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.

The proposed project will potentially impact E, S and LR plant species. The Biological Conclusion for Schweinitz's sunflower is May Affect, Likely to Adversely Affect. Therefore, formal consultation with the U.S. Fish and Wildlife Service is required.

This project may impact individuals of the three S and LR species (smooth sunflower, large witch alder and glade wild quinine), but will not affect the viability of any of the three species across the forest. Discussions will occur with the USFS to determine avoidance and minimization options. NCDOT will coordinate with the Forest Service regarding avoidance and minimization options and will begin to develop right of way plans for Project R-2527. Updated USFS surveys will occur in 2017 and 2018. Results of this coordination and the new surveys will be captured in a consultation document prior to right of way acquisition for Project R-2527.

The proposed improvements to R-2527 are not likely to adversely affect any S or LR terrestrial species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. The proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.

Formal consultation will be finalized prior to construction.

Comment: We disagree with the general statement "Permanent impacts to wildlife will be minimal due to the project being a widening of the existing roadway, with no new alignment". Widening, as well as the fencing mentioned on page 15, may impact wildlife crossing ability and/or behavior. The widening of the road may have fragmentation impacts on wildlife populations.

Response: Comment noted. Fencing is not proposed for this project. Impacts to wildlife crossing ability is not anticipated.

Comment: The impacts to the Piedmont longleaf pine community located on the UNF and mentioned in a previous comment needs to be discussed. The analysis should determine how much of this existing habitat is present in the analysis area and how much will be impacted by the proposed project. It should also discuss the importance of prescribed burning in management of this community type and the impact the proposed four-lane roadway will have on the ability to prescribe burn.

Response: Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will begin to develop right of way plans for the Project R-2527. Updated Forest Service surveys will occur in 2017 and 2018. Results of this coordination and the new survey information will be captured in a consultation document prior to right of way acquisition for Project R-2527.

Prescribed burning is an integral part of the longleaf pine ecosystem. Burning longleaf pine stands control disease, reduces competition, provides for the establishment of native vegetation, and results in wildlife benefits. Prescribed fire controls brown spot disease in the young pine trees. The regular application of prescribed fire assists the longleaf to be more competitive by reducing the hardwood brush. The native plant community is restored and diversified with the proper use of prescribed fire.

Prescribed burning currently occurs along the NC 24-27 corridor. A widened roadway should not prohibit the activity in the future.

Comment: There is no mention or discussion of the potential for indirect effects such as the greater likelihood of non-native invasive plant species dominating the road corridor and possibly spreading to adjacent plant communities. A discussion needs to be presented on how this will be mitigated and what seeding mixtures will be utilized to stabilize the road corridor. In the UNF, and other adjacent areas, sericea lespedeza and other non-native legumes, including planted species, are currently invading fire-maintained thinned forests.

Response: A project commitment has been added for coordination with USFS and NCDOT Roadside Environmental to determine the mitigation and seed mixtures to be utilized to stabilize the road corridor within the UNF. NCDOT Roadside Environmental Unit will coordinate with USFS prior to any planting within the NFS.

Comment: In the discussion and in Tables 13 and 16, disclose the impacts to wetlands (acres) and streams (linear feet) located on NFS lands. All streams and wetlands located on the UNF need to be identified as occurring on NFS lands.

Response: Tables have been updated to reflect wetlands and streams within the UNF boundary. See tables on pages 7 and 8.

Comment: The document needs to identify which populations of Schweinitz's sunflower are located on NFS lands. The railroad population south of NC 24-27 is mentioned but there is no reference that the species would be impacted (occurrence actually over 0.25 miles south of the existing road) by straightening the railroad as part of the proposed project.

Response: This population of Schweinitz's sunflower could be affected by the proposed project, the population is in the NFS lands, see map. Surveys for Schweinitz's sunflower will be conducted this Fall. Once surveys are completed a Biological Assessment will be completed and a Biological Opinion will be rendered prior to construction. See Appendix E for coordination and mitigation regarding the Schweinitz's sunflower. Additional coordination will happen once final plans are developed for Project R-2527.

Comment: There is no discussion of how much of the located Schweinitz's sunflower population will be affected by the proposed project. While it appears that there will be a

negative effect to the entire population west of the bridge, one cannot assume that from the discussion presented. The presence of the Schweinitz's sunflower in the activity area should be the reason for the determination "may affect likely to adversely affect". The presence of habitat within 1 mile of the project area is not a reason for that determination if a negative survey, with the exception of the railroad population, was conducted for project R-2527.

Response: Comment Noted. Surveys for Schweinitz's sunflower will be conducted this Fall. Once surveys are completed a Biological Assessment will be completed and a Biological Opinion will be rendered prior to construction. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will begin to develop right of way plans for project R-2527.

Comment: The document states "An inactive cavity tree was observed in this stand". It appears from the location description that this tree may be located on NFS lands; if so, the USFS would like to know the exact location of the tree and if the cavity was enlarged. The potential foraging habitat located on the UNF needs to be better described in the document. The description should include the acres and quality of the habitat located within the survey boundaries. Impacts to that habitat as a result of the proposed project should also be discussed. Additional surveys will be required by the USFS of this habitat once five years have passed since the most recent surveys.

Response: Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Information regarding impacts to this cavity tree and habitat will be available as designs are developed and surveys are updated. Forest Service surveys will be occur in 2017 and 2018 as design plans are developed.

Comment: What in the past has been referred to as Forest Service PETS species are now referred to as TES (Threatened, Endangered, and Sensitive) species and LR (locally rare) species. There is no list provided of the TES&LR species that may occur in the project area and which species were surveyed for and why. There is no effects analysis on TES&LR species contained in this document.

Response: An Aquatic, Biological, Botanical and Terrestrial Resources Report was prepared for this project. These reports are included in Appendix E of this document. Additional coordination will occur regarding the Threatened, Endangered and Sensitive Species and Locally Rare Species in the UNF as designs are developed and surveys are updated. Forest Service surveys will occur in 2017 and 2018.

Comment: The EA should disclose which TES&LR species have habitat in the project area and the expected impacts of the proposed project on that habitat. The EA should disclose the effects to the other located non-federally listed species (smooth sunflower and large witch alder) and have a determination of effects for them on NFS lands. Once direct, indirect, and cumulative effects have been disclosed any potential mitigation or

avoidance measures should be presented. The final EA should have an attached biological evaluation which discloses effects to these species on NFS lands. The FS will be unable to participate in the selection of the preferred alternative until effects on these species and their habitats are adequately disclosed.

Response: An Aquatic, Biological, Botanical and Terrestrial Resources Report was prepared for this project. These reports are included in Appendix E of this document. Additional coordination will occur regarding the Threatened, Endangered and Sensitive Species and Locally Rare Species in the UNF as designs are developed and surveys are updated.

Comment: Disclose which soil types are found within the project area on the UNF. Again the document does not disclose the effects to the resource. This section is a description of the existing environment not an effects analysis. The document must disclose the impacts to soils located on the UNF.

Response: Information regarding impacts to soil types within the UNF will be determined as right of way plans are developed for Project R-2527. Updated Forest Service surveys will occur in 2017 and 2018.

Comment: The EA compromises the location of site 31MG1629 by describing its location in relation to the Roberdo Bog. In a document available to the general population this is a breach of site confidentiality regulations. It is preferable and acceptable to state “site 31MG1629 is located in a rare environment / eco-niche found in the Piedmont, which is likely to contain information not found in other areas. Rare and previously undocumented ecological and cultural adaption data can be retrieved from such a site in this type of location.”

Response: Comment noted.

Comment: The statement “information can be retained through data recovery efforts or through creative mitigation strategies such as more intensive laboratory analysis of recovered materials” is not clear and may be misleading. It needs to be made clear and agreed that the entire area of potential effects at all National Register of Historic Places (NRHP) eligible sites will be completely excavated and the data collected and analyzed using the most up-to-date methods and procedures.

Response: It is standard practice to use the most up-to-date methods and practices for data collection and/or excavation of NRHP sites. Data Recovery efforts will be limited to the maximum area of ground disturbing construction activities including all easements within each site’s limits.

Comment: No discussion or disclosure is made of the possible time and financial commitments needed to accomplish data recovery as described above. Nor are various mitigation strategies compared by alternatives. In addition, right of way widths of 250 feet and 150 feet may have different impacts on a historic property (Section 106 NHPA).

Actual right of way widths will need to be known to identify the actual impacts to archeological resources present in the project area(s) and to prescribe mitigation for protection of those resources.

Response: ROW acquisition is scheduled for May 2017 for R-2530B/ B-4974. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. USFS is requiring actual ROW widths to identify the actual impacts to archaeological resources present in the project area(s) and to prescribe mitigation for projection of historic resources. A Memorandum of Agreement (MOA) will be prepared by NCDOT in consultation with the Historic Preservation Office (HPO), the USFS, and other consulting parties that may be identified and invited by FHWA to participate. The MOA will detail the measures NCDOT plans to carry out to mitigate adverse effects to National Register of Historic Places Eligible archaeological sites. Once ROW acquisition is complete for areas identified to involve archaeological resources, an assessment of data recovery will be completed. If needed, a Data Recovery plan for the impacted archaeological resources and coordination with the Office of State Archaeology will be completed. If USFS property is involved, NCDOT will consult with the USFS. Results of this coordination will be captured in a consultation document.

Comment: The document states “Hikers can access the 20-mile Uwharrie National Recreation Trail and the 8-mile Dutchman’s Creek Trail from the unpaved, trailhead parking lot adjacent to project R-2527”. Again the document does not disclose the effects to the resource. This section is a description of the existing environment not an effects analysis. The document must disclose the impacts to recreation facilities located on the UNF. If there are no impacts expected then make that statement.

Response: There are no anticipated impacts to recreational facilities within the UNF.

U.S. Department of Agriculture, EPA

Comment: EPA acknowledges the ‘Green sheet’ project commitments on pages i to iii in the EA. EPA has substantial environmental concerns for the potential impacts to jurisdictional resources, including High Quality Waters (HQW) and water supply critical areas. EPA is requesting that the transportation agencies consider adequate avoidance and minimization measures to meet the requirements under Clean Water Act Section 404(b)(1) guidelines. EPA is requesting that a complete wetland quality assessment be provided prior to the next Merger team meeting. EPA is requesting a copy of the MSAT qualitative analysis report prior to the issuance of the FONSI.

Response: Comment noted. Merger coordination is still underway for the proposed project. The requested information was sent to Dr. Van Der Wiele on November 10, 2016. MSAT information was recently revised and that report was sent to EPA on March 30, 2017, it can also be found in Appendix E.

Comment: Table S1 and Table 5 (by project sections) of the Federal Environmental Assessment (EA) include the jurisdictional impacts to wetlands and streams based upon the Detailed Study alternatives (DSAs). There are 7 sections identified in Table 5. Stream and wetland impacts are also further detailed in Tables 11, 12, and 13 (Streams involving R-2530B, B-4974 & R-2527) and Tables 14, 15 and 16 (Wetlands involving R-2530B, B-4974 & R-2527).

Response: Comment noted.

Comment: DSA A/B1/C impacts approximately 2.4 acres and 15,230 linear feet of wetlands and streams, respectively. DSA A/B4/C C impacts approximately 2.3 acres and 15,520 linear feet of wetlands and streams, respectively. Considering the comparatively small differences in the overall total impacts to jurisdictional resources, neither DSA represents a clear environmentally-preferred alternative for EPA. Based upon the Table 5 impacts per project section, Alternative 1 in Section 5 (1.8 miles) represents the least environmentally damaging choice between the four alternatives presented in the EA.

Response: Comment noted.

Comment: The jurisdictional impacts outlined in the EA include NCDOT's preliminary design slope stake limits plus 25 feet. In addition, the preliminary designs also include two different median widths. For the R-2527 portion of the proposed project, a 46-foot depressed median is being designed for a very rural area between the Pee Dee River and the future Troy Bypass. Traffic capacity issues beyond 2035 have not been documented for the rural segment between NC 73 and NC 109 (Figure 3B). A 23-foot median along NC 24-27 is being judged acceptable by transportation agencies west of the Pee Dee River to Albemarle (R-2530B).

Response: Comment noted. However there will be a 46-foot median from Sweet Home Church Road to end of the project.

Comment: The EA identifies potential impacts to High Quality Waters (HQW), including Rocky River (Little River tributary). The EA also identifies numerous water supply waters and critical area designations for waters within the project study area in Table 10 that will be potentially impacted. The DSAs (Alternatives A/B1/C and A/B4/C) include potential impacts to water supply critical areas (i.e., Mountain Creek, Jacobs Creek, Pee Dee River, and Rocky Creek/Lake Tillery tributary). In addition, the proposed project impacts High Quality Waters (HQW) with the Rocky Creek/Lake Tillery tributary system. EPA notes the comment on Page 27 of the EA that there are two stream systems named Rocky Creek within the R-2527 project study area. The extent of the impact to the water supply critical areas is not quantified in the EA. This information should be provided to EPA prior to the next Merger concurrence meeting. Efforts to minimize impacts to HQW and Water Supply Critical Areas need to be identified by the transportation agencies. Quantification of impacts to floodplains also need to be quantified prior to the next Merger concurrence meeting.

Response: Updated tables were provided to the Merger Team prior to the CP3/ CP4A meeting. Any fill in the floodplain will comply with all FEMA regulations (CP4A meeting, January 22, 2014 and August 17, 2016).

The critical area (CA) water source in the project area is the Pee Dee River/ Lake Tillery. Critical area is defined as extending 0.5 mile from the normal pool elevation of a reservoir; or 0.5 mile upstream of , and draining to an intake. The effective area for hazardous spill basin placement is within 1.0 miles of the normal pool or upstream of an intake. See the following tables below for impacts within and outside of 0.5 mile from the CA source.

TABLE 6: WATER SUPPLY CRITICAL AREA IMPACTS FOR R-2530B & R-2527

STREAM ID	STREAM NAME	STREAM LENGTH IN STUDY AREA (FEET)	R-2530B & R-2527 PRELIMINARY DESIGN STREAM IMPACTS (FEET) ALTERNATIVE: BEST FIT	WITHIN 0.5 MILE FROM CA WATER SOURCE (PEE DEE RIVER/ LAKE TILLERY)
DITCH	UT, Mountain Creek	290	31	No
St-AN 02	UT, Mountain Creek	788	250	No
St-B	UT, Mountain Creek	475	149	No
St-CC	UT, Mountain Creek	515	70	No
St-D	UT, Mountain Creek	454	21	No
St-E	UT, Mountain Creek	396	35	No
St-EE	UT, Mountain Creek	527	30	No
St-F	UT, Mountain Creek	799	137	No
St-FF	UT, Mountain Creek	392	123	No
St-GG	UT, Mountain Creek	310	178	No
St-HH	UT, Mountain Creek	619	154	No
St-I	UT, Mountain Creek	1867	1433	No
St-M	UT, Jacobs Creek	3730	656	No
St-N	UT, Jacobs Creek	676	240	No
SB-1	Rocky Creek	903	117	No
SB-2	UT, Rocky Creek	643	151	No
SF-B	Rocky Creek	517	155	No
SH-1	UT, Pee Dee River	81	81	No
TOTAL STREAM IMPACTS			5,037	

TABLE 7: WATER SUPPLY CRITICAL AREA IMPACTS FOR B-4974

STREAM ID	STREAM NAME	STREAM LENGTH IN STUDY AREA (FEET)	B-4974 PRELIMINARY DESIGN STREAM IMPACTS (FEET) REHABILITATION ALTERNATIVE: 4	WITHIN 0.5 MILE FROM CA WATER SOURCE (PEE DEE RIVER/ LAKE TILLERY)?
St-Q	UT, Jacobs Creek	662	98	No
St-R	UT, Pee Dee River	884	237	No
St-T	UT, Pee Dee River	821	213	Yes
St-U	UT, Pee Dee River	1445	303	Yes
St-V	UT, Pee Dee River	1255	328	Yes
SG	UT, Pee Dee River	242	65	Yes
SH	UT, Pee Dee River	386	72	Yes
SA-1	UT, Rocky Creek	832	201	Yes
SA	Rocky Creek	1,123	174	Yes
TOTAL STREAM IMPACTS			1,691	

Comment: It is noted that the proposed project impacts several Federally-listed species of threatened and endangered plants, including Schweinitz's Sunflower, Georgia Aster, Large Witch Alder and Smooth Sunflower. EPA requests that the transportation agencies provide stringent avoidance and minimization measures for these species in consideration of a reasonable highway design and continue to work with the U.S. Fish and Wildlife Service, U.S. Forest Service and the N.C. Wildlife Resources Commission on applicable conservation measures. A context sensitive design for the proposed multi-lane, median divided facility can potentially reduce impacts to these threatened and endangered plants and also reduce impacts to other natural resources.

Response: A CP3/ CP4A meeting was held January 22, 2014 with an update to that meeting on August 17, 2016. Avoidance and Minimization was discussed at the CP4A meeting. Context sensitive designs are being implemented with this project. The only federally-listed species on the list is the Schweinitz's sunflower. The concurrence forms are included in Appendix B.

Comment: Both widening Sections 6 and 7 under R-2527 using a 'best-fit' design impact Uwharrie National Forest. The impacts of 54 and 57 acres to these Federally-managed lands from these two sections (4.3 and 4.2 miles) represent a potentially significant impact without full consideration of avoidance and minimization. In total, DSA A1/B1/C and A1/B4/C impact 120 acres to the only National Forest wholly located in the N.C. Piedmont ecosystem. EPA believes that the 120 acres of impact to Federally-managed lands represents a potentially significant impact and that the transportation agencies consider all context sensitive design solutions and relevant avoidance and minimization measures. EPA does not believe that a 46-foot median is a reasonable design requirement for the 8.5 mile sections through a very rural area of the project study area. The purpose and need for the proposed project does not identify future capacity needs beyond the 2035 design year requiring a 46-foot median. Safety is not a specific

element of the signed purpose and need statement and a greater median width and resulting higher speeds will potentially increase the severity of animal collisions. Animal/vehicle collisions within the Uwharrie National Forest area of the proposed widening project are a potentially significant environmental issue. A reduced raised median width of 23 feet is being proposed for other more suburban areas of the project¹ (e.g., From NC 740 to SR 1731).

Response: Additional coordination has occurred since the completion of the EA to include discussions regarding the median width at the CP3 meeting. (Refer to CP3 meeting resolution and forms dated January 22, 2014). Context sensitive designs are being implemented with this project. In addition, impacts within the UNF has been revised based on the actual boundaries.

Comment: DSA A/B4/C includes an adverse effect to a historic structure. Additional human and natural environment resource impacts for DSA A/B1/C and A/B4/C are respectively identified below:

100-year Floodplain impacts: Yes and Yes (no quantification)

Water Supply Critical Areas: Yes and Yes (no quantification)

Residential relocations: 25 and 23

Business relocations: 27 and 22

Cemeteries: Yes and Yes

Archeological sites: 6 and 6

Section 4(f) impacts: Yes and Yes

Traffic noise receptors: 30 and 30

Hazardous Materials sites: 23 and 23

Response: Since the completion of the EA, several changes have occurred regarding the historic Swift Island Bridge. Bridge No. 51 is proposed to be rehabilitated. The proposed rehabilitation will result in no adverse effects with conditions. Impacts in the project area are shown in Table 2 on page 3.

Comment: The comments regarding Mobile Source Air Toxics (MSATs) on pages 57-59 are noted. EPA requests a review copy of the 12/5/11, qualitative analysis report identified on page 58 of the EA prior to the issuance of the FONSI. EPA does not concur with the generalized summary or following claim from page 59 of the EA: *“Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly”*. Vehicle miles travelled in the U.S. has shown a decline in the last few years according to FHWA sources. Approximately 40 counties in N.C. are currently in maintenance or non-attainment areas for criteria air pollutants. The physical relationship between criteria pollutants (inorganic molecules: Lead, Carbon monoxide, Ozone, Sulfur dioxide, Nitrogen oxides) and MSATs (organic molecules) is not identified or explained in the EA.

Response: An updated Air Quality Report (NCDOT, March 21, 2017) has been prepared. This statement is from the FHWA publication titled Transportation Air Quality: Selected

Facts and Figures (February 2016) found at https://www.fhwa.dot.gov/environment/air_quality/publications/fact_book/factbook2016.pdf

With a decline in vehicle miles travelled, one could presume even further reductions in criteria pollutant emissions. We disagree with the statement of 40 counties in NC are currently in maintenance or non-attainment areas for criteria air pollutants. According to the EPA Green Book at https://www3.epa.gov/airquality/greenbook/anayo_nc.html, there are seven (7) NC counties in maintenance due to the 2008 8-hour Ozone standard. There are no counties in nonattainment. NCDOT is not including counties where criteria pollutant standards have been revoked (1997 8-hour Ozone standard) or where 20-year maintenance plans (for CO) have ended. We are unclear of the relevance of the question of physical relationship between criteria pollutants and MSATs to the proposed transportation improvements. The proposed project is located in Stanly and Montgomery counties, which are in attainment with EPA's National Ambient Air Quality Standards. Therefore, transportation conformity does not apply. The project is also anticipated to have no meaningful potential MSAT effects. This project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the no-build alternative. Whatever the relationship is between inorganic and organic molecules does not change these findings. The updated MSAT information has been forwarded to the EPA.

Comment: The impacts between the DSAs are very similar and EPA has not identified an environmentally preferred alternative at this time.

Response: The preferred alternative was selected during CP3 meeting, refer to forms dated August 17, 2016.

N.C. Department of Agriculture and Consumer Service

Comment: Thank you for the opportunity to comment on the proposed project to widen NC 24-27 from west of NC 740 in Stanly County to the proposed Troy Bypass in Montgomery County. The North Carolina Department of Agriculture and Consumer Services (NCDA&CS) is concerned about the conversion of North Carolina's farm and forest lands to other uses. Due to the importance of agricultural activities in the area, as well as the economy of the entire state, NCDA&CS strongly encourages the project planners to avoid conversion of agricultural land to other uses whenever possible. When avoidance is not possible, all reasonable efforts to minimize impacts to farming operations and agricultural land should be implemented.

Response: Based on the EA, farmlands will not be impacted as a part of this project.

N.C. Department of Environment and Natural Resources, Division of Water Quality

Comment: This project is being planned as part of the 404/NEPA Merger Process. As a participating team member, NCDWQ will continue to work with the team.

Response: Comment noted.

Comment: It is stated that there are no waters within the study area that are included on the Final 2010 303(d) list. It should be clarified that the Final 2010 and Draft 2012 303(d) lists include all 13,178 surface waters in North Carolina for limited fish consumption advisories due to elevated concentrations of mercury in fish tissue of several species.

Response: No streams in project area are included on the 303d list. Clarification noted.

Comment: Review of the project reveals the presence of surface waters classified as Water Supply Critical Area in the project study area. Given the potential for impacts to these resources during the project implementation, NCDWQ requests that NCDOT strictly adhere to North Carolina regulations entitled Design Standards in Sensitive Watersheds (15A NCAC 04B .0124) throughout design and construction of the project. This would apply for any area that drains to streams having WS CA (Water Supply Critical Area) classifications.

Response: This standard operating procedure will be followed for this project.

Comment: Should the bridge project be located within the Critical Area of a Water Supply. NCDOT may be required to design, construct, and maintain hazardous spill catch basins in the project area. The number of spill basins installed should be determined by the design of the bridge, so that runoff would enter said basin (s) rather than flowing directly into the stream, and in consultation with NCDWQ.

Response: Both bridges crossing the Pee Dee River currently have direct stormwater discharge through the deck. It is anticipated that the replacement/ new location alternative would reconfigure the new bridge geometry in such a way to provide for a stormwater collection system that could route stormwater through a hazardous spill basin before discharging back to the Pee Dee River. Because the preferred alternative retains both bridges and rehabilitates the historical bridge in-kind, the existing bridge geometry is such that retrofitting a collection system to the existing bridge is not feasible. Additionally, the State Historic Preservation Office determined that a drainage collection system on the rehabilitated bridge would have an adverse effect to the historic nature of the bridge. NCDOT will continue to coordinate with NCDWQ regarding hazardous spill basins and the replacement of the basins as it relates to Swift Island Bridge and other areas within the Critical Area.

Comment: Review of the project reveals the presence of surface waters classified as C; High Quality Waters of the State in the project study area. This is one of the highest classifications for water quality. Pursuant to 15A NCAC 2H, 1006 and 15A NCAC 2B .0224, NCDOT will be required to obtain a State Stormwater Permit prior to construction. As such, the NCDOT is strongly encouraged to contact the NCDWQ to discuss appropriate permitting requirements and strategies.

Response: Comment Noted. The proposed project is following the NEPA/404 Merger Process. Coordination regarding permitting is occurring through the merger process and is standard for projects with similar impacts.

Comment: Table 1 shows the cost estimates for the project. It is noted that the amount allowed for mitigation for projects R-2530B and B-4974 is zero. It is not clear to NCDWQ why no funds are/were allocated to mitigation for these two projects when Table 5 and Tables 11-16 clearly indicate that there will be enough impacts to streams and wetlands associated with these projects to warrant mitigation.

Response: Stream mitigation cost for the three projects are \$3,235,221. Wetland mitigation cost for the three projects are \$65,057. That mitigation cost is \$3,300,278.

Comment: In Table 6 (Summary of Environmental Effects), the residential and business relocations for R-2530B state to “See B-4974.” It is unclear what this means; there is no footnote explanation and it is not discussed in the text. Additionally, it is not clear whether it is referring Alternative 1 or Alternative 4 under B-4974.

Response: The Summary of Environmental Effects for the preferred alternative table is shown on page 3 of this document and lists the impacts for each section of the project.

Comment: The NCDWQ prefers onsite mitigation as opposed to offsite or in-lieu fee mitigation. The NCDWQ strongly encourages the NCDOT to thoroughly investigate any potential onsite mitigation opportunities, as is stated on page 34.

Response: NCDOT will investigate any potential onsite mitigation opportunities as the project progresses.

Comment: With respect to the “Bridge Demolition” section on page 35, if demolition of Bridge 51 is to occur, the NCDOT should follow the “Removal of Existing Structures” guidance referenced and select a demolition method and procedure(s) that prevents pieces of the bridge from falling in the river during the demolition/removal process. Also, there is a reference to project B-2527; it is believed it should actually reference project B-4974.

Response: The references to B-2527 is shown in the revision to EA section of the FONSI. Additionally, the “Removal of Existing Structures” guidelines is a standard operation procedure that will be followed for this project with the rehabilitation of Bridge No. 51.

Comment: There is a brief discussion of the anticipated indirect and cumulative effects (ICE) discussed on page 53. The conclusion by the NCDOT is that ICE will be minimal, primarily due to federal land ownership, land planning regulations, and water supply watershed regulations. While this conclusion may be true based on these factors, the NCDWQ would like to know that other factors have been considered as well. The NCDWQ would like to see the NCDOT’s screening criteria table included. This would show that other factors other than land ownership and current policy, which can change rather quickly, have been evaluated on a quantitative level.

Response: NCDOT's screening criteria tables are below.

TABLE 8. POTENTIAL FOR LAND USE CHANGE, 2000-2020 FOR R-2530B

Rating	Change in Accessibility	Change in Property Values	Forecasted Growth	Land Supply vs. Land Demand	Water/Sewer Availability	Market For Development	Public Policy
Strong	Travel Time Savings > 10 min.	> 50% Increase	> 3% Annual Pop. Growth	< 10-Year Supply of Land	Current Services Exist	Extremely High Potential	Pro-Growth
^ " " "	X	X	X	X	X	X	X
Weak	Travel Time Savings < 2 min.	No Change	< 1% Annual Pop. Growth	> 20-Year Supply of Land	No Plans For Future Service	Extremely Low Potential	Anti-Growth

TABLE 9: POTENTIAL FOR NEW GROWTH OR LAND USE CHANGE, 2000-2030 FOR R-2527

Rating	Change in Accessibility	Change in Property Values	Forecasted Growth	Land Supply v. Land Demand	Water/Sewer Availability	Market for Development	Public Policy
STRONG	> 10 minute travel time savings	> 50% increase in property values	> 3% annual population growth	< 10-year supply of land	Existing service available	Development activity abundant	Less stringent; no growth management
↑							
↑		X		X		X	X _X
↔		X	X	X	X	X	
↓	X _X	X	X	X	X	X	
↓	X		X				
weak	< 2 minute travel time savings	No property value increase	0-1% annual population growth	> 30-year supply of land	No service available now or in future	Development activity lacking	More stringent; growth management

X no-Build Scenario

X Build Scenario

X Growth Impact Study Areas

Comment: General Comments #11-28 (See Appendix)

Response: Standard practices will be followed.

North Carolina Wildlife Resources Commission

Comment: NCDOT currently shows an estimated impact of 120 acres to the Uwharrie National Forest. This acreage appears excessive for the amount of widening occurring within US Forest Service lands. Also the figures illustrating Uwharrie National Forest depicts an area much larger than the existing lands that comprise the forest. NCDOT should coordinate with the USFS to confirm the accuracy of mapping and impacts to this area. None-the-less, as a public resource including being managed as a Game Land impacts to this area should be minimized, and NCDOT should coordinate with the USFS to identify potential mitigation options for unavoidable impacts.

Response: Impacts to USFS lands were recalculated based on updated boundary limits. The total of USFS land impacted is 50 acres. Avoidance and minimization efforts were discussed and an agreement was reached as of December 18, 2016. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. NCDOT will coordinate with the Forest Service to further avoid and minimize impacts and identify potential mitigation options will begin to develop right of way plans for Project R-2527.

Comment: There are two WRC facilities with the project study area, the Swift Island public boating access area and the Troy Depot. Impacts to these facilities should be minimized to the greatest extent practicable. Minimization efforts during design and further coordination with WRC personnel prior to construction will be necessary to allow continued access to these sites through project completion.

Response: NCDOT is currently coordinating with WRC and Duke Energy regarding the boat access at Swift Island Bridge. Coordination will continue to ensure schedules are coordinated and impacts are minimized. Concurrence on current impacts are included in the Appendix D. The Troy Depot is not a protected resource. It is not available for public use. This building is used to house WRC offices.

Department of Environment and Natural Resources – Division of Water Resources Public Water Supply Section

Comment: All construction projects with water systems must submit plans and specifications to Public Water Supply Section (PWSS) for review and obtain approval before construction work can begin. Once the project is completed before the water system can be placed into service the applicant again must obtain a final approval from PWSS.

Response: Standard procedure.

Public Hearing Comments

R-2530B (NC 24/27 from NC 740 to Lake Tillery)

Several citizens submitted concerns of placement of left-overs and U-turn bulbs along the project limits. U-turn bulbs and leftovers along this portion of the project is currently being addressed. Other citizens had a concern with the 5-lane design; however, NCDOT has decided that a 4-lane facility will be constructed along NC 24/27.

B-4974 (Swift Island Bridge over Lake Tillery)

Citizens and county officials wanted the bridge to be replaced. NCDOT at that time were to determine which alternative to be chosen during the Least Environmentally Damaging Practicable Alternative (LEDPA) meeting. The Swift Island Bridge will be rehabilitated in its current location.

R-2527 (NC 24/27 from Lake Tillery to the proposed Troy Bypass)

There were a couple concerns with U-turn bulb placements and NCDOT will be investigating options during the right of way plan preparation. A couple citizens were concerned about proximity of a house and cemetery within the project area. NCDOT will try to minimize the impacts to the property during right of way plans preparations and look into the location of the cemetery.

Following the circulation of the EA, a Combined Public Hearing was held on June 21, 2012. The Albemarle City Council voted unanimously to request that NCDOT consider using a 5-lane section on the portion of the project that begins at NC 740 and extends to Sweet Home Church Road. However, Department staff decided to move forward with the current 4-lane median divided design. This was based on the facilities designation as a Strategic Highway Corridor, the design year traffic projections, the design speed, and the noted safety benefits of median divided facility. Other design decisions determined were the Indian Mound Road Extension will not be extended to connect to NC 24/27 on a temporary or permanent basis and a directional left-over will be provided at Charter Street.

Additional Project Coordination

Merger Process

A CP3 LEDPA/ CP4 Meeting was on August 17, 2016. The purpose of this meeting was to confirm the LEPA for R-2530B, R-2527 (best fit alignments) and decide on LEPA and avoidance and minimization for B-4974. The majority of the team concurred on August 17, 2016. The RPO concurred on December 18, 2016 (See Appendix).

Coordination with Local Officials

There was coordination with the Town of Albemarle for sidewalks within the project limits. Additionally, coordination is underway with Albemarle regarding the proposed superstreet designs only in the curb and gutter section of R-2530B and other design features of the project.

Coordination with other Federal and State Agencies

Agency coordination occurred through the Merger Process. In addition coordination is underway for FERC, Swift Island Bridge boat access with WRC and Duke Energy respectively. Coordination with USFS will also be on-going.

Coordination for Controversial Issues

There was coordination with the NCDOT and the County on the bridge retention or replacement of the bridge.

VI. Revisions to the EA

The following are revisions to the Environmental Assessment (EA):

A. SUMMARY

Summary, 2. Project Purposed Description of Proposed Action, page iv, General Description, page 1 states:

The EA states TIP project B-4974 involves replacing existing Bridge No. 51 over the Pee Dee River on the Stanly/ Montgomery County line.

Revision: TIP project B-4974 involves rehabilitating existing Bridge No. 51 over Pee Dee River on the Stanly/ Montgomery County line.

Summary, 4. Alternatives Considered, page v, paragraph 1 states:

“and widening NC 24-27 from NC 740 in Albemarle to the proposed Troy Bypass (TIP project R-623), west of Troy to include constructing a new bridge over the Pee Dee River.”

Revision: This portion of the paragraph should be revised to replace “constructing a new bridge” to “rehabilitate the old bridge over the Pee Dee River.”

Summary, 4. Alternatives Considered, page v, paragraph 1 states:

Preliminary alternatives examined for the proposed projects included the “No Build” alternative, alternate modes of transportation, Transportation Systems Management (TSM) alternative, and widening NC 24-27 from NC 740 in Albemarle to the proposed Troy Bypass (TIP project R-623), west of Troy to include constructing a new bridge over the Pee Dee River. Of these preliminary alternatives, only widening NC 24-27 would serve the project purpose of improving traffic flow and level of service on the section of NC 24-27 between NC 740 in Albemarle to the proposed Troy Bypass and to maintain a bridge across the Pee Dee River that addresses the needs of highway users.

Revision: The No Build alternative was omitted as an alternative to carry forward for detailed study on the CP2 form dated 12/11/2008. To capture the “No Build” impacts associated with this project, information was added to the impact table below comparing the alternatives that were studied. Based upon the purpose and need, the No Build alternative does not meet the purpose and need for the project.

IMPACT CATEGORY	PROJECT STUDY ALTERNATIVE				TOTAL IMPACTS
		A	Rehab	C	
	No Build	R-2530B	B-4974,	R-2527	A+Rehab+C
			Rehab Alt.		
Natural Resources Impacts					
Federal Listed Species Habitat	No	Yes	Yes	Yes	Yes
100-Year Flood Plain and Floodway Impacts	No	No	Yes	Yes	Yes
Wetlands (number of crossings/acres)	0	3 / 0.82	1 / 0.02	26 / 0.89	30 / 1.73
Stream Crossings (number / linear feet)	0	15 / 3,842	9 / 1,356	25 / 5,695	49 / 10.893
Water Supply Critical Areas	No	Yes	Yes	Yes	Yes
Rare Plants *	No	Yes	No	Yes	Yes
USFS Forest Land (acres) **	0	0	0	50	50
Human Environment Impacts					
Residential Relocations (number)	0	19	5	8	32
Business Relocations (number)	0	18	3	2	23
Low Income/Minority Population	No	No	No	No	No
Cemeteries/Graves (number of graves impacted)	0	Yes / 0	No	No	Yes / 0
Historic Structures ***	0	0	1	0	1
Archaeological Sites	0	3	0	3	6
Section 4(f) Impacts	0	No	Yes	Yes	Yes
Traffic Noise Impacts (receptors) ****	0	15	0	11	26
Air Quality	Within an Attainment area				
Physical Environment Impacts					
Railroad Crossings (number)	0	0	0	1	1
Farmland	No	No	No	No	No
Potentially Hazardous Materials Sites (number)	0	17	2	4	23

NOTES:

All impacts, but the USFS Forest Land acreage, are based on preliminary design slope stake limits plus 25 feet. The USFS Forest Land acreage is based on preliminary proposed right of way limits.

* Rare plants include Schweinitz's Sunflower, Georgia Aster, Large Witch Alder and Smooth Sunflower.

** USFS Forest Land acreage was recalculated based on updated forest boundaries.

*** The Swift Island Ferry / James B. Garrison Bridge (Existing Bridge 51) is eligible for the National Register of Historic Places.

**** The values are based on results of the Traffic Noise Analysis (December 5, 2011) and screened against the Traffic Noise Policy (October 6, 2016). A Design Noise Report (DNR) will be completed during final design.

Summary, 4. Alternatives Considered, page v, paragraph 2 states:

Four bridge replacement alternatives were considered for TIP project B-4974. Alternate 1 included south side widening and replacing Bridge No. 51, Alternate 2 included south side widening and replacing Bridge No. 51 and No. 50, Alternate 3 included north side widening and replacing Bridge No. 51 and No. 50, and Alternate 4 included replacing Bridge No. 51 in place.

Revision: Five alternatives were considered for TIP Project B-4974. Alternate 5 include rehabilitating the existing Bridge No. 51.

Summary, 8. Additional Information, page viii states:

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B. DESCRIPTION OF PROPOSED ACTION

Section I, B. Historical Resume and Project Status, page 1

The proposed projects are included in the North Carolina Department of Transportation (NCDOT) 2012-2020 State Transportation Improvement Program (2012-2020 STIP). Right of way acquisition and construction for R-2530B and B-4974 are scheduled for state and federal fiscal years 2014 and 2016, respectively. Right of way acquisition and construction for R-2527 is scheduled for state fiscal years 2016 and 2018, respectively.

Revision: The proposed projects are included in the NCDOT 2016-2025 STIP. Right of way acquisition and construction for R-2530B and B-4974 are scheduled for state and federal fiscal years 2017 and 2019, respectively. Project R-2527 was recently funded in the Draft STIP. However, while this FONSI was being developed, TIP Project R-2527 was unfunded and final design plans were postponed. Costs estimates for R-2527 is based on STIP costs.

Section I, C. Cost Estimates, page 2

The cost estimates included in the 2012-2020 STIP and the latest cost estimates are listed in Tables 1 and 2, respectively, and on page 2 of the EA. These cost were updated.

Revision: The updated cost estimates included in the 2016-2025 STIP are listed in the table below.

PROJECT COST ESTIMATE FROM THE 2016-2025 STIP*

Project Number	Right of Way/ Utility Cost	Construction Cost	Mitigation Cost	Project Cost
R-2530B:	\$15,900,000	\$29,200,000	\$1,174,118	\$46,274,118
B-4974 Rehab Alternative:	\$2,025,000	\$28,000,000	\$403,538	\$30,428,538
R-2527	\$9,437,000	\$46,200,000	\$1,722,622	\$57,359,622
Total Cost	\$27,362,000	\$103,400,000	\$3,300,278	\$134,062,278

*Based off of NCDOT STIP January 2017 and March 2017

C. PURPOSE AND NEED FOR THE PROJECTS

Section II, B. Needs for the Projects, 8. Bridges and Drainage Structures

Table 3: Existing Bridges, on page 5,

PROJECT/ BRIDGE NO.	CARRIES/ CROSSES	CLEAR ROADWAY WIDTH OR MIN. HORIZONTAL CLEARANCE UNDER	VERTICAL CLEARANCE	LENGTH	YEAR BUILT	SUFFICIENCY RATING*
B-4974 / 50	NC 24- 27 / Pee Dee River	40' (Clear Roadway Width)	N/A	1140'	1979	87.6
B-4974 / 51	NC 24- 27 / Pee Dee River	20' (Clear Roadway Width)	N/A	1060'	1927	47
R-2527 / 14	NS Railroad/ NC 24- 27	43.4' (Horizontal Clearance Under)	15'3"	145'	1957	N/A

*Sufficiency Rating (out of a possible 100 rating points).

Revision: Based on 2016 Bridge Inspection Reports

PROJECT/ BRIDGE NO.	CARRIES/ CROSSES	CLEAR ROADWAY WIDTH OR MIN. HORIZONTAL CLEARANCE UNDER	VERTICAL CLEARANCE	LENGTH	YEAR BUILT	SUFFICIENCY RATING*
B-4974 / 50	NC 24- 27 / Pee Dee River	40' (Clear Roadway Width)	N/A	1140'	1979	86.6
B-4974 / 51	NC 24- 27 / Pee Dee River	20' (Clear Roadway Width)	N/A	1060'	1927	46.82
R-2527 / 14	NS Railroad/ NC 24- 27	43.4' (Horizontal Clearance Under)	15'3"	145'	1957	N/A

*Sufficiency Rating (out of a possible 100 rating points).

Table 4: Existing Drainage Structures (Major Stream Crossings), page 6 has been updated.

Revision:

STREAM NAME	LOCATION	DRAINAGE STRUCTURE	DRAINAGE AREA (SQ. MILES)	STREAM CLASSIFICATION	DWQ SCORE
<u>R-2530B:</u>					
UT Mountain Creek	0.3 miles SE of the NC 740 junction	Replace 1 @ 87.5" X 68" (87"X63") CMPA w/ 2 @ 9'x5' RCBC	0.20 (131 Ac.)	-	-
UT Mountain Creek	0.3 miles NW of the SR 1537 junction	Replace 1 @ 6' X 6' RCBC w/ 1 @ 8'x7' RCBC	0.38 (243 Ac.)	Perennial	30.5
UT Mountain Creek	0.05 miles SE of the SR 1731 junction	Replace 1 @ 6' X 6' RCBC w/ 1 @ 7'x7' RCBC	0.27 (171 Ac.)	Perennial	32
<u>B-4974:</u>					

UT Pee Dee River	0.2 miles SE of the SR 1778 junction	Replace 1 @ 7' X 7' Bottomless RCBC w/ 1 @ 9'x7' RCBC	0.43 (275 Ac.)	Perennial	29
Rocky Creek	0.4 miles W of the SR 1150 junction	Replace 2 @ 10 X 7 RCBC w/ 2 @ 11'x9' RCBC	3.5	Perennial	42.5
<u>R-2527:</u>					
Rocky Creek	0.08 miles W of the SR 1150 junction	Retain and Extend 2 @ 9 X 7 RCBC	2.9	Perennial	40
Clarks Creek	0.8 miles SW of the SR 1134 junction	Retain and Extend 2 @ 10 X 7 RCBC	2.6	Perennial	41.5
UT Lick Fork Creek	0.5 miles NE of the SR 1134 junction	Retain and Extend 2 @ 7 X 7 RCBC	1.2	Perennial	44.5
UT Rocky Creek	0.2 miles W of the SR 1137 junction	Retain and Extend 1 @ 7 X 5 RCBC	0.83 (530 Ac.)	Perennial	40.5
UT Rocky Creek	0.1 miles E of the SR 1137 junction	Retain and Extend 1 @ 7 X 5 RCBC	1.0 (664 Ac.)	Perennial	40.5
Rocky Creek	0.3 miles E of the SR 1137 junction	Retain and Extend 3 @ 9 X 9 RCBC	9.0	Perennial	48.5
Smith Branch Creek	0.4 miles NE of the NC 109 junction	Retain and Extend 1 @ 8 X 8 RCBC	1.3	Perennial	43

Section II, B. Needs for the Projects, d. Traffic Carrying Capacity, 1. Existing and Future Traffic Volumes, page 7 states:

In the year 2010, average daily traffic along NC 24-27 will likely range between 7,200 and 14,100 vehicles per day. By year 2035, traffic in the project areas is predicted to range between 10,500 and 20,500 vehicles per day, respectively.

Revision: In 2010, the average daily traffic will likely range between 9,000 and 14,100 vehicles per day. By the year 2035, the traffic in the project areas is predicted to range between 13,100 and 20,500 vehicles per day, respectively.

Section II, B. Needs for the Projects, e. Accident Data, page 8 states:

An accident study was conducted along NC 24-27 in the project study areas for the time period from August 1, 2008 through July 31, 2011. During this study period, 203 crashes were reported along the subject sections of NC 24-27. Three fatal crashes occurred, and 76 crashes resulted in injuries. The total crash rate for this section of NC 24-27 is 131.36 accidents per 100 million vehicle miles (acc/100mvm). Compared to the statewide rate of 177.26 acc/100mvm for rural two-lane, undivided NC routes, NC 24-27 total crash rates are below the statewide rate. The fatal crash rate of 1.94 acc/100mvm is also below the statewide rate of 2.12 acc/100mvm for rural two-lane, undivided NC routes.

Revision: An accident study was conducted along NC 24-27 in the project study areas for the time period from December 1, 2011 through November 30, 2016. During this study period, 371 crashes were reported along the subject sections of NC 24-27. Three fatal crashes occurred, and 105 crashes resulted in injuries. The total crash rate for this section of NC 24-27 is 160.77 accidents per 100 million vehicle miles (acc/100mvm). Compared to the statewide rate of 174.39 acc/100mvm for rural two-lane, undivided NC routes, NC 24-27 total crash rates are below the statewide rate. The fatal crash rate of 1.30 acc/100mvm is also below the statewide rate of 1.94 acc/100mvm for rural two-lane, undivided NC routes.

D. ALTERNATIVES TO THE PROPOSED ACTION

Section III, D. Alignment Alternatives, page 14

Table 6: Summary of Environmental Effects, page 14 has been updated.

Revision:

IMPACT CATEGORY	PROJECT STUDY ALTERNATIVE				TOTAL IMPACTS
		A	Rehab	C	
	No Build	R-2530B	B-4974,	R-2527	A+Rehab+C
			Rehab Alt.		
Natural Resources Impacts					
Federal Listed Species Habitat	No	Yes	Yes	Yes	Yes
100-Year Flood Plain and Floodway Impacts	No	No	Yes	Yes	Yes
Wetlands (number of crossings/acres)	0	3 / 0.82	1 / 0.02	26 / 0.89	30 / 1.73
Stream Crossings (number / linear feet)	0	15 / 3,842	9 / 1,356	25 / 5,695	49 / 10.893
Water Supply Critical Areas	No	Yes	Yes	Yes	Yes
Rare Plants *	No	Yes	No	Yes	Yes
USFS Forest Land (acres) **	0	0	0	50	50
Human Environment Impacts					
Residential Relocations (number)	0	19	5	8	32
Business Relocations (number)	0	18	3	2	23
Low Income/Minority Population	No	No	No	No	No
Cemeteries/Graves (number of graves impacted)	0	Yes / 0	No	No	Yes / 0
Historic Structures ***	0	0	1	0	1
Archaeological Sites	0	3	0	3	6
Section 4(f) Impacts	0	No	Yes	Yes	Yes
Traffic Noise Impacts (receptors) ****	0	15	0	11	26
Air Quality	Within an Attainment area				
Physical Environment Impacts					
Railroad Crossings (number)	0	0	0	1	1
Farmland	No	No	No	No	No
Potentially Hazardous Materials Sites (number)	0	17	2	4	23

NOTES:

All impacts, but the USFS Forest Land acreage, are based on preliminary design slope stake limits plus 25 feet. The USFS Forest Land acreage is based on preliminary proposed right of way limits.

* Rare plants include Schweinitz's Sunflower, Georgia Aster, Large Witch Alder and Smooth Sunflower.

** USFS Forest Land acreage was recalculated based on updated forest boundaries.

*** The Swift Island Ferry / James B. Garrison Bridge (Existing Bridge 51) is eligible for the National Register of Historic Places.

**** The values are based on results of the Traffic Noise Analysis (December 5, 2011) and screened against the Traffic Noise Policy (October 6, 2016). A Design Noise Report (DNR) will be completed during final design.

E. PROPOSED IMPROVEMENTS

Section IV, E. Intersections, F. Traffic Operations, page 16 states:

Due to concerns voiced by the public, the plans currently show full movement intersections at the NC 24-27 / Barnard Street / Anderson Road intersection and the NC 24-27 / Anderson Grove Church Road / Anderson Road intersection within the Albemarle city limits. The final decision concerning whether these full movement intersections will be revised will be made after the public hearing.

Revision: Coordination regarding full movement intersections occurred following the Environmental Assessment. Based on the coordination full movement intersections are proposed at the following locations:

NC 24/27 at Barnard Street/ Anderson Road

NC 24/27 at Anderson Grove Church Road/ Anderson Road

Section IV, J. Bridges and Drainage Structures, page 19

Table 9: Proposed Bridges and Drainage Structures (Major Stream Crossings) on page 20 has been updated.

Revision:

SITE NO.	STREAM UNDER OR RAILROAD OVER NC 24-27	LOCATION ON NC 24-27	RECOMMENDED STRUCTURE	FLOOD ZONE STATUS
<u>R-2530B:</u>				
1	UT Mountain Creek	0.3 miles SE of the NC 740 junction	Replace 1 @ 87.5" X 68" (87"X63") CMPA w/ 2 @ 9'x5' RCBC	N/A
2	UT Mountain Creek	0.3 miles NW of the SR 1537 junction	Replace 1 @ 6' X 6' RCBC w/ 1 @ 8'x7' RCBC	N/A
3	UT Mountain Creek	0.05 miles SE of the SR 1731 junction	Replace 1 @ 6' X 6' RCBC w/ 1 @ 7'x7' RCBC	N/A
<u>B-4974:</u>				
4	UT Pee Dee River	0.2 miles SE of the SR 1778 junction	Replace 1 @ 7' X 7' Bottomless RCBC w/ 1 @ 9'x7' RCBC	N/A
5	UT to Pee Dee River	0.1miles SE of the SR 1149 junction	Replace 1 @ 60" RCP w/ 1 @ 6'x8' RCBC	N/A

6	Pee Dee River Alternative 4	0.1 miles W of the NC 73 Junction	Rehab Bridge No. 51 bridge. Existing Bridge No. 50 will remain in place.	Designated Flood Hazard Zone
7	Rocky Creek	0.4 miles W of the SR 1150 junction	Replace 2 @ 10 X 7 RCBC w/ 2 @ 11'x9' RCBC	Designated Flood Hazard Zone
R-2527:				
8	Rocky Creek	0.4 miles W of the SR 1150 junction	Replace 2 @ 10 X 7 RCBC w/ 2 @ 11'x9' RCBC	Designated Flood Hazard Zone
9	Rocky Creek	0.08 miles W of the SR 1150 junction	Retain and Extend 2 @ 9 X 7 RCBC	Designated Flood Hazard Zone
10	Clarks Creek	0.8 miles SW of the SR 1134 junction	Retain and Extend 2 @ 10 X 7 RCBC	Designated Flood Hazard Zone
11	UT Lick Fork Creek	0.5 miles NE of the SR 1134 junction	Retain and Extend 2 @ 7 X 7 RCBC	Designated Flood Hazard Zone
12	UT Rocky Creek	0.2 miles W of the SR 1137 junction	Retain and Extend 1 @ 7 X 5 RCBC	N/A
13	UT Rocky Creek	0.1 miles E of the SR 1137 junction	Retain and Extend 1 @ 7 X 5 RCBC	N/A
14	Rocky Creek	0.3 miles E of the SR 1137 junction	Retain and Extend 3 @ 9 X 9 RCBC	Designated Flood Hazard Zone
Near 14	Norfolk Southern/ Aberdeen Carolina & Western Railway	0.1 miles W of the NC 109 junction	Build a new 210' bridge and railroad track west of the existing bridge. Remove Bridge No. 14	N/A
15	Smith Branch Creek	0.4 miles NE of the NC 109 junction	Retain and Extend 1 @ 8 X 8 RCBC	N/A

F. ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

Section V, A. Natural Resources, 2. Water Resources, a. Clean Water Act/ Waters of the U.S., 2nd and 3rd paragraph page 29

Revision: Fifteen (15) jurisdictional streams are impacted in the R-2530B project area. Seven (7) jurisdictional streams are impacted in the B-4974 project area. Twenty-five (25) jurisdictional streams are impacted in the R-2527 project study area. Three (3) wetlands are impacted in the R-2530B project area. One (1) wetland is impacted in the B-4974 project study area. Twenty-six (26) wetlands are impacted in the R-2527 project

study area. Stream classifications, wetland types and other data are included in Tables below. See **Figures 3A to 3K** in Appendix A.

Tables 11- 16 on pages 31 – 33 under Summary of Anticipated Effects have been updated.

Revision:

STREAM IMPACTS IN THE R-2530B PROJECT STUDY AREA

STREAM ID	STREAM NAME	NC DENR STATUS CLASSIFICATION	DWQ SCORE	STREAM LENGTH IN STUDY AREA (FEET)	PRELIMINARY DESIGN STREAM IMPACTS (FEET) ALTERNATIVE: BEST FIT
DITCH	UT, Mountain Creek	-	-	290	31
St-AN 02	UT, Mountain Creek	Perennial	30.5	788	250
St-B	UT, Mountain Creek	Perennial	32	475	149
St-CC	UT, Mountain Creek	Perennial	33	515	70
St-D	UT, Mountain Creek	Perennial	32	454	21
St-E	UT, Mountain Creek	Perennial	32	396	35
St-EE	UT, Mountain Creek	Perennial	30.5	527	30
St-F	UT, Mountain Creek	Perennial	--	799	137
St-FF	UT, Mountain Creek	Intermittent	24.5	392	123
St-GG	UT, Mountain Creek	Perennial	35.5	310	178
St-HH	UT, Mountain Creek	Perennial	30.5	619	154
St-I	UT, Mountain Creek	Intermittent	28	1867	1433
St-M	UT, Jacobs Creek	Perennial	36.5	3730	656
St-N	UT, Jacobs Creek	Perennial	40	676	240
St-Q	UT, Jacobs Creek	Perennial	34.5	662	98
St-R	UT, Pee Dee River	Perennial	31.5	884	237
TOTAL STREAM IMPACTS FOR R-2530B					3,842

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.

STREAM IMPACTS IN THE B-4974 PROJECT STUDY AREA

STREAM ID	STREAM NAME	NCDENR STATUS CLASSIFICATION	DWQ SCORE	STREAM LENGTH IN STUDY AREA (FEET)	PRELIMINARY DESIGN STREAM IMPACTS (FEET) REHABILITATION ALTERNATIVE: 4
St-T	UT, Pee Dee River	Perennial	29	821	213
St-U	UT, Pee Dee River	Perennial	33	1445	303
St-V	UT, Pee Dee River	Perennial	34.5	1255	328
SG	UT, Pee Dee River	Intermittent	26	242	65
SH	UT, Pee Dee River	Perennial	32.5	386	72
SA-1	UT, Rocky Creek	Intermittent	--	832	201
SA	Rocky Creek	Perennial	42.5	1,123	174
TOTAL STREAM IMPACTS FOR B-4974					1,356

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet

STREAM IMPACTS IN THE R-2527 PROJECT STUDY AREA

STREAM ID	STREAM NAME	NCDENR STATUS CLASSIFICATION	DWQ SCORE	STREAM LENGTH IN STUDY AREA (FEET)	PRELIMINARY DESIGN STREAM IMPACTS (FEET) ALTERNATIVE: BEST FIT
SB-1	Rocky Creek	Perennial	40	903	117
SB-2	UT, Rocky Creek	Perennial	32.5	643	151
SC	Dumas Creek	Perennial	43	521	109
SC-1	UT, Dumas Creek	Intermittent / Perennial	26	1,807	1372
SD	Clarks Creek	Perennial	41.5	531	145
SE	UT, Lick Fork Creek	Perennial	44.5	530	127
SF-A	Lick Fork Creek	Perennial	40.5	524	135
SF-A1	UT, Lick Fork Creek	Intermittent	30	60	60
SF-B	Rocky Creek	Perennial	48.5	517	155
SH-1	UT, Pee Dee River	Intermittent	>19	81	81
SJ	UT, Wood Run	Intermittent	20	210	109
SL-A	UT, Cattail Creek	Perennial	33.5	627	114
SM-1	UT, Rocky Creek	Intermittent	24	553	188
SM-2	UT, Rocky Creek	Perennial	35	554	172
SN	UT, Dumas Creek	Perennial	39.5	753	281
SO	UT, Dumas Creek	Perennial	37	747	122
SP	UT, Clarks Creek	Perennial	40	521	108
SR	UT, Lick Fork Creek	Intermittent	24.5	507	171
SU	UT, Lick Fork Creek	Perennial	39	343	267
SW-B	UT, Lick Fork Creek	Intermittent	29	672	147
SW-C1	UT, Rocky Creek	Intermittent	27.5	664	193
SX	UT, Lick Fork Creek	Perennial	37.5	1,567	339
SY-A	UT, Rocky Creek	Perennial	40.5	2,335	729
SY-B	Smith Branch Creek	Perennial	43	902	196
SZ	UT, Smith Branch Creek	Intermittent	27.75	749	107
TOTAL STREAM IMPACTS FOR R-2527					5,695

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.

WETLAND IMPACTS IN THE R-2530B PROJECT STUDY AREA

WETLAND ID	WETLAND TYPE	WETLAND RATING	WETLAND AREA IN STUDY AREA (Acres)	PRELIMINARY DESIGN WETLAND IMPACTS (ACRES) ALTERNATIVES: BEST FIT
8	Riverine	No Form	1.20	0.61
10	Riverine	No Form	0.36	0.18
WA	Riverine	No Form	0.03	0.03
TOTAL WETLAND IMPACTS FOR R-2530B				0.82

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.
Information is unavailable for items marked with "No Form".

WETLAND IMPACTS IN THE B-4974 PROJECT STUDY AREA

WETLAND ID	WETLAND TYPE	WETLAND RATING	WETLAND AREA IN STUDY AREA (Acres)	PRELIMINARY DESIGN WETLAND IMPACTS (ACRES) REHABILITATION ALTERNATIVE: 4
WB	Riverine	32	0.020	0.02
TOTAL WETLAND IMPACTS FOR B-4974				0.02

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.
Information is unavailable for items marked with "No Form".

WETLAND IMPACTS IN THE R-2527 PROJECT STUDY AREA

WETLAND ID	WETLAND TYPE	WETLAND RATING	WETLAND AREA IN STUDY AREA (Acres)	PRELIMINARY DESIGN WETLAND IMPACTS (ACRES) ALTERNATIVE: BEST FIT
WBB	Riverine	20	0.152	0.14
WE	Riverine	19	0.011	0.01
WEE	Non-Riverine	18	0.308	0.04
WF	Riverine	25	0.101	0.03
WFF	Riverine	31	0.601	0.04
WGG	Non-Riverine	22	0.251	0.05
WH	Riverine	18	0.007	0.01
WHH	Riverine	31	0.019	0.02
WJ	Riverine	18	0.003	<0.01
WM	Riverine	30	0.012	0.01
WN	Riverine	30	0.017	0.01
WNN	Riverine	16	0.306	0.09
WOO	Riverine	31	0.028	0
WP	Non-Riverine	30	0.092	0.092
WPP	Non-Riverine	18	0.057	<0.01
WQQ	Riverine	18	0.114	0
WR	Non-Riverine	30	0.099	0.03
WS	Riverine	19	0.054	0.02
WSS	Riverine	37	0.061	<0.01
WT	Non-Riverine	16	0.166	0.11
WU-1	Riverine	19	0.018	0.02
WU-2	Riverine	39	0.123	0.11
WXX	Riverine	28	0.233	0
WYY	Riverine	16	0.008	0
WZ	Riverine	18	0.076	0.02
WZZ	Non-Riverine	19	0.037	<0.01
TOTAL WETLAND IMPACTS FOR R-2527				0.89

NOTES: Impacts are based on preliminary design slope stake limits plus 25 feet.

Section V, A. Natural Resources, 2. Water Resources, e. Summary of Anticipated Effects
page 30

This information has been updated

Revision: For project R-2530B, there are 3,507 linear feet of stream impacts and 0.82 acres of wetland impacts. For project B-4974, Rehabilitation Alternative, there are

1,691 linear feet of stream impacts and 0.02 acres of wetland impacts. For project R-2725, there are 5,695 linear feet of stream impacts and 0.88 acres of wetland impacts.

Section V, A. Natural Resources, 3. Rare and Protected Species, a. Endangered Species Act Protected Species pages 36

Table 17 – Federally Protected Species Listed For Stanly and Montgomery Counties has been updated.

Revision:

PROJECT & COUNTY	COMMON NAME	FEDERAL STATUS	HABITAT PRESENT?	BIOLOGICAL CONCLUSION
R-2530B & R-2527 – Stanly/Montgomery	Schweinitz's Sunflower	E	Yes	May Affect, Likely to Adversely Affect
R-2527 – Montgomery	Smooth Coneflower	E	Yes	No Effect
R-2527 – Montgomery	Red-cockaded Woodpecker	E	No	No Effect
R-2530B – Stanly	Northern Long-Eared Bat	T	Yes	Unresolved

NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for Northern Long-Eared Bat.

Section V, B. Cultural Resources, 1. Historic Architectural Resources, b. Potential Project Effects page 42

Table 18 has been updated to include rehabilitation of the bridge

Revision:

ALTERNATIVE/ SCENARIO	EFFECT FINDING
Alt. 1, 2 & 3 – new owner agrees to take ownership of Bridge No. 51	No Adverse Effect
Alt. 1, 2 & 3 – no new owner agrees to take ownership of Bridge No. 51	Adverse Effect
Alternative 4	Adverse Effect
Alternative – rehabilitation of bridge, no new ownership of Bridge No. 51	No Adverse Effect with conditions

Rehabilitation alternative received a “no adverse effect with conditions” determination based on the agreement that the bridge be rehabilitated with similar structural

components as the existing structure. The Concurrence Form for Assessment of Effects can be found in the Appendix.

Section V, C. Section 4(f)/ 6(f) Resources paragraph 2 page 45

Additional information has developed since the completion of the EA. A Rehabilitation Alternative was developed for the improvements to Bridge No. 51. This rehabilitation alternative removes the superstructure of the bridge. The Environmental Assessment detailed the terms and conditions if bridge was replaced and a responsible party took the bridge over. A responsible party agreed to take the bridge over however due to state legislation, withdrew their offer because of the additional financial burden specified by this legislation.

Revision: Boat access coordination is currently underway with NCDOT, WRC and Duke Energy regarding impacts to the Swift Island Boat access area, schedule and construction. The design for facilities within the boat access area has been coordinated with Duke Energy and WRC.

Section V, E. Social Effects, 5. Bicycle and Pedestrian Facilities and Scenic Byways 2nd paragraph page 49-50

According to local officials, no trails or greenways exist within the R-2530B, B-4974 or R-2527 project study area or are planned in these areas. They have suggested that existing Bridge No. 51 over the Pee Dee River could be utilized as a pedestrian bridge for any potential future greenway or trail system.

Revision: Bridge No. 51 will be rehabilitated and will not be taken over to be utilized as a pedestrian bridge for any potential future greenway or trail system.

Section V, J. Highway Traffic Noise page 54

Revision: An updated design noise report will be completed during final design.

Section IV, Sidewalk Location, Addition to EA

Sidewalk location was not included in the EA. Since the signing of the document, it has been coordinated to include sidewalks in the project. The sidewalks will be included in the project at the following locations:

Five-foot sidewalks are proposed on both the north and south sides of NC 24-27-73, within the Albemarle city limits and the southwest quadrant of NC 24-27-73 (Spaulding Street) and SR 1625 (Raleigh Highway) for approximately 325 feet. Information regarding costs and location of the sidewalks were shared with the City of Albemarle. Estimated costs for sidewalks and cost sharing participation is as follows:

The total cost for constructing five-foot sidewalks on both sides of NC 24-27-73, East Main Street, within the Albemarle city limits is estimated to be approximately \$271,639. The City of Albemarle's share is estimated to be \$81,492, and NCDOT's share is estimated to be \$190,147.

The total cost for constructing five-foot sidewalks on the north side of NC 24-27-73, East Main Street, within the Albemarle city limits is estimated to be approximately \$140,070. The City of Albemarle's share is estimated to be \$42,021, and NCDOT's share is estimated to be \$98,049.

The total cost for constructing five-foot sidewalks on the south side of NC 24-27-73, East Main Street, within the Albemarle city limits is estimated to be approximately \$131,956. The City of Albemarle's share is estimated to be \$39,587, and NCDOT's share is estimated to be \$92,369.

The total cost for constructing five-foot sidewalks along the east side of Spaulding Street within the Albemarle city limits is estimated to be approximately \$193. The City of Albemarle's share is estimated to be \$58, and NCDOT's share is estimated to be \$135.

G. COMMENTS AND COORDINATION

Section VI, E. FERC Coordination page 63

Coordination with Progress Energy for potential requirements of the Federal Energy Regulatory Commission (FERC) regarding approvals has been initiated. Preliminary design plans will be forwarded to the appropriate contact. This coordination will continue through the permitting phase of the projects.

Revision: FERC coordination with Duke Energy is currently underway and will be finalized prior to construction.

VII. Bases for Finding of No Significant Impact

The EA documents a study of the impacts of the proposed project. Based upon this study and on comments received from federal, state, local agencies and the general public, it is the finding of the FHWA that this project will not have a significant adverse impact upon the human or natural environment. No significant impacts to natural, social, ecological, cultural, economic, or scenic resources are expected. The proposed project is consistent with local plans. The project has been extensively coordinated with federal, state, and local agencies. In view of this evaluation, it has been determined that a Finding of No Significant Impact (FONSI) is applicable for this project. Therefore, neither an Environmental Impact Statement nor further environmental analysis is required. The Summary of Findings for the project are listed in Table 10 below.

TABLE 10. SUMMARY OF FINDINGS

SECTION OF THE EA	SIGNIFICANT IMPACT?
Impacts to Aquatic Communities	No. Prior to construction, an Erosion and Sedimentation Control Plan/Stormwater Pollution Prevention Plan will be developed for the preferred alternative in accordance with the NCDENR publication Erosion and Sediment Control Planning and Design and the NCDOT's Best Management Practices for Protection of Surface Waters, to minimize any adverse impacts to aquatic communities. These Plans will be implemented and maintained throughout the construction period.
Water Resources	No. The construction activities associated with the project will follow NCDOT's Best Management Practices for Construction and Maintenance Activities. The standard sedimentation and erosion control measures adopted by NCDOT for the installation of bridges and culverts will be followed.
Jurisdictional Areas	No. It is anticipated impacts to jurisdictional surface waters will total approximately 10,893 linear feet. 1.73 acres of wetlands will be impacted as a result of this project. The NCDOT will coordinate the project with the Ecological Enhancement Program (EEP) to mitigate the stream impacts identified above.
Federally Protected Species	No. Endangered species addressed in the study area include Schweinitz's Sunflower, Smooth Coneflower, and red-cockaded woodpecker. The Northern Long-Eared Bat has been added to the species list since the completion of the EA. NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for Northern Long-Eared Bat. A Biological Assessment and a Biological Opinion will be rendered for the species where habitat and species are observed.
Historic Architecture	No. One historic property, James B. Garrison Bridge (Swift Island Ferry Bridge), is located within the project study area. During a meeting with HPO, FHWA and NCDOT staff it was agreed rehabilitating the bridge will have no adverse effects with the conditions.
Flood Hazard Evaluation	No. The proposed project will impact areas designated as 100-year floodplain /floodway zones for Pee Dee River. The proposed new structures and replacement structures will provide equivalent or greater conveyance than that of the existing structures.
Archaeology	No. It was determined that significant archaeological resources are unlikely to be affected by the project. USFS is requiring actual ROW widths to identify the actual impacts to archaeological resources

	present in the project area(s) and to prescribe mitigation for projection of historic resources. Once ROW acquisition is complete for areas identified to involve archaeological resources, an assessment of data recovery will be completed. If needed, a Data Recovery plan for the impacted archaeological resources and coordination with the Office of State Archaeology will be completed
Section 4(f)	No. Two (2) 4(f) resources will be impacted – James B Garrison Bridge (Swift Island Ferry Bridge), Wildlife Resources Commission’s Swift Island public boat access. Uwharrie National Recreational Trail will not have any impacts.
Social Effects	No. 32 homes and 23 businesses will be impacted by this project; however, no cohesion or other community effects are anticipated and no low income, minority or any other communities will be impacted.
Community Facilities & Services	No. Recreational facility (Swift Island boat access) will be impacted by the project but will not have an adverse effect on the ability to access and use this facility. Because no indirect impacts are anticipated, the cumulative effects of this project, when considered in the context of other past, present, and future actions, and the resulting impact on notable human and natural features should be minimal. Therefore, any contribution of the project to cumulative impacts resulting from current and planned development patterns are expected to be minimal.
Economic Impact	No. The widening project is expected to have an overall neutral economic impact on the Town of Albemarle and Town of Troy areas.
Noise	No. Although there would be traffic noise impacts as a result of the Preferred Alternative, very few of these impacts would be due to a substantial increase over existing noise levels.
Air Quality	No. The proposed project is located in Stanly and Montgomery Counties, which have been determined to comply with the NAAQS. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. The proposed project is not anticipated to create any adverse effects on the air quality of this attainment area. The project will have no meaningful potential for Mobile Source Air Toxic (MSAT) Effects.
Farmlands	No. The study area is located in a rural area of Stanly and Montgomery counties; however, the project would have no impacts to farmlands. An NRCS screening was completed for this project which found it to be below minimum criteria.
Hazardous Materials	No. Twenty-one possible UST facilities, one (1) junk yard and one (1) tire dump were identified within the limits. Preliminary site assessments will be determined and completed once final ROW plans become available and prior to ROW acquisition. A project special provision

	will be included in the let package to instruct the contractor in the event contaminated soil or ground water is encountered. In the event that additional right of way is needed on any of these properties, it is requested that the Right of Way office contact the GeoEnvironmental Section before making an offer to purchase.
SECTION OF THE EA	FINDINGS
Permits	An individual permit may be required if impacts to Waters of the US exceed half an acre or impacts to an individual stream exceed 300 feet. If not, then a nationwide permit may be required. If a Section 404 permit is required, then a Section 401 Water Quality Certification from the NCDWR will be needed. The USACE holds the final discretion as to what permit will be required to authorize project construction.
Mitigation	Decisions regarding final mitigation plans for the project will be made in cooperation with the Ecological Enhancement Program, the USACE, and the NCDWQ.

The following people may be contacted for additional information concerning this proposal and statement:

John F. Sullivan, III, PE, Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601
Telephone: (919) 856-4346

Beverly G. Robinson, CPM, Western Group Supervisor
Project Development and Environmental Analysis Unit
NC Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548
Telephone: (919) 707-6041

APPENDIX A

FIGURES

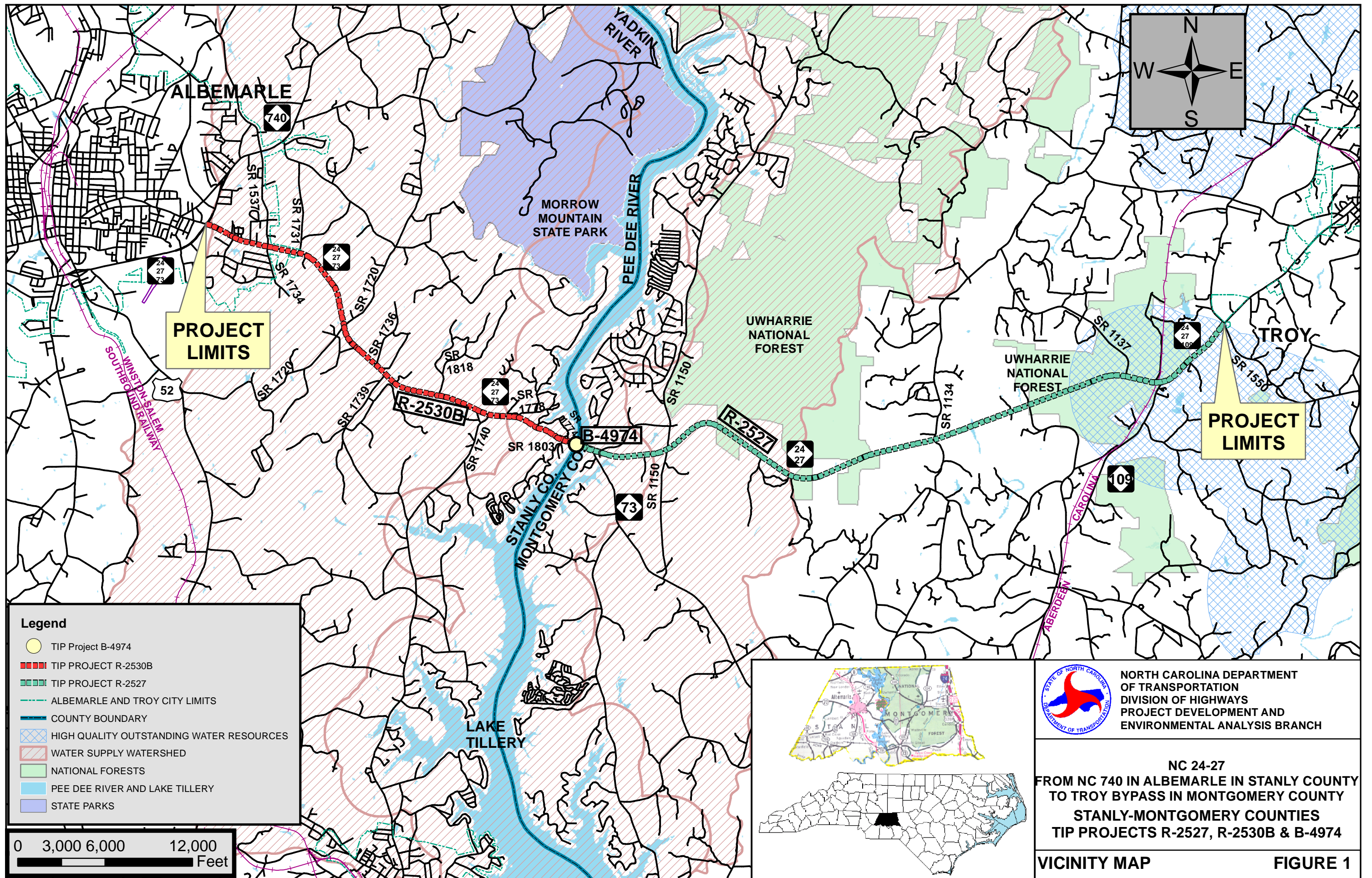
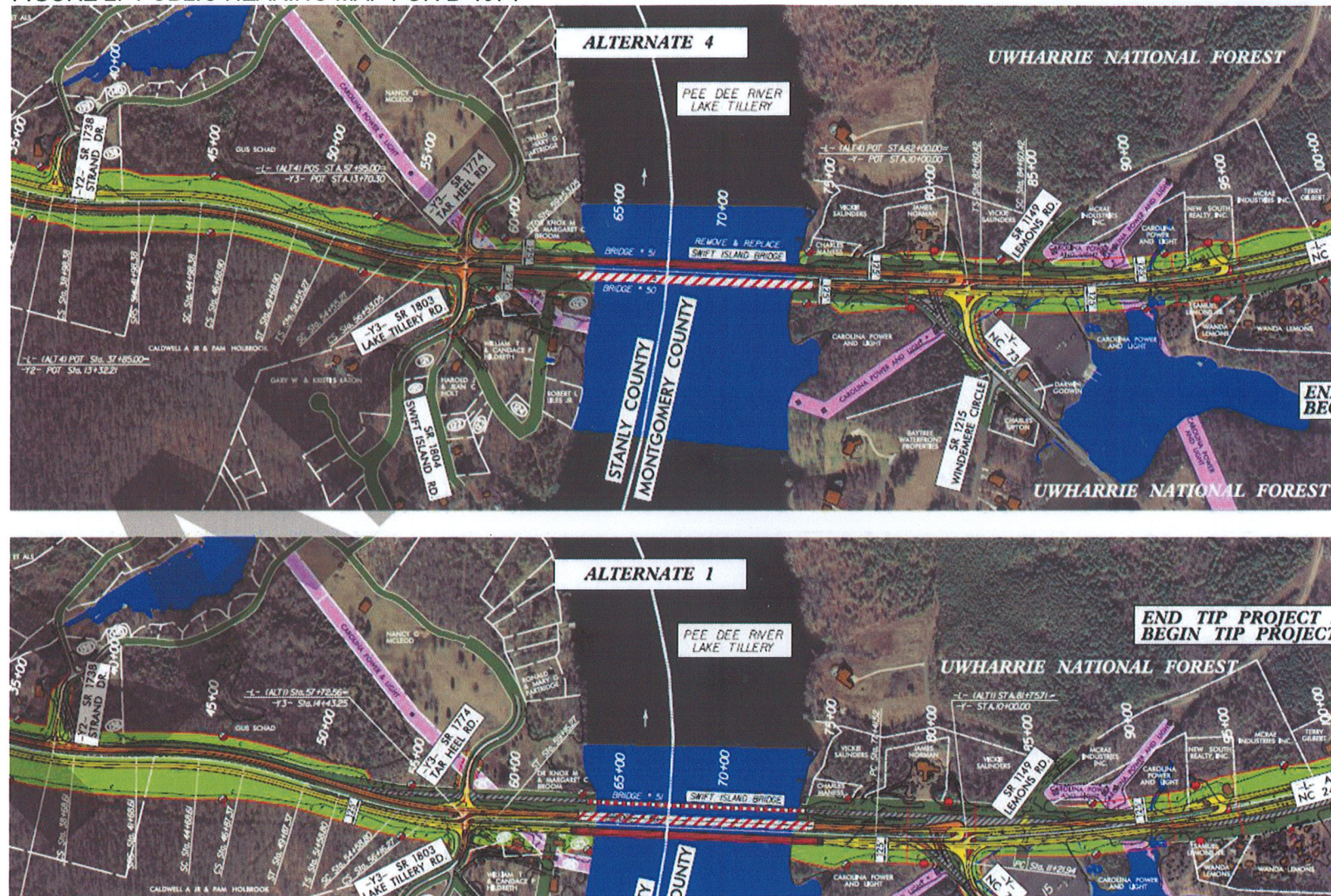
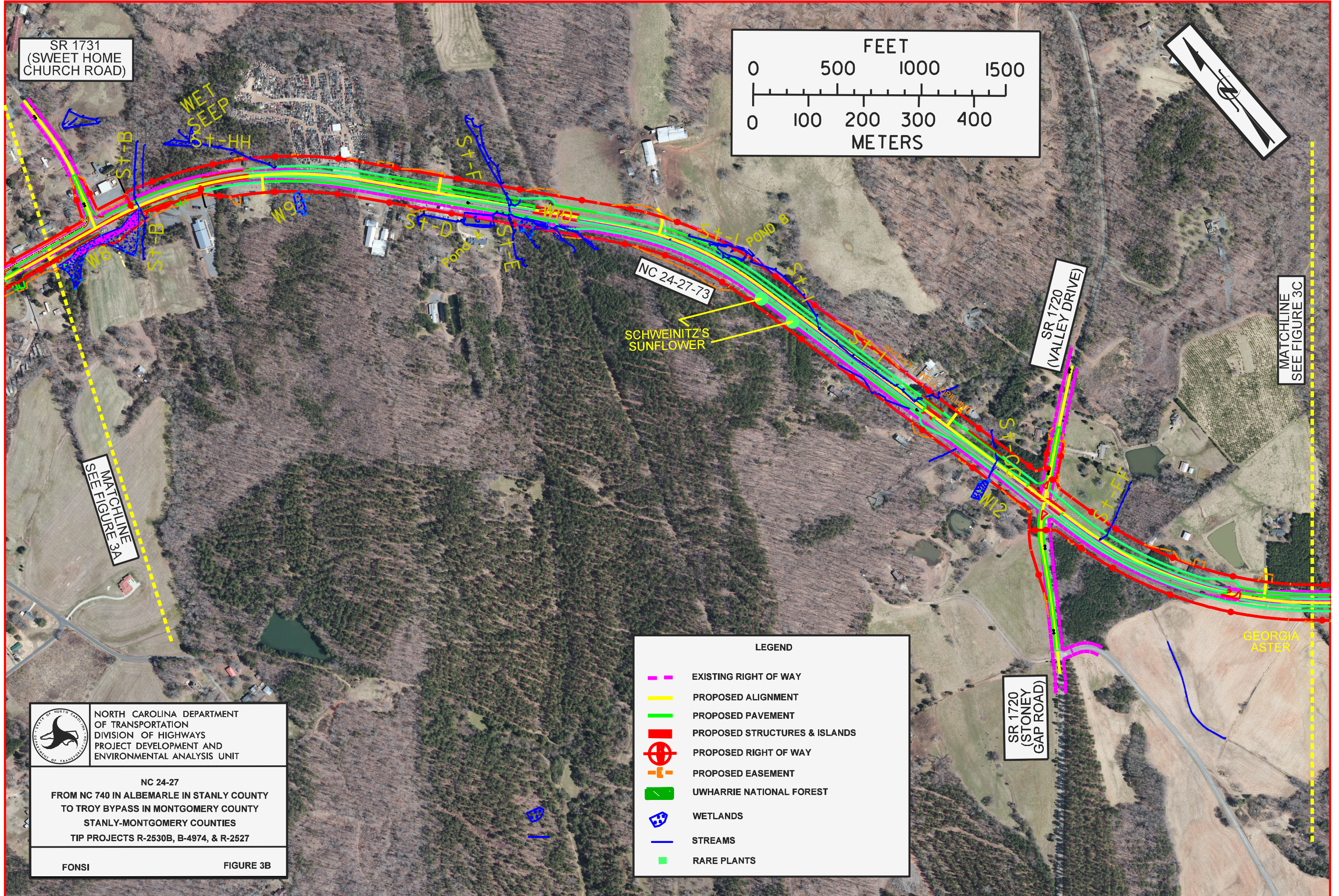
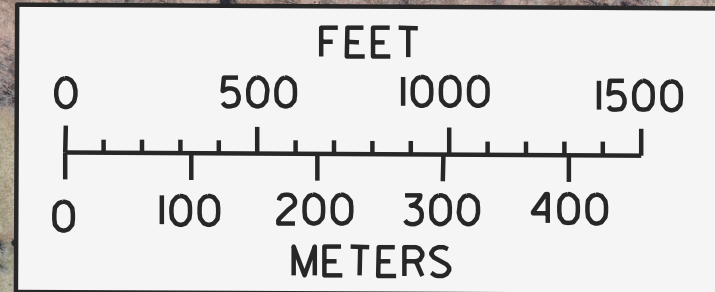


FIGURE 2: PUBLIC HEARING MAP FOR B-4974




SR 1731
(SWEET HOME
CHURCH ROAD)



MATCHLINE
SEE FIGURE 3C

MATCHLINE
SEE FIGURE 3A



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

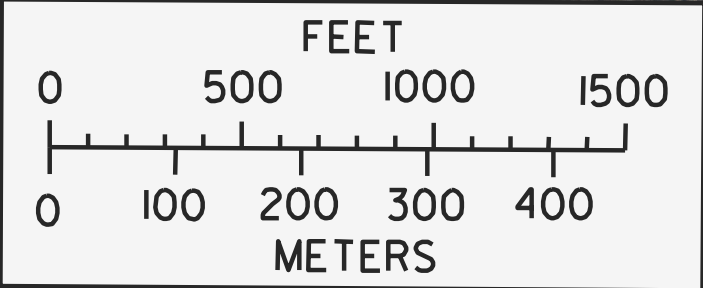
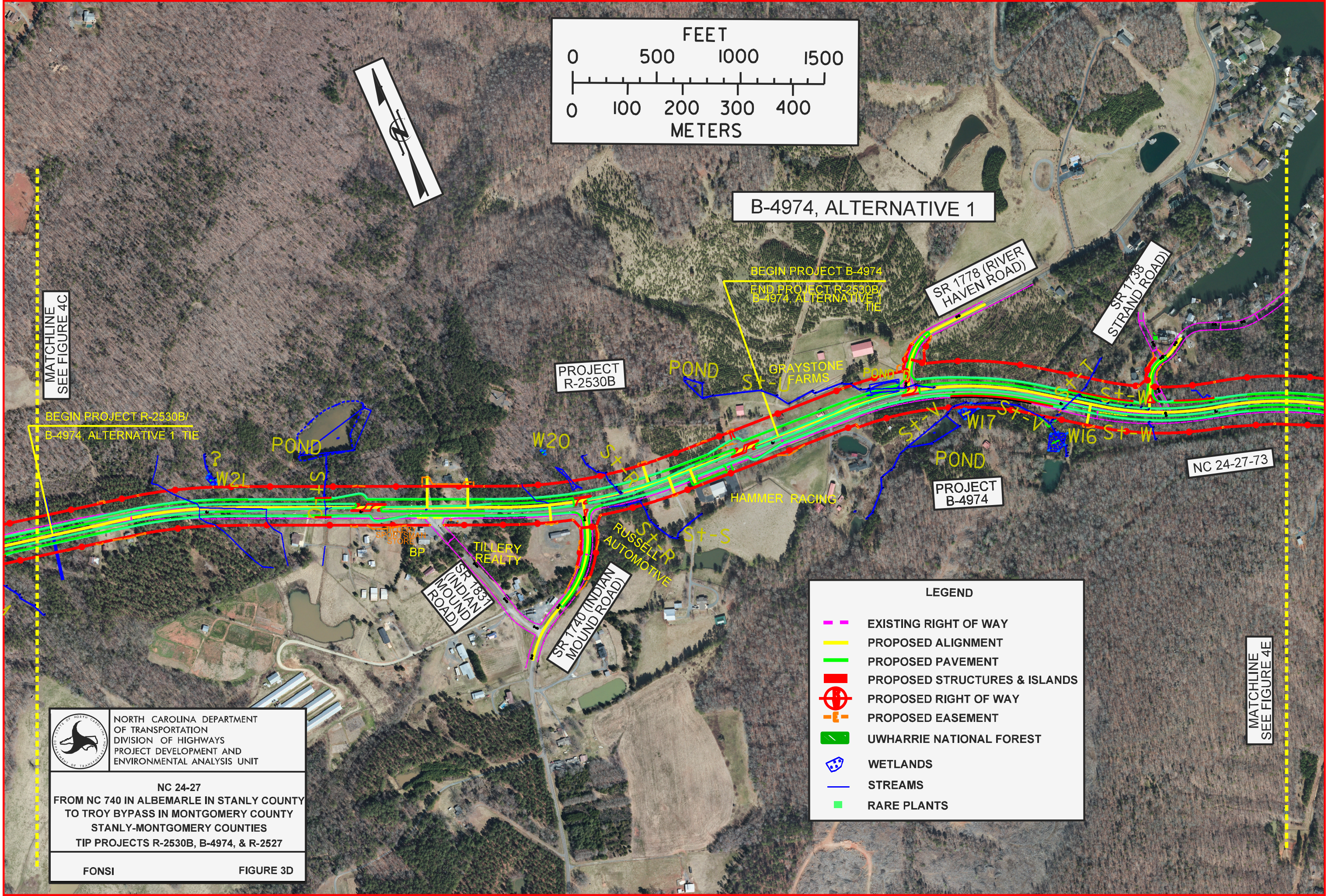
NC 24-27
FROM NC 740 IN ALBEMARLE IN STANLY COUNTY
TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527

FONSI

FIGURE 3B

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED ALIGNMENT
- PROPOSED PAVEMENT
- PROPOSED STRUCTURES & ISLANDS
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- UWHARRIE NATIONAL FOREST
- WETLANDS
- STREAMS
- RARE PLANTS



B-4974, ALTERNATIVE 1

SR 1778 (RIVER HAVEN ROAD)

SR 1738 (STRAND ROAD)

PROJECT R-2530B

BEGIN PROJECT B-4974
END PROJECT R-2530B/
B-4974, ALTERNATIVE 1 TIE

MATCHLINE
SEE FIGURE 4C

BEGIN PROJECT R-2530B/
B-4974, ALTERNATIVE 1 TIE

NC 24-27-73

PROJECT B-4974

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED ALIGNMENT
- PROPOSED PAVEMENT
- PROPOSED STRUCTURES & ISLANDS
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- UWHARRIE NATIONAL FOREST
- WETLANDS
- STREAMS
- RARE PLANTS

MATCHLINE
SEE FIGURE 4E

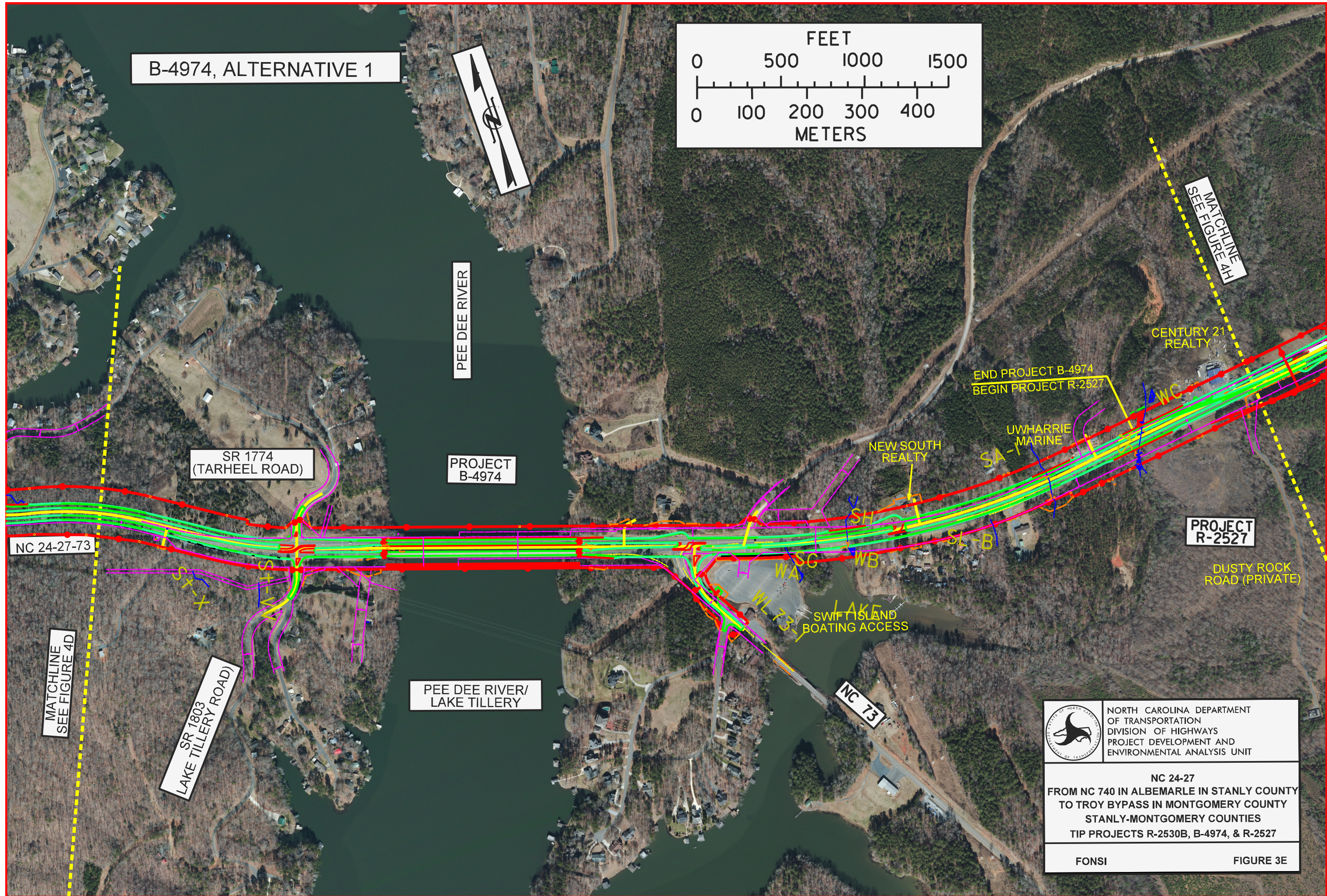



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OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

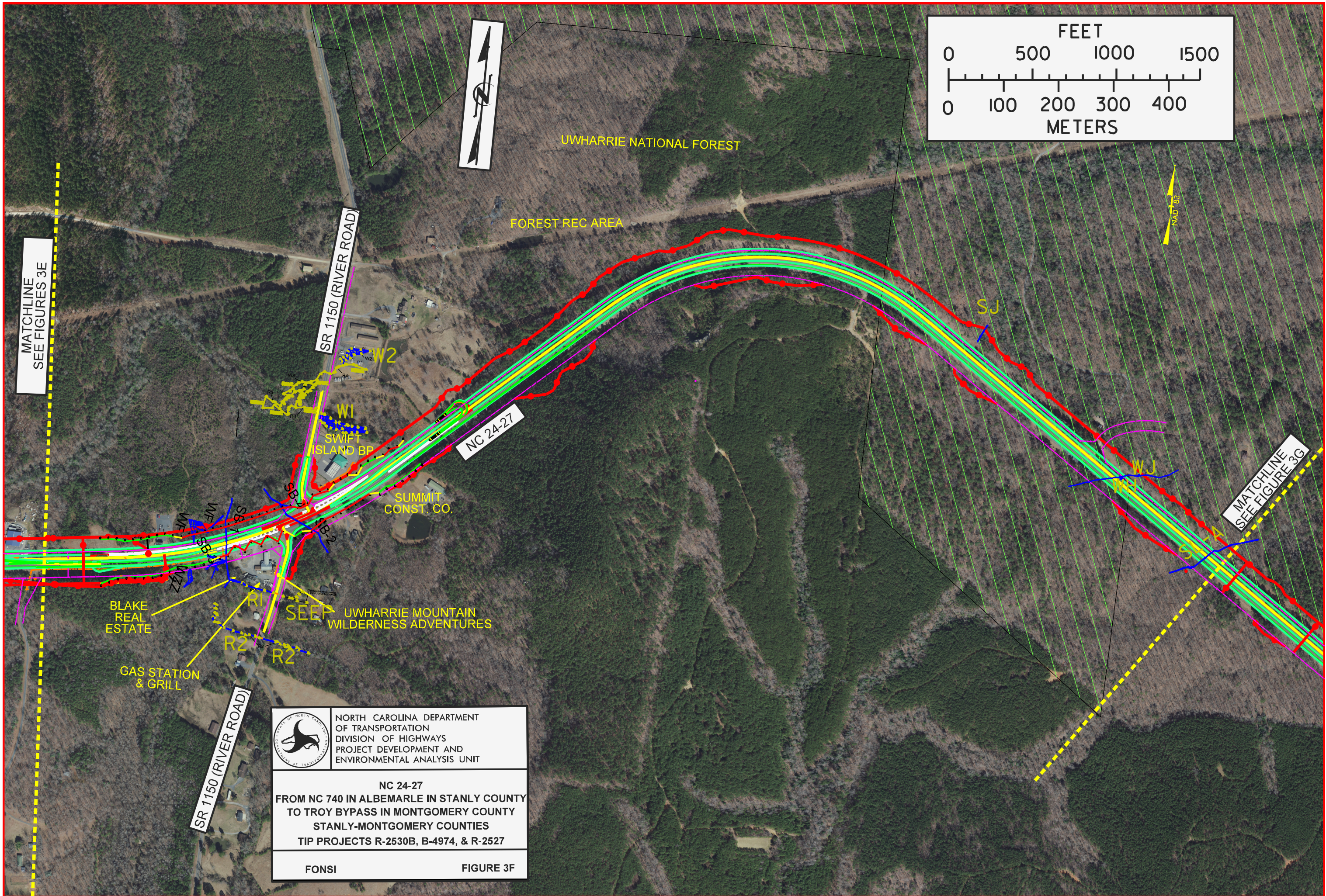
NC 24-27
FROM NC 740 IN ALBEMARLE IN STANLY COUNTY
TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527

FONSI

FIGURE 3D



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS UNIT
	NC 24-27 FROM NC 740 IN ALBEMARLE IN STANLY COUNTY TO TROY BYPASS IN MONTGOMERY COUNTY STANLY-MONTGOMERY COUNTIES TIP PROJECTS R-2530B, B-4974, & R-2527
	FONSI
	FIGURE 3E

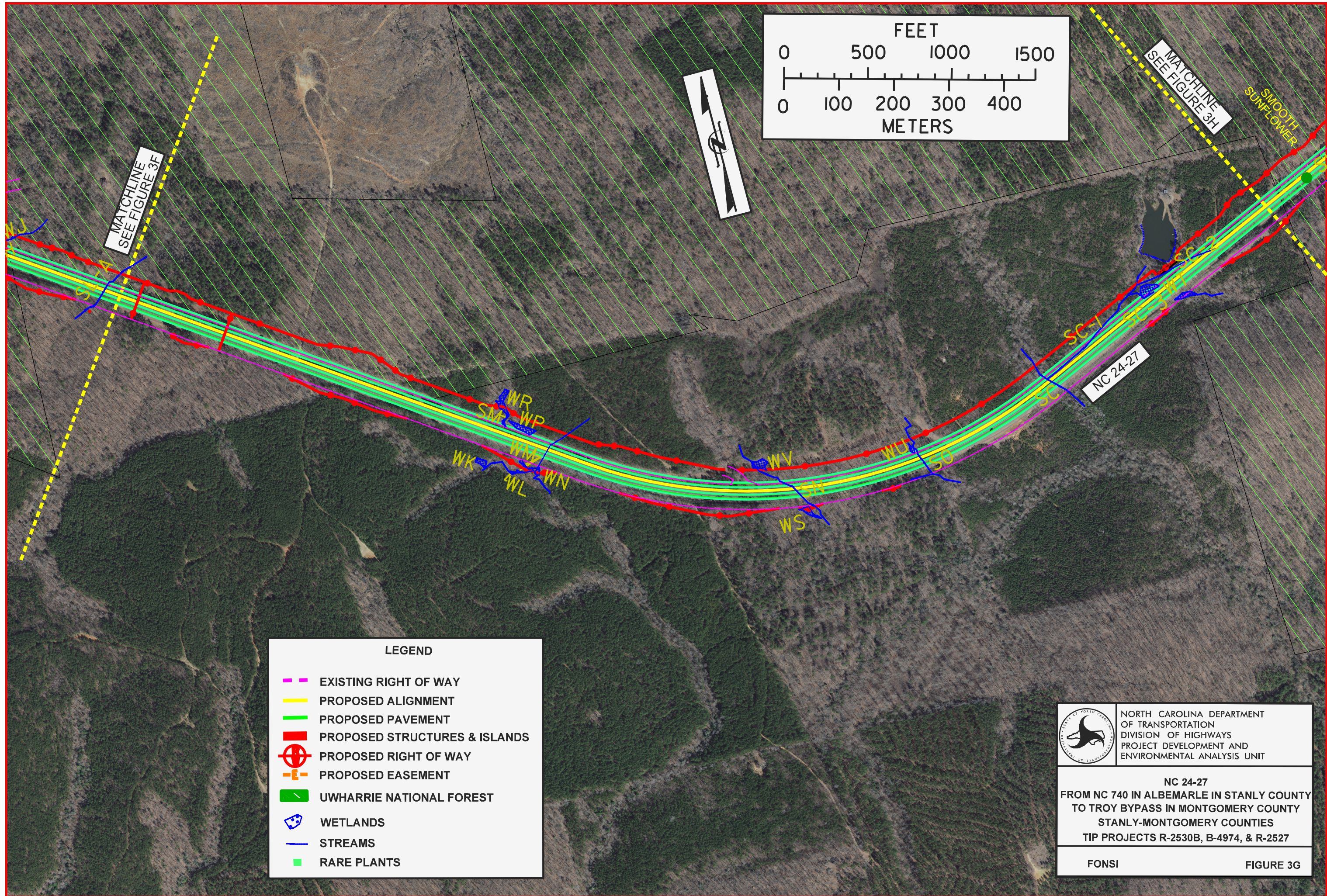


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ENVIRONMENTAL ANALYSIS UNIT

NC 24-27
FROM NC 740 IN ALBEMARLE IN STANLY COUNTY
TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527


FONSI

FIGURE 3F



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED ALIGNMENT
- PROPOSED PAVEMENT
- PROPOSED STRUCTURES & ISLANDS
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- UWHARRIE NATIONAL FOREST
- WETLANDS
- STREAMS
- RARE PLANTS

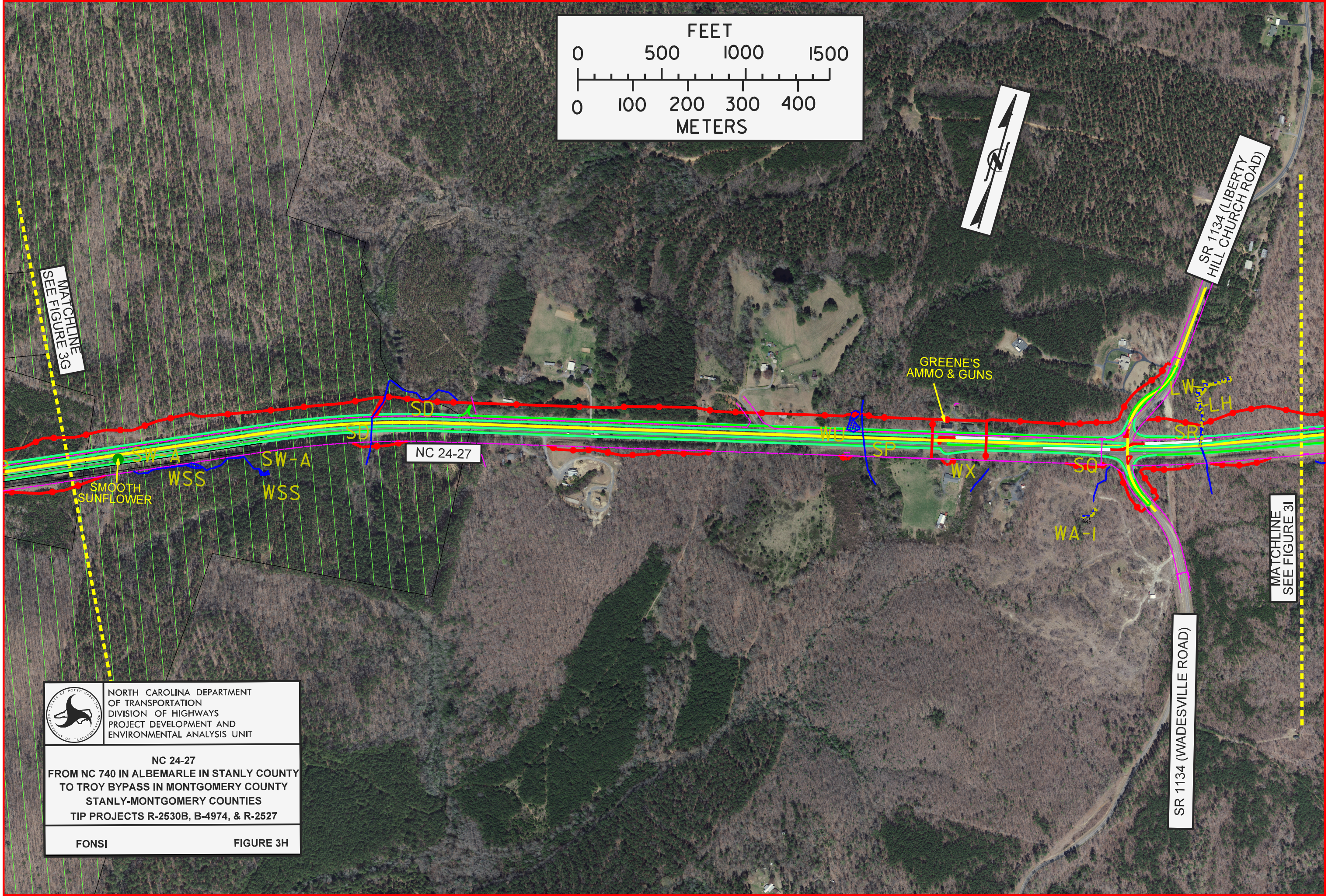
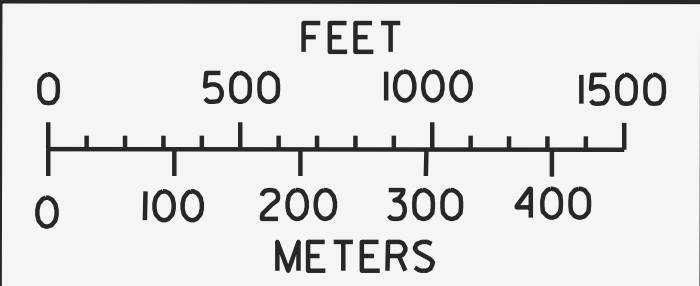


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PROJECT DEVELOPMENT AND
ENVIRONMENTAL ANALYSIS UNIT

NC 24-27
FROM NC 740 IN ALBEMARLE IN STANLY COUNTY
TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527

FONSI

FIGURE 3G



MATCHLINE
SEE FIGURE 3G

MATCHLINE
SEE FIGURE 3I

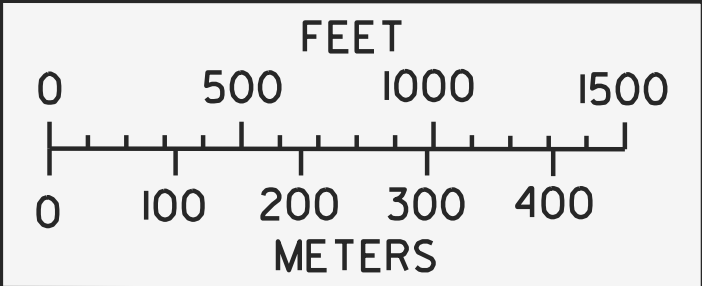
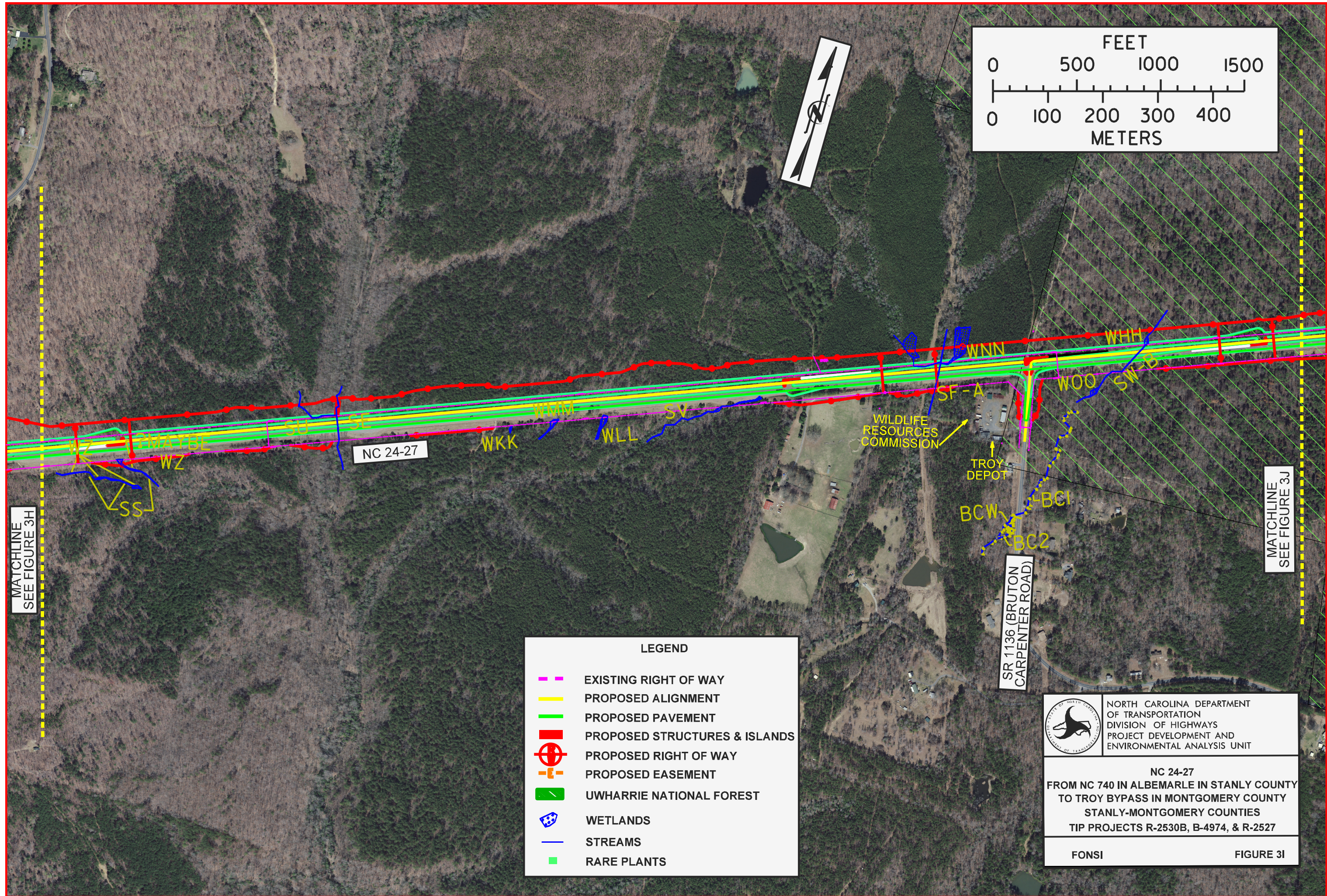


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NC 24-27
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STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527


FONSI

FIGURE 3H



LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED ALIGNMENT
- PROPOSED PAVEMENT
- PROPOSED STRUCTURES & ISLANDS
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENT
- UWHARRIE NATIONAL FOREST
- WETLANDS
- STREAMS
- RARE PLANTS

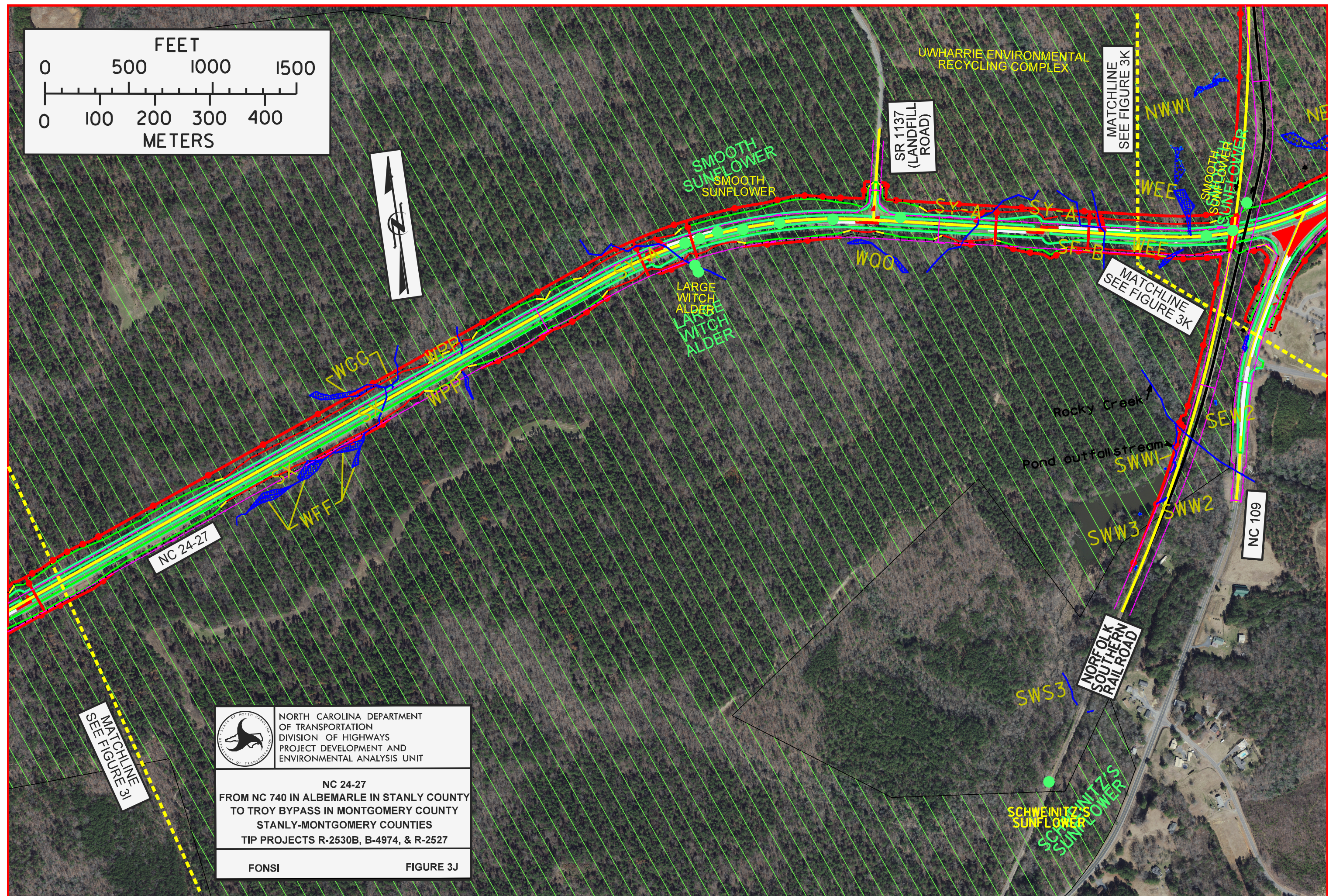


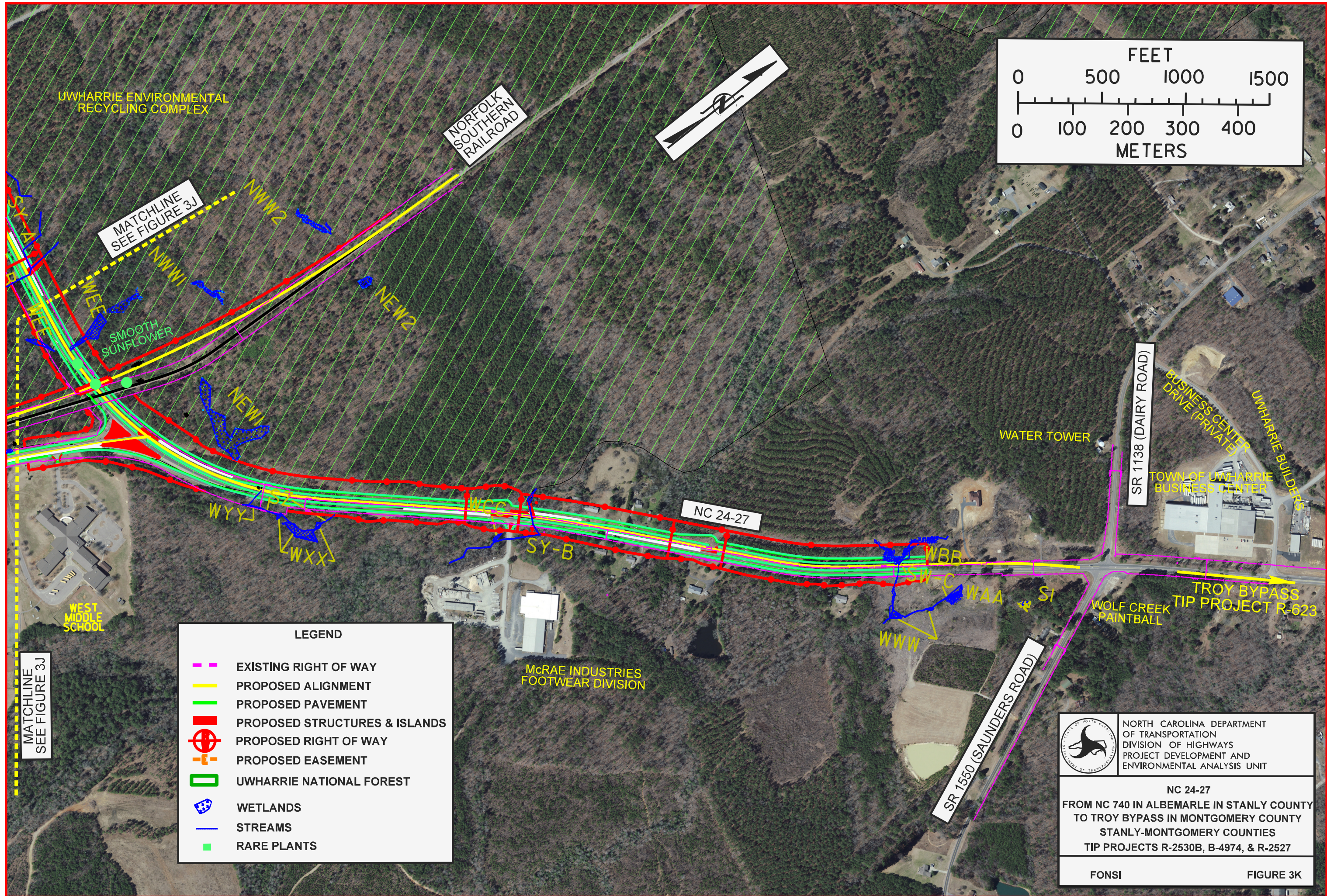
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TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2530B, B-4974, & R-2527

FONSI

FIGURE 3I





APPENDIX B
MERGER / 4(F) INFORMATION

Merger Project Team Meeting Agreement

Concurrence Point No. 3: Least Environmentally Damaging Practicable Alternative (LEDPA) Revisit for B-4974

Project Name/Description: NC 24-27, Widen to multi-lanes from NC 740 in Albemarle in Stanly County to the Troy Bypass, west of Troy, in Montgomery County

TIP Projects: R-2530B, B-4974, and R-2527

WBS Nos.: 34446.1.6, 39922.1.1, and 35572.1.1

Least Environmentally Damaging Practicable Alternative (LEDPA): Based upon the current project development information, the Project Team has concurred that the following checked alternatives are the Least Environmentally Damaging Practicable Alternative (LEDPA):

R-2530B, Section 1 – NC 740 to SR 1731 – "Best Fit"

☒ Asymmetrical Widening to the South – 23' Raised Median

Comments: Concurrence reached on 1/22/14, revisit not required.

R-2530B, Section 2 – SR 1731 to SR 1720 – "Best Fit"

☒ Asymmetrical Widening to the North – 46' Median

Comments: Concurrence reached on 1/22/14, revisit not required.

R-2530B, Section 3 – SR 1720 to SR 1818 – "Best Fit"

☒ Asymmetrical Widening to the South – 46' Median

Comments: Concurrence reached on 1/22/14, revisit not required.

R-2530B, Section 4 – SR 1818 to west of SR 1778 – "Best Fit"

☐ Asymmetrical Widening to the South (Tie to B-4974, Alternative 1) – 46' Median

☐ Asymmetrical Widening to the North (Tie to B-4974, Alternative 4) – 46' Median

☒ Asymmetrical Widening to the North (Tie to B-4974, Bridge No. 51 Rehabilitation Alternative) – 46' Median

Comments:

B-4974, Section 5 – west of SR 1778 to east of NC 73

- ☐ Alternative 1 - South side widening, replace Bridge No. 51
- ☐ Alternative 4 - Replace in place, replace Bridge No. 51
- ☒ Bridge No. 51 Rehabilitation Alternative, rehabilitate Bridge No. 51

Comments: _____

R-2527, Section 6 – east of NC 73 to SR 1134 – "Best Fit"

- ☒ Asymmetrical Widening to the North – 46' Median

Comments: Concurrence reached on 1/22/14, revisit not required.

R-2527, Section 7 – SR 1134 to SR 1550 – "Best Fit"

- ☒ Asymmetrical Widening to the North – 46' Median

Comments: Concurrence reached on 1/22/14, revisit not required.

The Project Team has concurred on this date of August 17, 2016, on the above mentioned alternatives as the Least Environmentally Damaging Practicable Alternative (LEDPA) for TIP Project B-4974.

USACE	<u>Andrew Williams</u>	<u>8/17/2016</u>	NCDOT	<u>Joe M. L. Allen</u>	<u>8/17/16</u>
		Date			Date
USEPA	<u>Cynthia F. VanderWiele</u>	<u>8.17.2016</u>	USFWS	<u>Harry Jordan</u>	<u>8/17/2016</u>
		Date			Date
FHWA	<u>Felix D. Lee</u>	<u>8/17/16</u>	NCDWR	<u>B. J. Lee</u>	<u>8/17/16</u>
		Date			Date
NC WRG	<u>S. H. W.</u>	<u>8-31-16</u>	NCDCR	<u>Rene Medkiff-Early</u>	<u>8-17-16</u>
		Date			Date
PTRPO	<u>Kelly E. Larkins</u>	<u>8/17/16</u>	RRRPO	<u>Don Borgmule</u>	<u>12/18/16</u>
		Date			Date
USFS	_____	_____			
		Date			

Merger Project Team Meeting Agreement

Concurrence Point No. 4A: Avoidance and Minimization Revisit for B-4974

Project Name/Description: NC 24-27, Widen to multi-lanes from NC 740 in Albemarle in Stanly County to the Troy Bypass, west of Troy, in Montgomery County

TIP Projects: R-2530B, B-4974, and R-2527

WBS Nos.: 34446.1.6, 39922.1.1, and 35572.1.1

Avoidance and Minimization: Based upon the current project development and design information, the jurisdictional impacts have been avoided and minimized to the maximum extent practicable. The following avoidance and minimization measures have been utilized:

- 2:1 slopes were used at culvert crossings and wetland areas, where feasible.

Comments:

The Project Team has concurred with the avoidance and minimization measures for TIP Project B-4974 on this date of August 17, 2016.

USACE	<u>Andrew Williams</u>	<u>8/17/2016</u>	NC DOT	<u>Kim M. Follen</u>	<u>8/17/16</u>
		Date			Date
USEPA	<u>Cynthia F. VanDerWeide</u>	<u>8.17.2016</u>	USFWS	<u>Gary Jordan</u>	<u>8/17/2016</u>
		Date			Date
FHWA	<u>Felix Delo</u>	<u>8/17/16</u>	NCDWR	<u>B. L.</u>	<u>8/17/16</u>
		Date			Date
NC WRC	<u>S. V. R.</u>	<u>8-31-16</u>	NCDCR	<u>Peni Hedrick Early</u>	<u>8.17.16</u>
		Date			Date
PTRPO	<u>Kelly Larkin</u>	<u>8/17/16</u>	RRRPO	<u>Dana Apple</u>	<u>12/13/16</u>
		Date			Date
USFS					
		Date			

Federal Aid #:

TIP#: B-4974

County: Stanley

Property and Status	Alternative	Effect Finding	Reasons
Stanley County Bridge 51 (Determined Eligible)	rehab bridge	no adverse effect with conditions	Replace deck & spandrel bents in order to widen roadway to 2 lanes w/ 6' shoulders on each side - bail will be 42" in height with formed panels - no sidewalks - superstructure stylistic elements (plinths, capitals, cross members, recessed panels) will be replaced "in kind" - HPO will be provided the 65% plans to review and comment

Initialed:

NCDOT

NPT

FHWA

WJF

HPO

DZ

FHWA Intends to use the HPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

Stanley County Bridge 51

Federal Aid #:

TIP#: B-4974

County: Stanley

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: Replace Stanley County Bridge 51 (open spandrel concrete arch) on NC 24-73-27 over the Pee Dee River, associated with TIP # R-2527 and R-2530B

On *August 2, 2016*, representatives of the

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

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

Signed:

Mary Pope 8/2/2016
Representative, NCDOT Date

Nicholas A. Dawson 8/2/2016
FHWA, for the Division Administrator, or other Federal Agency Date

Renee Bledhill-Early 8/2/16
Representative, HPO Date

APPENDIX C

AGENCY COMMENTS



United States
Department of
Agriculture

Forest
Service

National Forests in North Carolina
Supervisor's Office

160 ZILLICOA ST STE A
ASHEVILLE NC 28801-1082
828-257-4200

File Code: 2730 2012
Date: May 11, 2011

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

Dear Mr. Thorpe:

Enclosed are the Forest Service comments on the Federal Environmental Assessment for TIP Projects R-2530B, B-4974, and R-2527 in Stanly and Montgomery Counties, North Carolina. We have limited our comments to portions of the document addressing project R-2527 which is the only project impacting National Forest System lands. We appreciate having the opportunity to review and comment on this document. We also appreciate you allowing us to submit our comments past the requested date due to a death in the family of Karen Compton our NCDOT Liaison.

Our major concerns with this document are the lack of true analysis of the effects for many of the environmental resources present in the project area and lack of discussion of proposed mitigation and avoidance measures for the expected impacts. The Forest Service will be unable to concur with any Least Environmentally Damaging Practicable Alternative (LEDPA) selection until effects to all resources have been adequately disclosed.

If you have any questions concerning these comments, please contact Karen Compton at (828) 257-4230.

Sincerely,

KEITH LAWRENCE
Acting Forest Supervisor

Enclosure

cc: Deborah Walker, Uwharrie District Ranger
Gary Jordon, USFWL
Travis Wilson, NCWRC
Chris Militscher, USEPA
Ronnie Smith, USACE
Felix Davila, FHWA



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USFS COMMENTS ON THE EA
NC 24/27
T.I.P NO. R-2527

Review completed May 9, 2012

General Comments

- A. The Environmental Assessment (EA) is lacking in the analysis of effects to most environmental resources present in the study area. It is very difficult to review analysis that is not present in the document. Direct, indirect, and cumulative effects to all biological resources must be disclosed in the EA.
- B. All references in the document to “National Forest Service lands” need to be referred to as to “National Forest System lands” and thereafter, NFS lands.
- C. All maps contained in the EA should note the location of NFS lands on the Uwharrie National Forest (UNF) in relation to the project. It appears that the UNF boundaries depicted on the maps included in the document are the proclamation boundary and not the actual property boundaries. The proclamation boundary includes all land both public and private within which the UNF can legally acquire property.
- D. Evaluation of impacts on NFS lands need to be addressed specifically in the document i.e. not imbedded in the discussion of impacts to the entire project area in accordance with our Forest Plan.
- E. The EA does not discuss any mitigation options for loss of NFS lands or stream or wetlands impacts on NFS lands as a result of the proposed actions. The US Forest Service (USFS) would like to discuss possible mitigation for lost resources and unavoidable impacts to resources.

Green Sheets p. ii

The determination of effect for Schweinitz’s sunflower is still being consulted on with the United States Fish and Wildlife Service (USFWL). USFWL has not yet agreed with the determination of effect for this species.

Summary of Environmental Effects p. vi

Disclose the impacts to wetlands (acres), streams (linear feet), federally listed species habitat, flood plain impacts, rare plants, archeological sites, traffic noise impacts, railroad crossings, and potentially hazardous material sites located on NFS lands. Table S1: There will be “0” acres of NFS lands impacted by project B-4974 and the acres of impact on NFS for project R-2527 is overestimated. As noted in general comments, make sure that NFS acres are evaluated using the actual property boundaries not the proclamation boundary.

Permits Required p. vii and p. 35

Only project R-2527 will require a special use permit from the USFS for the proposed projects. The USFS does not own any property that will be affected by project B-4974; therefore, a permit is not required. The wording “permit from the USFS will be required to provide land for the proposed project” needs to clearly reflect that the USFS will only be permitting use of the land and not actually transferring ownership of the land to the North Carolina Department of Transportation.

I. Description of Proposed Action, General Description p. 1

Include the length of the road corridor that bisects NFS lands within the UNF.

II. Purpose and Need for the Projects, Utilities p. 4

The EA needs to state which power lines, water and sewer lines, and communication lines are located on the UNF. This can be done in the narrative or on maps that show both the line locations and the UNF boundaries.

II. Purpose and Need for the Projects, Traffic Carrying Capacity p. 7

Existing and Future Traffic Volumes: The document states “In the year 2010, average daily traffic along NC 24-27 will likely range between 7,200 vehicles per day and 14,100 vehicles per day”. If this is actual data, the document need to say “ranges” instead of “will likely range”. If these are truly estimates it would be better to include actually data if known since the date shown is in the past.

Existing and Future Levels of Service: Traffic Service levels should be disclosed for the various projects not lumped together. The narrative makes it appear that the entire 14.6 mile project area is currently operating at LOS E. It is clear from Tables 7 and 8 in Section IV.F that only short sections of the road are operating at LOS E. The document states “In 2010, the existing intersection operates at Level of Service (LOS) E...”. What intersection is being discussed, there appears to be text missing from the document.

II. Purpose and Need for the Projects, Land Use Plans p. 9

The Land and Resource Management Plan for the Uwharrie National Forest (here after, Forest Plan) (May 2012) should be listed. This land use plan explains how the USDA Forest Service proposes to manage the Uwharrie National Forest over the next 15 years. Information is provided that describes what activities will be implemented, what public benefits are anticipated, and what will be the long-term conditions of the national forest as a result of implementing the plan.

II. Purpose and Need for the Projects, Benefits of the Project p. 10

Safety: If the largest number of accidents is occurring due to animal/vehicle collisions, how is upgrading the road to a 4-lane highway and mostly likely increasing speeds going to result in fewer collisions and a safer road condition?

III. Alternatives to the Proposed Action, “No Build” Alternative p. 11

While it is true that the “No Build” alternative would not meet the purpose and need; that is true of any well designed project where a good case for purpose and need have been established. However, that is not really a good reason not to carry the “No Build” alternative throughout the document. In the true spirit of NEPA an environmental document compares the environmental

impacts of various alternatives. In the case of projects R-2530B and R-2527 there is really only one alternative fully analyzed in the EA. When the USFS concurred with Concurrence Point 2 (Detailed Study Alternatives Carried Forward); it was not our intention to support dropping the “No Build” alternative from full analysis in the EA.

III. Alternatives to the Proposed Action, Summary of Environmental Effects p. 13

Table 5: There is no NFS lands located in project B-4974. Acres of NFS lands impacted in R-2527 needs to reflect actual USFS property boundaries.

III. Alternatives to the Proposed Action, Summary of Environmental Effects p. 14

Table 6: See comments on Summary of Environmental Effects p. vi. The information (Yes/No) provided for federally listed species habitat and rare plants gives no indication of the actual impact. For instance, for all the action alternatives that have rare plants, will the effects extend to the entire percent of all population or just a small portion? If rare plants are present, how many species and what percentage of the population would be affected?

IV. Proposed Improvements, Right of Way and Access Control p. 15

The document states “A control of access fence is placed along the entire length of the facility, except at intersections and driveway”. What type of fencing and what are the dimensions? This information needs to be disclosed and the impacts of the fencing on wildlife crossing needs to be disclosed in the Environmental Effects section of the document.

IV. Proposed Improvements, Railroad Crossings p. 19

The document needs to give design details on the replacement of the railroad bridge crossing and any realignment of the railroad track that would be required. Norfolk Southern Railway has a right of way across NFS lands to operate their railroad. The bridge and this section of railroad are located on NFS lands and movement of them will need to be coordinated with the USFS.

IV. Proposed Improvements, Utilities p. 19

The document states “Utilities along the project will be relocated prior to construction.” The EA is not clear which, if any, of these utilities are located on the UNF. The types and locations of any utilities on the UNF that will need to be relocated or upgraded as a result of the proposed project must be identified along with a description of the proposed changes.

All relocation of utilities including but not limited to powerlines, water and sewer lines, and communication lines located on NFS lands must be coordinated with the USFS. Utility companies cannot use the easement granted to the North Carolina Department of Transportation for construction and operation of the highway for their uses. All utility companies must work directly with the USFS to modify their existing special use permits on relocations within the project area.

IV. Proposed Improvements, Landscaping p. 21

The document states “The project will also include standard landscaping as needed for erosion control purposes. No special landscaping is proposed as part of the projects”. Landscaping and erosion control plants and seed mixes to be used on NFS lands must be discussed with the FS and disclosed in this document.

V. Environmental Effects of Proposed Action, Terrestrial Communities p. 21

For project R-2527 there is little mention of Piedmont longleaf pine woodland, which occurs within the project area on NFS lands on the north and south side of the existing road from SR 1136 to the intersection with NC 109. This is a rare forest community within North Carolina and through its limited range. Restoration of the piedmont longleaf pine community is one of the primary goals of the newly signed Uwharrie Forest Plan. Management of this forest type requires prescribed burning.

V. Environmental Effects of Proposed Action, p. 21-26

The information provided on pages 21-26 only describes the existing environment and does not actually disclose the direct, indirect, and cumulative impacts to the natural resources as a result of the project. The section titled "Summary of Anticipated Effects" on page 26 is not really a summary, it is the entire analysis. This analysis is very general, vague and completely inadequate to evaluate the impacts of the project on terrestrial communities, terrestrial wildlife, and aquatic communities. No mention is made of either indirect or cumulative effects as a result of the proposed projects. A more detailed and quantified effects analysis is needed to adequately evaluate the impacts of the proposed project.

We disagree with the general statement "Permanent impacts to wildlife will be minimal due to the project being a widening of the existing roadway, with no new alignment". Widening, as well as the fencing mentioned on page 15, may impact wildlife crossing ability and/or behavior. The widening of the road may have fragmentation impacts on wildlife populations.

The impacts to the Piedmont longleaf pine community located on the UNF and mentioned in a previous comment needs to be discussed. The analysis should determine how much of this existing habitat is present in the analysis area and how much will be impacted by the proposed project. It should also discuss the importance of prescribed burning in management of this community type and the impact the proposed four-lane roadway will have on the ability to prescribe burn.

There is no mention or discussion of the potential for indirect effects such as the greater likelihood of non-native invasive plant species dominating the road corridor and possibly spreading to adjacent plant communities. A discussion needs to be presented on how this will be mitigated and what seeding mixtures will be utilized to stabilize the road corridor. In the UNF, and other adjacent areas, sericea lespedeza and other non-native legumes, including planted species, are currently invading fire-maintained thinned forests.

V. Environmental Effects of Proposed Action, Summary of Anticipated Effects p. 30

In the discussion and in Tables 13 and 16, disclose the impacts to wetlands (acres) and streams (linear feet) located on NFS lands. All streams and wetlands located on the UNF need to be identified as occurring on NFS lands.

V. Environmental Effects of Proposed Action, Schweinitz's Sunflower p. 36

The document needs to identify which populations of Schweinitz's sunflower are located on NFS lands. The railroad population south of NC 24-27 is mentioned but there is no reference that the species would be impacted (occurrence actually over 0.25 miles south of the existing road) by straightening the railroad as part of the proposed project.

There is no discussion of how much of the located Schweinitz's sunflower population will be affected by the proposed project. While it appears that there will be a negative effect to the entire population west of the bridge, one cannot assume that from the discussion presented. The presence of the Schweinitz's sunflower in the activity area should be the reason for the determination "may affect likely to adversely affect". The presence of habitat within 1 mile of the project area is not a reason for that determination if a negative survey, with the exception of the railroad population, was conducted for project R-2527.

V. Environmental Effects of Proposed Action, Red-cockaded Woodpecker p. 38

The document states "An inactive cavity tree was observed in this stand". It appears from the location description that this tree may be located on NFS lands; if so, the USFS would like to know the exact location of the tree and if the cavity was enlarged. The potential foraging habitat located on the UNF needs to be better described in the document. The description should include the acres and quality of the habitat located within the survey boundaries. Impacts to that habitat as a result of the proposed project should also be discussed. Additional surveys will be required by the USFS of this habitat once five years have passed since the most recent surveys.

V. Environmental Effects of Proposed Action, (PETS) species p. 39

What in the past has been referred to as Forest Service PETS species are now referred to as TES (Threatened, Endangered, and Sensitive) species and LR (locally rare) species. There is no list provided of the TES&LR species that may occur in the project area and which species were surveyed for and why. There is no effects analysis on TES&LR species contained in this document.

The EA should disclose which TES&LR species have habitat in the project area and the expected impacts of the proposed project on that habitat. The EA should disclose the effects to the other located non-federally listed species (smooth sunflower and large witch alder) and have a determination of effects for them on NFS lands. Once direct, indirect, and cumulative effects have been disclosed any potential mitigation or avoidance measures should be presented. The final EA should have an attached biological evaluation which discloses effects to these species on NFS lands. The FS will be unable to participate in the selection of the preferred alternative until effects on these species and their habitats are adequately disclosed.

V. Environmental Effects of Proposed Action, Soils p. 40

Disclose which soil types are found within the project area on the UNF. Again the document does not disclose the effects to the resource. This section is a description of the existing environment not an effects analysis. The document must disclose the impacts to soils located on the UNF.

V. Environmental Effects of Proposed Action, Archeological Resources p. 44

The EA compromises the location of site 31MG1629 by describing its location in relation to the Roberdo Bog. In a document available to the general population this is a breach of site confidentiality regulations. It is preferable and acceptable to state "site 31MG1629 is located in a rare environment / eco-niche found in the Piedmont, which is likely to contain information not found in other areas. Rare and previously undocumented ecological and cultural adaption data can be retrieved from such a site in this type of location."

The statement “information can be retained through data recovery efforts or through creative mitigation strategies such as more intensive laboratory analysis of recovered materials” is not clear and may be misleading. It needs to be made clear and agreed that the entire area of potential effects at all National Register of Historic Places (NRHP) eligible sites will be completely excavated and the data collected and analyzed using the most up-to-date methods and procedures.

No discussion or disclosure is made of the possible time and financial commitments needed to accomplish data recovery as described above. Nor are various mitigation strategies compared by alternatives. In addition, right of way widths of 250 feet and 150 feet may have different impacts on a historic property (Section 106 NHPA). Actual right of way widths will need to be known to identify the actual impacts to archeological resources present in the project area(s) and to prescribe mitigation for protection of those resources.

V. Environmental Effects of Proposed Action, Recreational Facilities p. 50

The document states “Hikers can access the 20-mile Uwharrie National Recreation Trail and the 8-mile Dutchman’s Creek Trail from the unpaved, trailhead parking lot adjacent to project R-2527”. Again the document does not disclose the effects to the resource. This section is a description of the existing environment not an effects analysis. The document must disclose the impacts to recreation facilities located on the UNF. If there are no impacts expected then make that statement.

APPENDIX D

CORRESPONDENCE

P | 704.984.9410
F | 704.984.9406



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PO Box 190
Albemarle, NC 28001

Office of the City Manager

November 8, 2016

Beverly Robinson
Western Region Group Leader
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

SUBJECT: Pedestrian Facilities for STIP Project R-2530B

Dear Ms. Robinson:

I am writing as a response to your letter dated October 27 regarding the above described project. The City of Albemarle continues its desire to see the accommodation of bicycles as well as the installation of sidewalk within the City limits in conjunction with the construction of this project. At their November 7 regular meeting, the Albemarle City Council voted unanimously to reaffirm their support and commitment to the bicycle and pedestrian accommodations / facilities as described in your letter.

If you have any further questions regarding this matter or if I can be of any assistance, please let me know.

Sincerely,

Michael J. Ferris
City Manager
City of Albemarle
mferris@albemarlenc.gov

cc: Mayor and City Council

CITY OF ALBEMARLE
P.O. BOX 190
ALBEMARLE, N.C. 28002-0190

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Division:
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Preconstruction
Project Development and
Environmental Analysis Branch
Beverly Robinson
Western Region Group Leader
Project Development and Environmental
Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548

27699-154899



Brown, Dionne C

From: Davila, Felix (FHWA) <Felix.Davila@dot.gov>
Sent: Monday, April 10, 2017 11:08 AM
To: Brown, Dionne C
Subject: FW: R-2530B/B-4974/R-2527 4(f) evaluation

From: Wilson, Travis W. [mailto:travis.wilson@ncwildlife.org]
Sent: Monday, April 10, 2017 9:42 AM
To: Robinson, Beverly G
Cc: Coleman, Clarence (FHWA); Davila, Felix (FHWA); Travis.Sinclair@duke-energy.com; Gardner, Gary; Cabe, Daniel E.
Subject: R-2530B/B-4974/R-2527 4(f) evaluation

Beverly,

WRC has reviewed the proposed layout to the Swift Island BAA. There does appear to be room for improvement in the design that could add some additional spaces. With that said, for the purposes of the FHWA finding of de minimus impacts to the Section 4(f) property WRC can agree to that finding. However, NCDOT should continue to review and coordinate the layout of this facility to avoid or minimize any loss of use.

Also, please note this is a recreational area ultimately regulated under a FERC license. In no way by agreeing to a de minimus call on a 4(f) resource should NCDOT view that as the final agreement on impacts to this BAA.

WRC has noted NCDOT's commitment to paving and restriping the BAA

As far as access to this facility. Duke Energy is the owner of this facility, WRC has a long term maintenance agreement for the BAA. All future coordination by NCDOT for access and improvements to Swift Island BAA should include both Duke Energy and WRC.

Troy Depot is a WRC operations and maintenance type facility. WRC does not object to FHWA's determination of this property not meeting 4(f) requirements.

Travis W. Wilson
Eastern Region Highway Project Coordinator
Habitat Conservation Program

NC Wildlife Resources Commission

1718 Hwy 56 West
Creedmoor, NC 27522
Phone: 919-707-0370
Fax: 919-528-2524

Travis.Wilson@ncwildlife.org

ncwildlife.org



From: Robinson, Beverly G
Sent: Thursday, April 06, 2017 10:49 AM
To: Wilson, Travis W. <travis.wilson@ncwildlife.org>
Cc: Coleman, Clarence <clarence.coleman@fhwa.dot.gov>; Davila, Felix (FHWA) <Felix.Davila@dot.gov>
Subject:

Hello Travis,

I had a call with Travis Sinclair on today regarding the Swift Island Boat access facility. Attached is the layout of the parking spaces based on placement of the proposed Duke amenities. I am finalizing a Finding of No Significant Impact (FONSI) for the proposed improvements to NC 24-27. I am requesting that you review the attached plan and the parking space matrix associated with the plan and respond to the information listed below. Please let me know if you need to discuss this. I look forward to hearing from you. This information is needed by COB today. Thanks.

1. Please indicate by responding to this email that you agree that the project as proposed near the Swift Island Boat access facility does not adversely affect the activities, features, or attributes that make the property eligible for 4(f) protection. Please concur that you are party with signature authority, landowner and official with jurisdiction over the Swift Island Bridge Boat access facility. Please be informed that, based on your concurrence, the FHWA intends to make a de minimus finding regarding impacts to the Swift Island Boat access facility, thus satisfying the requirements of Section 4(f).
2. NCDOT commit to restripe and pave the Boat access facility.
3. NCDOT requests that any requirement for accessing this property be granted to NCDOT to allow the restriping and paving to occur. We will include this language in the Project Commitments and will continue to coordinate as the project progresses.
4. Please confirm that the Troy Depot is not protected under Section 4(f). This facility is used only by WRC staff.

	Existing	Duke Site Plan	KH Plan
Boat (Std)	100	98	93
Boat (ADA)	4	4	4
Total	104	102	97
Car (Std)	15	16	17
Car (ADA)	0	2	2
Car (Non-Std)	1	1	
Total	16	19	19

Grand Total	120	121	116
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Delta from KH	4	5	-
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Brown, Dionne C

From: Davila, Felix (FHWA) <Felix.Davila@dot.gov>
Sent: Friday, April 07, 2017 3:37 PM
To: Brown, Dionne C
Cc: Coleman, Clarence (FHWA); Robinson, Beverly G
Subject: FW: Swift Island Boat access area
Attachments: 2017-04-06_Boat Parking Lot Exhibit (002).pdf

Dionne, please be aware of this e-mail from Travis Sinclair from Duke-energy.

Have you heard anything from Travis Wilson from NC WRC?

Thanks,

Felix Davila P.E.
Preconstruction and Environment Engineer
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, North Carolina 27601
Phone (919)747-7021
Fax (919)747-7030



Please consider the environment before printing this email

From: Sinclair, Travis Lee [mailto:Travis.Sinclair@duke-energy.com]
Sent: Friday, April 07, 2017 11:14 AM
To: Robinson, Beverly G
Cc: Coleman, Clarence (FHWA); Davila, Felix (FHWA); Mellor, Colin
Subject: RE: Swift Island Boat access area

Ms. Robinson,

Thank you for the note and opportunity to respond to the draft plans for the NCDOT proposed improvement to NC 24-27, specifically how it impacts the federal recreation site known as Swift Island Access Area.

Below are Duke Energy's comments regarding this request and impacts on Swift Island Access Area:

- Duke Energy Progress, LLC. Is the owner of the property know as Swift Island Access Area. Duke Energy is also the owner of the Federal Energy Regulatory Commission (FERC) operating license for the Yadkin-Pee Dee project, which includes Lake Tillery.
- The Swift Island Access Area is located within the FERC project boundary and is required under the FERC Operating License for the Yadkin-Pee Dee Project, Issued April 1, 2015 and required under FERC Order 313 to be held for public recreation.
- Based the current design provided and the park lot matrix enclosed below the Swift Island Access Area would be losing five (5) parking spaces. Duke Energy agrees this design does not pose a significant impact on the public recreation space with the following conditions:

- Because Swift Island Access Area is within the FERC's federal boundary, the FERC must approval any and all change to the recreation site prior to any work being conducted on this site. FERC reserves the right to approve, reject, and/or require modification to the plan. Therefore, this finding of no significant impact is subject to change contingent upon FERC approval.
- With the proposed widening of the NCDOT Right of Way, FERC must approve the associated land being removed out of the FERC boundary and the loss of recreation lands. This is a separate approval than the modification to facilities and amenities to the recreation site as outlined in the above bulleted point. FERC reserves the right to approve, reject, and/or require modifications to the plan. Additionally, FERC reserves the right to require lands of equal recreational opportunity be added to the FERC project boundary as a replacement. If required by FERC to replace the land loss for recreation it will be the responsibility of the NCDOT to acquire the land and transfer it to Duke Energy for the sole purpose of public recreation and/or a separate agreement between NCDOT and Duke Energy to resolve this requirement. Because this would be a federal order, in the event this cannot be resolved then the plan would not be approved.
- The lose of five (5) parking spaces is minor. However NCDOT should continue to revise the plan in order to replace all parking spaces at a rate of one-to-one for vehicle only and vehicle with trailer spaces, both existing and FERC approved planned for the 2018 upgrades, which are lost due to the NCDOT proposed improvement of NC 24-27.
- All final plans must be approved by Duke Energy and FERC prior to any work being performed at the Swift Island Access Area. If the NCDOT design plans are modified or deviate from the plans attached then Duke Energy and FERC most approve the modification prior to performing any work.

If you have questions please let me know. Duke Energy understand and supports this project. With continued communication and coordination I feel confident we can achieve the proposed improvements to NC 24-27 while meeting all the federal regulatory requirement for this property. I look forward to meeting with you on April 21, 2017.

Sincerely,

=====

Travis L. Sinclair

Water Strategy, Hydro Licensing and Lake Services

Duke Energy Carolinas, LLC. | 526 S. Church Street | Mailcode: EC12Q | Charlotte, NC 28202

o: 704.382.6920 | c: 704.681.2703



From: Robinson, Beverly G [<mailto:brobinson@ncdot.gov>]

Sent: Thursday, April 06, 2017 11:20 AM

To: Sinclair, Travis Lee

Cc: Coleman, Clarence; Davila, Felix (FHWA); Mellor, Colin

Subject: Swift Island Boat access area

***** Exercise caution. This is an EXTERNAL email. DO NOT open attachments or click links from unknown senders or unexpected email. *****

Hello Travis,

Good Morning Travis. Thank you for taking my call on today regarding the Swift Island Boat access facility. Attached is the layout of the parking spaces based on placement of the proposed Duke amenities. I am finalizing a Finding of No Significant Impact (FONSI) for the proposed improvements to NC 24-27. I am requesting that you review the attached plan and the parking space matrix associated with the plan and respond to the information listed below. Please let me know if you need to discuss this. I look forward to hearing from you. This information is needed by COB today. Thanks.

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	Existing	Duke Site Plan	KH Plan
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Total	16	19	19

Grand Total	120	121	116
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Delta from KH	4	5	-
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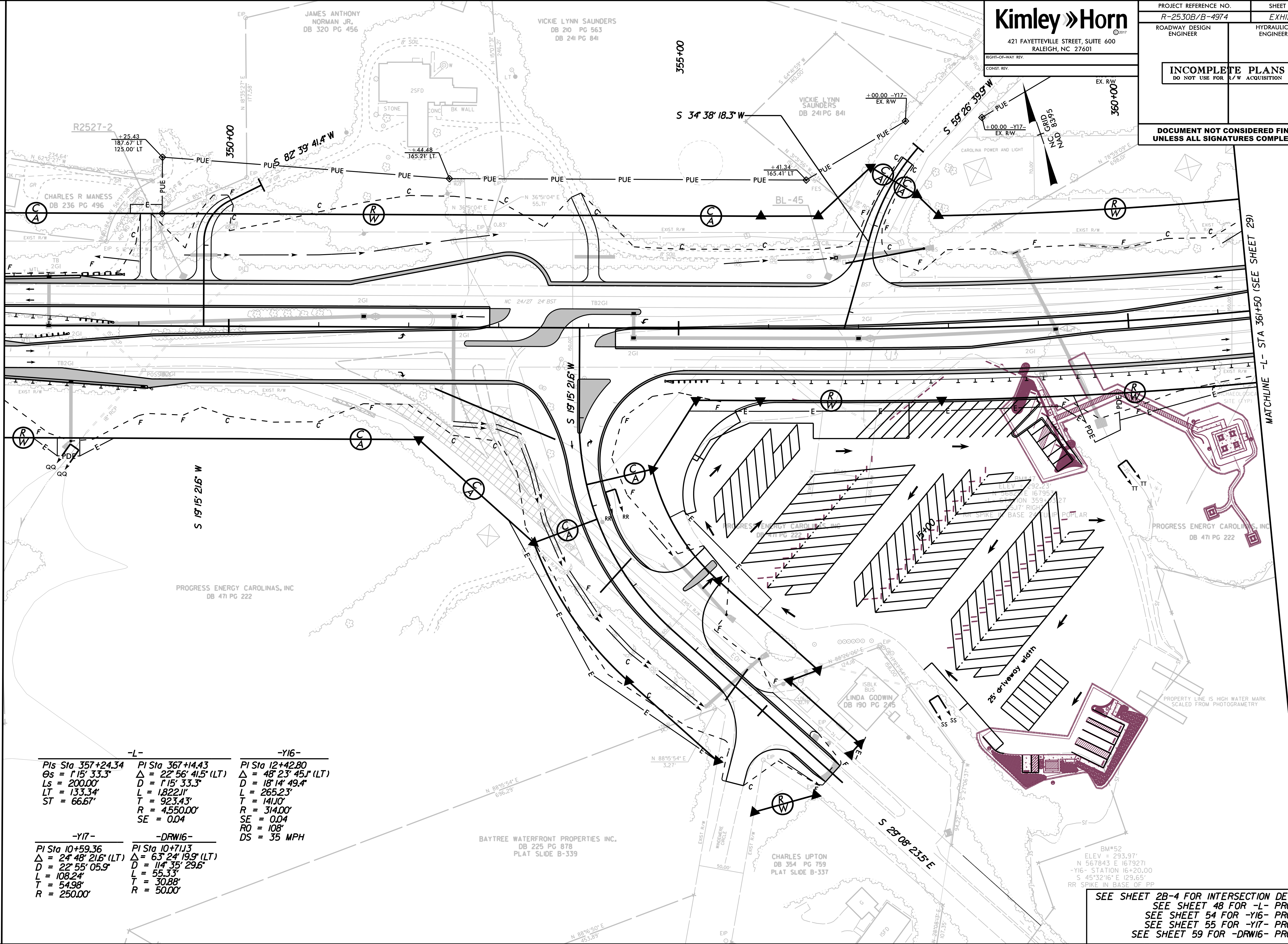
5/14/99

4/6/2017

REVISIONS

MATCHLINE -L- STA 347+50 (SEE SHEET 27)

MATCHLINE -L- STA 361+50 (SEE SHEET 29)



-L-		-Y16-	
PI Sta 357+24.34	PI Sta 367+14.43	PI Sta 12+42.80	
Δs = 1'15' 33.3"	Δ = 22' 56' 41.5" (LT)	Δ = 48' 23' 45.1" (LT)	
Ls = 200.00'	D = 1'15' 33.3"	D = 18' 14' 49.4"	
LT = 133.34'	L = 1,822.11'	L = 265.23'	
ST = 66.67'	T = 923.43'	T = 141.0'	
	R = 4,550.00'	R = 314.00'	
	SE = 0.04	SE = 0.04	
		RO = 108'	
		DS = 35 MPH	

-Y17-		-DRW16-	
PI Sta 10+59.36	PI Sta 10+71.13	PI Sta 10+71.13	
Δ = 24' 48' 21.6" (LT)	Δ = 63' 24' 19.9" (LT)	Δ = 63' 24' 19.9" (LT)	
D = 22' 55' 05.9"	D = 114' 35' 29.6"	D = 114' 35' 29.6"	
L = 108.24'	L = 55.33'	L = 55.33'	
T = 54.98'	T = 30.88'	T = 30.88'	
R = 250.00'	R = 50.00'	R = 50.00'	

SEE SHEET 2B-4 FOR INTERSECTION DETAILS
SEE SHEET 48 FOR -L- PROFILE
SEE SHEET 54 FOR -Y16- PROFILE
SEE SHEET 55 FOR -Y17- PROFILE
SEE SHEET 59 FOR -DRW16- PROFILE

Kimley » Horn
421 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NC 27601

PROJECT REFERENCE NO.
R-2530B/B-4974

ROADWAY DESIGN
ENGINEER

SHEET NO.
EXHIBIT

HYDRAULICS
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

BM#52
ELEV = 293.97'
N 56°18'43" E 167.9271'
-Y16- STATION 16+20.00
S 45°32'16" E 129.65'
RR SPIKE IN BASE OF PP

APPENDIX E

SUPPORTING DOCUMENTATION

AQUATIC RESOURCES REPORT
FOR THE
PROPOSED WIDENING OF NC 24/27
FROM EAST OF THE PEE DEE RIVER
TO WEST OF SR 1134 (WADEVILLE ROAD)

UWHARRIE NATIONAL FOREST

MONTGOMERY COUNTY

NORTH CAROLINA

TIP # R-2527

WBS ELEMENT 35572.1.1

January 14, 2014

Contact Person:

Matt Haney

North Carolina Department of Transportation

Natural Environment Section

Biological Surveys Group

1598 Mail Service Center

Raleigh, NC 27699

919.707.6122

e-mail: mmhaney@ncdot.gov

I. INTRODUCTION

This report identifies the potential effects and impacts on aquatic resources of the proposed widening of NC 24/27 from east of the Pee Dee River to west of SR 1134 (Wadeville Road). The proposed project would affect U.S. Forest Service (USFS) property along the existing and proposed right-of-way. The project area is in the Uwharrie Ranger District, Uwharrie National Forest, Montgomery County, North Carolina.

Approximately 50 acres of USFS land falls within the 500 ft project study corridor. As design is finalized, the acreage will decrease.

This project affects Clarks Creek, Rocky Creek, unnamed tributaries to Rocky Creek, and Smith Branch along NC 24/27. These streams are located in the Piedmont III ecoregion, and the Carolina Slate Belt level IV ecoregion (Griffith et al. 2002). The Carolina Slate Belt has some of the lowest water-yielding geology in the state resulting in the tendency of streams to dry up in summer. Mount Gilead Town Wastewater Treatment Plant discharges into Clarks Creek. Clarks Creek was rated Fair in 2011 for benthic bioclassification by North Carolina Department of Environment and Natural Resources' Division of Water Quality (NCDWQ). Rocky Creek was rated Good-Fair in 1996 for benthic bioclassification by NCDWQ. Clarks Creek was rated Excellent 2004 for fish bioclassification by NCDWQ. Rocky Creek was rated Good in 2010 for fish bioclassification by NCDWQ.

Water quality ratings for fish and benthic macroinvertebrates are not always in agreement due to habitat differences. Furthermore, benthic macroinvertebrates are more sensitive to slight changes in water quality.

During the twentieth century these streams suffered numerous detrimental effects on the aquatic fauna. Logging in the Uwharrie National Forest, construction of the railroad and NC 24/27 through the National Forest, and residential development and agriculture have all contributed to periods of habitat degradation.

II. SPECIES CONSIDERED AND METHODS

The potential effects on Sensitive (S) and Locally Rare (LR) aquatic species are evaluated. The S and LR species lists are maintained by the Uwharrie National Forest Service, Asheville, N.C. Potential direct and indirect effects to S and LR aquatic species were analyzed in the Clarks Creek, Rocky Creek, and Smith Branch areas where road widening is proposed. This area is referred to as the activity area, and is shown in the attached project map (See Figure 1).

Potentially affected aquatic species were identified by:

(1) Reviewing the list of S and LR aquatic species of the Uwharrie National Forest in Montgomery Co. (Appendix 1) and streamlining this list to include only aquatic species that exist

within the natural communities found at the project site.

(2) Consulting the element occurrence records of aquatic species as maintained by the North Carolina Natural Heritage Program (NCNHP 2012).

(3) Consulting with NCNHP, USFS, and NC Wildlife Resource Commission (NCWRC) personnel who are knowledgeable of the area and its fauna.

(4) Conducting field surveys in areas designated for stream disturbing activities.

Surveys were conducted within the Forest Service property that may be impacted by the proposed road improvements. While the aquatic inventory assessed all animals encountered, particular focus was directed for species listed with Threatened (T), Endangered (E), S or LR status.

III. AQUATIC RESOURCES

A. T&E, SENSITIVE, AND LOCALLY RARE SPECIES

The 2011 revised rare aquatic species list for Montgomery County (Appendix 1) includes twenty-two T&E, S, and LR species: eighteen invertebrates (5 S and 13 LR), one amphibian (1 S), and five fish (2 S and 3 LR). The number of species on this list was substantially reduced and summarized for the following reasons:

1. Lack of suitable habitat for the species in the activity area.
2. The species has a well-known distribution that does not include the activity area.
3. Conclusions were also based on personal communication with experts in the field of study.
4. Any aquatic species that had marginal to suitable habitat in the vicinity of the area and could potentially occur were ruled out either during the surveys or because they were "historic or extirpated" or listed as "obscure records."

Endangered and Threatened Species

A detailed discussion of the T&E aquatic species was included in the accompanying Biological Evaluation along with the botanical and terrestrial species and will not be included in this report. The S and LR aquatic species are discussed below.

Sensitive Species

Eight Forest Service S aquatic species are listed for the Uwharrie National Forest in Montgomery Co. All eight species were ruled out due to not being found during surveys or outside of the project study corridor.

Mollusks

1. *Elliptio roanokensis* (Roanoke slabshell), occurs in most Atlantic drainages. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Fusconaia masoni* (Atlantic pigtoe), occurs in most Atlantic drainages in the lower Piedmont. The preferred habitat for the Atlantic pigtoe is a yielding substrate composed of coarse sands and gravel at the downstream edge of riffle areas. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
3. *Lasmigona subviridis* (green floater), occurs in the Yadkin/Pee Dee River basin. This species prefers pools or eddies with gravelly and sandy bottoms. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
4. *Toxolasma pullus* (Savannah lilliput), occurs in a number of Atlantic drainages. This species lives in still shallow water near the banks of streams and ponds in mud or sand. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
5. *Villosa vaughaniana* (Carolina creekshell), occurs in the Pee Dee River basin. This species is found near the bank in shaded pools of small streams. This species prefers muddy or silty gravel in shallow water. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

Fish

1. *Etheostoma collis* (Carolina darter), occurs in streams in the Piedmont. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Etheostoma mariae* (pinewoods darter), possibly occurs in the Pee Dee River basin. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

Locally Rare Species

Sixteen Forest Service LR aquatic species are listed for the Uwharrie National Forest in Montgomery Co. All sixteen species were ruled out due to not being found during surveys.

Mollusks

1. *Alasmidonta* sp. 2 (a bivalve), occurs in streams in the Uwharrie Mountains region. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Alasmidonta undulata* (triangle floater), occurs in most river systems in the Piedmont. This species is common in smaller rivers and streams, going well into the headwaters, found mainly in quiet waters with some current, avoiding riffles, living in coarser gravel and sand. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

3. *Anodonta implicata* (alewife floater), occurs in the Pee Dee River. This species is found living in ponds, overbank pools, streams and rivers in a variety of substrates including silt, sand and gravel. This species is listed as obscure in Montgomery Co. This species was not found during surveys. This species is not further analyzed.
4. *Lampsilis cariosa* (yellow lampmussel), occurs in a number of river systems. This species is found in medium to larger rivers often in sand in bedrock cracks, but also is found in silt, sand, gravel, and cobble substrates. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
5. *Lampsilis radiata* (eastern lampmussel), occurs in a number of river systems. This species has been found in creeks, lakes and rivers with fast current in gravel substrate and in a sandy substrate in lake like portions of rivers. This species has also been found in sand substrate with good current. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
6. *Strophitus undulatus* (creeper), occurs in most river basins in the Piedmont. This species appears adaptable to a variety of aquatic habitats, from high-gradient small streams to main channels of rivers in finer sediments to large gravel, usually deeply buried. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

Crustaceans

1. *Cambarus catagius* (Greensboro burrowing crayfish), occurs in the Uwharrie Mountains. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Cambarus hystricosus* (Sandhills spiny crayfish), occurs in streams in the Sandhills. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.

Aquatic Insects

1. *Beraea gorteba* (a caddisfly), has no locality data. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.
2. *Ceraclea joannae* (a caddisfly), occurs in the Little River. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
3. *Baetpous trishae* (a mayfly), has no locality data. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.
4. *Plauditus cestus* (a mayfly), has no locality data. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.
5. *Pteronarcy comstocki* (spiny salmonfly), has no locality data. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.

Fish

1. *Carpiodes sp. cf. cyprinus* (a carpsucker), occurs in the Yadkin/Pee Dee drainage. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.
2. *Moxostoma sp. 3* (Carolina redhorse), occurs in the Pee Dee drainage. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
3. *Notropis volucellus* (mimic shiner), occurs in scattered drainages near the Fall Line. Current records for Montgomery Co. possibly exist. This species was not found during surveys. This species is not further analyzed.

B. AQUATIC SPECIES SURVEYS

Benthic Macroinvertebrates

NCDOT biologists conducted multiple surveys in Rocky Creek, Clarks Creek, and Smith Branch within the Uwharrie National Forest for benthic macroinvertebrates, and samples were collected during each survey. For details on collection methods, please refer to the NCDENR DWQ Biological Assessment website: (<http://www.esb.enr.state.nc.us/BAU.html>). Appendix 2 lists macroinvertebrate species actually collected by NCDOT biologists on 5/21/2007, 6/27/2007, and 8/16/2007. A vicinity map can be found in this report, before the appendices. **None of the invertebrate species on the Forest Service S or LR lists were found during any of the surveys.**

Freshwater Mussels

Mussel surveys were conducted on 8/16/2007 by NCDOT biologists in Clarks Creek and Rocky Creek for the presence of live mussels and mussel shells. The only mussel species that was observed during surveys was *Elliptio complanata*. Clarks Creek and Rocky Creek had very little water during mussel surveys. **None of the freshwater mussel species on the Forest Service S or LR lists were found during any of the surveys.**

Fish

Fish surveys were conducted on 6/27/2007 by NCDOT biologists in Rocky Creek and Clarks Creek. Appendix 3 lists the fish species that were collected during the survey. **None of the fish species on the Forest Service S or LR lists were found during any of the surveys.**

Qualifications of principle investigators are included in the Biological Evaluation report.

C. COMMUNITIES

Stream characteristics were recorded during the fish surveys on 6/27/2007.

Clarks Creek had a water depth of approximately 3 inches. The stream channel was approximately 9 feet wide. The substrate was primarily cobble and gravel, but also consisted of sand and boulder. The bank height was approximately 3 feet.

Rocky Creek had a water depth of 3-6 inches. The stream channel was approximately 12 feet wide. The substrate was primarily cobble and boulder, but also consisted of bedrock and gravel. The bank height was approximately 3 feet.

IV. POTENTIAL EFFECTS TO SENSITIVE AND LOCALLY RARE AQUATIC SPECIES

There will be no effects or impacts (direct, indirect or cumulative) to any listed aquatic species if this proposal were implemented. This conclusion is supported by the following:

- 1) S or LR aquatic species are not known to occur in or near the activity area.
- 2) Site specific aquatic surveys did reveal the absence of S or LR species.

V. MITIGATION AND RATIONALE

Since there are no effects or impacts to any T & E, S and LR aquatic species, there is no recommended mitigation.

VI. SUMMARY OF EFFECT

The proposed improvements to R-2527 will not impact any S or LR aquatic species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. **The proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.**

VII. REFERENCES

- Griffith, G.E., J.M. Omernik, J.A. Comstock, M.P. Schafale, W.H. McNab, D.R. Lenat, T.F. MacPherson, J.B. Glover, and V.B. Shelburne. 2002. Ecoregions of North Carolina and South Carolina (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,500,000).
- N.C. Division of Water Quality Benthic Macroinvertebrate Assessment Data available online at <http://portal.ncdenr.org/web/wq/benthosdata> (Accessed: November 2012).
- N.C. Division of Water Quality (NCDWQ). 2008. Yadkin-Pee Dee River Basinwide Water Quality Plan. Available online at <http://portal.ncdenr.org/web/wq/ps/bpu/basin/yadkinpeedee/2008>

N.C. Division of Water Quality (NCDWQ). 1998. Yadkin-Pee Dee River Basinwide Water Quality Management Plan. Available online at

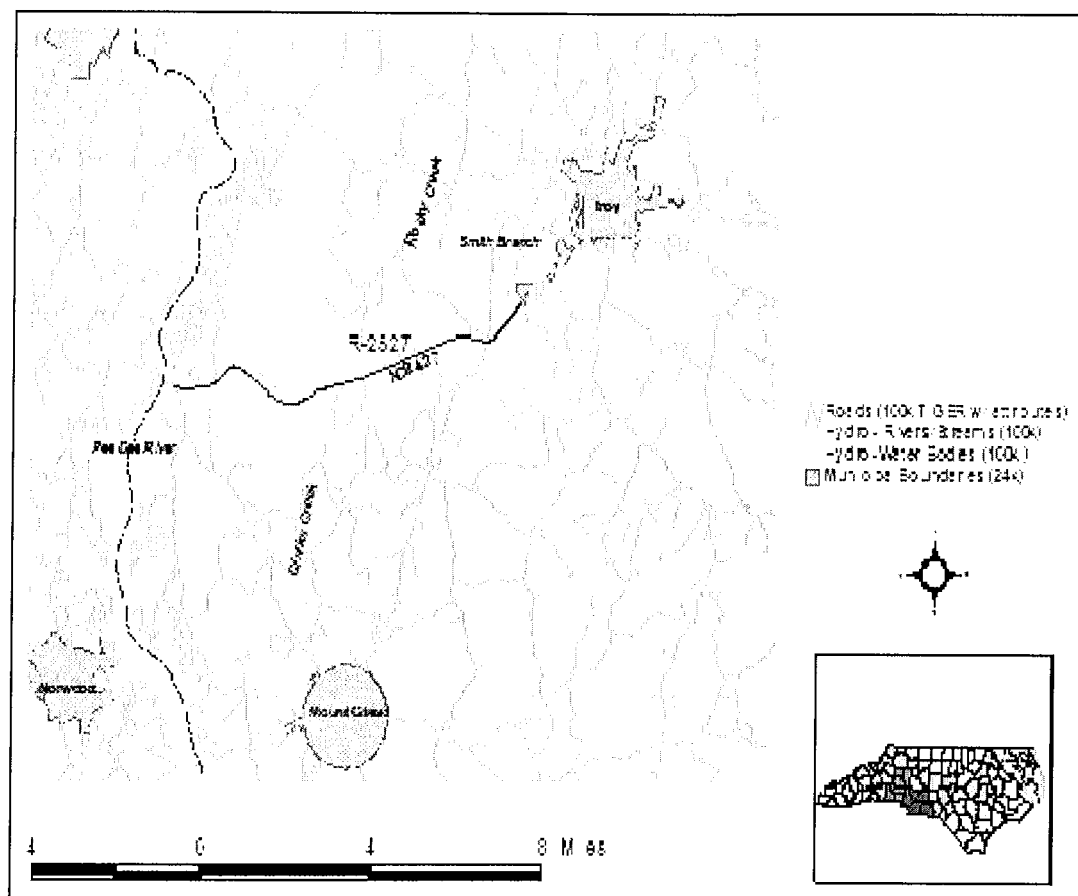
http://portal.ncdenr.org/c/document_library/get_file?uuid=e05c0bbc-1f76-4ed8-9f61-b5c73ade39c3&groupId=38364

N.C. Natural Heritage Program (NCNHP) map viewer and data base search available online at <http://portal.ncdenr.org/web/nhp/home> (Accessed: November 2012).

N.C. Natural Heritage Program (NCHNP). 2001. Montgomery County Natural Heritage Inventory. Natural Heritage Program, Office of Natural Resource Planning and Conservation, Department of Environment and Natural Resources. Inventory Biologist: Moni C. Bates. 249 pp.

U.S. Geological Survey (USGS). 1974. Hydrologic Unit Map – 1974, State of North Carolina. Department of the Interior, prepared in cooperation with the U.S. Water Resources Council.

Figure 1. R-2627 Vicinity Map



Appendix 1. List of Forest Service Sensitive and Locally Rare Aquatic Species for Montgomery County (October 2012).

SCIENTIFIC NAME	COMMON NAME	STATUS	NHP-LISTED COMMUNITY OR HABITAT AND RECORDS	LIKELIHOOD OF OCCURRENCE AND CONCLUSION
<i>Fish</i>				
<i>Carpionodes sp. cf. cyprinus</i>	A carpsucker	LR	Occurs in the Yadkin/Pee Dee drainage	Species was not collected during surveys.
<i>Etheostoma collis</i>	Carolina darter	S	Occurs in streams in the Piedmont	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Etheostoma mariae</i>	Pinewoods darter	S	Possibly occurs in the Pee Dee drainage	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Moxostoma sp. 3</i>	Carolina redhorse	LR	Occurs in the Pee Dee drainage	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Notropis volucellus</i>	Mimic shiner	LR	Occurs in scattered drainages near Fall Line	Species was not collected during surveys.
<i>Mussels</i>				
<i>Alasmidonta sp. 2</i>	A bivalve	LR	Occurs in streams in the Uwharrie Mountains region	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Alasmidonta undulata</i>	Triangle floater	LR	Occurs in most river systems in Piedmont	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Anodonta implicata</i>	Alewite floater	LR	Occurs in the Pee Dee River	Listed as obscure in Montgomery Co. This species was not collected during surveys.

<i>Elliptio roanokensis</i>	Roanoke slabshell	S	Occurs in most Atlantic drainages	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Fusconaia masoni</i>	Atlantic pigtoe	S	Occurs in most Atlantic drainages, in the lower Piedmont	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Lampsilis cariosa</i>	Yellow lampmussel	LR	Occurs in a number of river systems; mainly near the Fall Line	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Lampsilis radiata</i>	Eastern lampmussel	LR	Occurs in a number of river systems	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Lasmigona subviridis</i>	green floater	S	Occurs in the Yadkin/Pee Dee system downstate	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Strophitus undulatus</i>	creeper	LR	Occurs in most river basins in the Piedmont	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Toxolasma pullus</i>	Savannah lilliput	S	Occurs in a number of Atlantic drainages	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Villosa vauhaniana</i>	Carolina creekshell	S	Occurs in the Pee Dee system	Current records are known in Montgomery Co. This species was not collected during surveys.
Crayfish				
<i>Cambarus catagius</i>	Greensboro burrowing crayfish	LR	Occurs in the Greensboro area, south to the Uwharrie Mountains	Current records are known in Montgomery Co. This species was not collected during surveys.
<i>Cambarus hystriocopus</i>	Sandhills spiny crayfish	LR	Occurs in streams in the Sandhills	This species was not collected during surveys.
Insects				
<i>Beraea gorteba</i>	A caddisfly	LR	No locality data	This species was not

<i>Ceraclea joannae</i>	A caddisfly	LR	Occurs in the Little River	collected during surveys. Current records are known in Montgomery Co. Endemic to this area. This species was not collected during surveys.
<i>Baetpous trishae</i>	A mayfly	LR	No locality data	This species was not collected during surveys.
<i>Plauditus cestus</i>	A mayfly	LR	No locality data	This species was not collected during surveys.
<i>Pteronarcy comstocki</i>	Spiny salmonfly	LR	No locality data	This species was not collected during surveys.

Forest Service Status (FS) is designated by the U.S. Forest Service. Sensitive and locally rare species are protected under provisions of the National Forest Management Act and directions set forth in FS manual 2670.

STATUS CODE	STATUS	DESCRIPTION
E	Endangered	A taxon which is in danger of extinction throughout all or a significant portion of its range
T	Threatened	A taxon which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range
S	Sensitive	Species at risk of extinction in a portion of their range as evidenced by downward trends in population numbers or density, or downward trends in habitat capability.
FC	Forest Concern	Species not at risk of extinction, even in a portion of their range, and not showing a downward population trend over their range as a whole within North Carolina.

Appendix 2. Taxa list with indication of relative abundance. A = Abundant (≥ 10), C=Common (3-9), and R = Rare (1-2). Uwharrie National Forest, Montgomery County, May 21, 2007. (Macroinvertebrate species found during NCDOT field surveys on May 21, 2007)

Stream	Rocky Cr	Rocky Cr	Clark Cr	Clark Cr	Smith Br	Smith Br
Site (relative to NC 24/27)	Upstream	Downstream	Upstream	Downstream	Upstream	Downstream
Date	5/21/07	5/21/07	5/21/07	5/21/07	5/21/07	5/21/07
	Abundance	Abundance	Abundance	Abundance	Abundance	Abundance
Ephemeroptera						
<i>Acerpenna pygmaea</i>	R		R	R	R	R
<i>Baetis flavistriga</i>	R	R	R	C		
<i>Baetis pluto</i>	R	C	R	C		
<i>Baetis propinquus</i>			R		C	R
<i>Caenis</i>			A	C		
<i>Centroptilum</i>					C	C
<i>Habrophlediodes</i> sp.	A	A	A	A	A	A
<i>Heptagenia</i>	R		R		C	
<i>Isonychia</i> sp.	A	A	A	C	A	A
<i>Eurylophella</i>	C	A	A	A		
<i>Ephemerella dorothea</i>	R	C				
<i>Leucrocuta</i>	A	A	C	C	C	A
<i>Plautidius dubius</i> grp.		R	R	R	C	A
<i>Pseudocloeon frondalis</i>			C		R	
<i>Stenacron interpunctatum</i>	C	C	A	C	R	R
<i>Stenonema modestum</i>		R	C	C	C	C
Odonata						
<i>Argia</i> sp.			C			
<i>Boyeria vinosa</i>	R	R	R	R	R	R
<i>Calopteryx</i> sp.		R	R	R		R
<i>Cordulegaster</i>						R
<i>Lanthus</i>	C			R	R	
<i>Somatochlora</i>		R				R
Plecoptera						
<i>Alloperla</i>	R					
<i>Acroneuria abnormis</i>	A	A				
<i>Amphinemura</i> sp.					R	
<i>Ecoptura xanthenes</i>				R		
<i>Neoperla</i>	C	C				
<i>Isoperla holochlora</i>	R		C	R	R	
<i>Perlesta placida</i>	A	A	A	A	A	A
<i>Leuctra</i>	C					
Megaloptera						
<i>Corydalus cornutus</i>		C	R	R		
<i>Nigronia serricornis</i>			R	R		
<i>Sialis</i>			R			R
Trichoptera						
<i>Chimarra</i>	A	A	A	C		
<i>Hydropsyche betteni</i>		R				
<i>Cheumatopsyche</i> sp.	A	A	A	A	C	
<i>Ceraclea ancylus</i>	C		C			
<i>Diplectrona modesta</i>				R	C	
<i>Neophylax oligius</i>		R				C
<i>Polycentropus</i>	R	R				
<i>Pteronarcys</i>		R				

<i>Pycnospshyche</i>				R		
<i>Ryacophila carolina</i>				C		
Coleoptera						
<i>Ancyronyx variegatus</i>			R	C		
<i>Dineutus</i>			R			
<i>Dytiscidae</i>			A	A		
<i>Gyrinus</i>			R			
<i>Helichus</i>		C	A	C	R	
<i>Macronychus glabratus</i>			R	R		
<i>Neoporus sp.</i>						C
<i>Stenelmis sp.</i>			R			R
<i>Psephenus herricki</i>	R	C	R	C		
Diptera						
<i>Antocha</i>			R		C	R
<i>Dicranota</i>			C	R		
<i>Simulium</i>	C	A	A	A	R	
<i>Hexatoma</i>		C	C	C	R	
<i>Tipula</i>		C		R	R	
<i>Palpomyia</i>			R	R		
Other						
<i>Erpobdella/Moreeobdella</i>		C				

Appendix 3. Fish species collected during surveys for R-2527

Chain pickerel	<i>Esox niger</i>
Rosyside dace	<i>Clinostomus funduloides</i>
Highback chub	<i>Hybopsis hypsinotus</i>
Bluehead chub	<i>Nocomis leptcephalus</i>
Redlip shiner	<i>Notropis chiliticus</i>
Highfin shiner	<i>Notropis altipinnis</i>
Creek chub	<i>Semotilus atromaculatus</i>
Creek chubsucker	<i>Erimyzon oblongus</i>
Flat bullhead	<i>Ameiurus platycephalus</i>
Yellow bullhead	<i>Ameiurus natalis</i>
Margined madtom	<i>Noturus insignis</i>
Pirate perch	<i>Aphredoderus sayanus</i>
Green sunfish	<i>Lepomis cyanellus</i>
Redbreast	<i>Lepomis auritus</i>
Pumpkinseed	<i>Lepomis gibbosus</i>
Warmouth	<i>Lepomis gulosus</i>
Tessellated darter	<i>Etheostoma olmstedii</i>
Fantail darter	<i>Etheostoma flabellare</i>

BOTANICAL RESOURCES REPORT
FOR THE
PROPOSED WIDENING OF NC 24/27
FROM EAST OF THE YADKIN-PEE DEE RIVER TO
WEST OF SR 1134 (WADEVILLE ROAD)
UWHARRIE NATIONAL FOREST
MONTGOMERY COUNTY
NORTH CAROLINA
TIP # R-2527
WBS ELEMENT 35572.1.1

January 14, 2014

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I. INTRODUCTION

This report identifies the potential effects on botanical resources of a proposed road widening of NC 24/27 from east of the Yadkin-Pee Dee River to west of SR 1134 (Wadeville Road). The proposed project would affect U.S. Forest Service (USFS) property along the existing and proposed right-of-way. The project area is in the Uwharrie Ranger District, Uwharrie National Forest, Montgomery Co., North Carolina.

Approximately 50 acres of USFS land falls within the 500 ft wide project study corridor. As design is finalized, the acreage will decrease.

II. SPECIES CONSIDERED AND METHODS

The potential effects on USFS Sensitive (S) and Locally Rare (LR) plant species are evaluated. Threatened (T) and Endangered (E) plant species are discussed in the Biological Evaluation report. Potential direct and indirect effects to S and LR plant species were analyzed in the areas where road widening is proposed. This area is referred to as the activity area, and is shown in the attached project map (Figure 1 of Biological Evaluation).

Potentially affected plant species were identified by:

- 1) Reviewing the list of S and LR plant species of the Uwharrie National Forest in Montgomery Co. (Appendix 1) and streamlining this list to include only plants that could potentially exist within the natural communities found at the project site. The streamlined list is shown below in Table 1.
- 2) Consulting element occurrence records of plants as maintained by the North Carolina Natural Heritage Program (NCNHP 2012).
- 3) Consulting with NCNHP and US Forest Service personnel who are knowledgeable of the area and its flora.
- 4) Conducting field surveys in areas designated for ground disturbing activities.

Surveys were conducted within the Forest Service property that will be impacted by the proposed road widening. While the floral survey assessed all plants encountered, particular focus was directed for plants listed as Threatened (T), Endangered (E), S or LR Status.

III. BOTANICAL RESOURCES

A. T&E, SENSITIVE AND LOCALLY RARE SPECIES:

The 2011 revised rare botanical species list for Montgomery Co. (Appendix 1) includes thirty-nine T&E, S, and LR species: two nonvascular species (2 S) and thirty-seven vascular species (1 E, 9 S and 27 LR).

All but fourteen species were dropped from the list for further consideration and discussion for one of the two following reasons: 1) lack of suitable habitat for the species in the project area, 2) the species has a well-known distribution that does not include the project area.

Habitats, community types and ranges of plant Threatened (T) and Endangered (E), S and LR species are derived from information in "Classification of the Natural Plant Communities of North Carolina (1990)," the Natural Heritage Program's "List of Rare Plant Species of North Carolina" (http://portal.ncdenr.org/c/document_library/get_file?uuid=b0c4aa96-6cdf-4c19-8885-88c4c0dc18c7&groupId=61587) or personal communication with other botanists.

Endangered and Threatened Species

A detailed discussion of the T&E botanical species was included in the accompanying Biological Evaluation along with the botanical and terrestrial species and will not be included in this report. The S and LR botanical species are discussed below.

Sensitive Species

Eleven Forest Service S botanical species are listed for the Uwharrie National Forest in Montgomery Co. All but three species were ruled out due to lack of suitable habitat.

Nonvascular

1. *Scopelophila cataractae* (Agoyan cataract moss), prefers copper-rich soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
2. *Xanthoparmelia monticola* (a rock-shield lichen), prefers high elevation rocky summits and mafic glades. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

Vascular

1. *Amorpha schwerinii* (Piedmont indigo bush), prefers dry forests. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. There is an occurrence of this species outside of the 500 ft wide project study corridor (approximately 600 ft from NC 24/27). This species is not further analyzed.
2. *Berberis canadensis* (American barberry), prefers open forests and glades on basic soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
3. *Carex impressinervia* (ravine sedge), prefers rich alluvial forests. Current records for

Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

4. *Danthonia epilis* (bog oatgrass), occurs in seepage bogs and wet seepy power lines. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
5. *Eurybia mirabilis* (Piedmont aster), prefers rich slopes and bottomlands. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
6. *Fothergilla major* (large witch-alder), occurs on dry ridge tops, in bluff forests, seepage wetlands, and Piedmont longleaf pine forests. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was found during surveys.
7. *Lindera subcoriacea* (bog spicebush), prefers streamhead pocosins, white cedar swamps, and seepage slopes. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
8. *Solidago plumosa* (Yadkin River goldenrod), prefers riverside rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
9. *Symphotrichum georgianum* (Georgia aster), prefers open woods and roadsides. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys within National Forest land. This species has been found along NC 24/27 on private land in Stanly County approximately 5-6 miles away from USFS property. This species is not further analyzed.

Locally Rare Species

Twenty-seven Forest Service LR botanical species are listed for the Uwharrie National Forest in Montgomery Co. All but eleven species were ruled out due to lack of suitable habitat.

Vascular

1. *Anemone berlandieri* (southern anemone), prefers thin circumneutral soil adjacent to rock outcrops. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
2. *Baptisia alba* var. *alba* (thick-pod white wild indigo), prefers open woodlands and clearings. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
3. *Baptisia australis* var. *aberrans* (eastern prairie blue wild indigo), prefers glades and open forests on basic soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
4. *Cardamine dissecta* (dissected toothwort), prefers rich woods, cove forests, and

bottomlands. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

5. *Cirsium carolinianum* (Carolina thistle), occurs in forests and disturbed areas, mostly on basic soils. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
6. *Collinsonia tuberosa* (Piedmont horsebalm), prefers thin circumneutral soil adjacent to rock outcrops. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
7. *Desmodium fernaldii* (Fernald's tick-trefoil), prefers dry to mesic hardwood-pine woodlands. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
8. *Dichanthelium boreale* (northern witch grass), prefers open woods. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was added to the USFS list since the last surveys were done. Surveys will be done for this species closer to the let date for this project.
9. *Gillenia stipulata* (Indian physic), prefers forests and open woods, mainly over mafic rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
10. *Helenium brevifolium* (littleleaf sneezeweed), prefers bogs, seeps, riverbanks, and other wet sites. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
11. *Helianthus laevigatus* (smooth sunflower), prefers shaly open woods and roadsides. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was found during surveys.
12. *Matelea decipiens* (glade milkvine), prefers thin woodlands over mafic or calcareous rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
13. *Parthenium auriculatum* (glade wild quinine), prefers glades and openings over mafic rocks. Current records for Montgomery Co. exist. This species was found during surveys.
14. *Primula meadia* (eastern shooting star), prefers mafic cliffs, dry coniferous woodlands, and associated nutrient-rich alluvial forests. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area. This species is not further analyzed.
15. *Pseudognaphalium helleri* (Heller's rabbit tobacco), prefers dry woodlands, openings, and glades, especially over mafic rocks. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during

- surveys. This species is not further analyzed. There is a population of this species south of NC 24/27 within the National Forest, approximately 800 feet from the road.
16. *Quercus austrina* (bluff oak), prefers bluff and bottomland forests over circumneutral soil. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 17. *Ruellia purshiana* (Pursh's wild petunia), prefers glades and woodlands, mostly over mafic or calcareous rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 18. *Salvia azurea* (azure sage), occurs in sandhills. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 19. *Sedum glaucophyllum* (cliff stonecrop), prefers rock outcrops, mainly calcareous or mafic. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 20. *Smilax hugeri* (Huger's carrion-flower), prefers deciduous forests. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
 21. *Solidago radula* (western rough goldenrod), prefers dry woodlands over mafic rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 22. *Stachys* sp. 1 (undescribed hedge nettle), prefers sandy edges of forested floodplains. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 23. *Stewartia ovata* (mountain camellia), occurs on bluffs and in forests, usually with rhododendrons. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 24. *Tradescantia virginiana* (Virginia spiderwort), prefers rich woods on circumneutral soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
 25. *Tridens chapmanii* (Chapman's redtop), prefers dry pine and oak woods, and sandy roadsides. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
 26. *Trifolium reflexum* (buffalo clover), prefers open woods and clearings. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. This species is not further analyzed.
 27. *Viola walteri* (prostrate blue violet), prefers rich cove forests and other rich forests. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

B. BOTANICAL SURVEYS:

The activity area was surveyed by multiple NCDOT biologists on May 21, 2007, June 26, 2007, October 24, 2007, November 1, 2007, November 2, 2007, November 7, 2007, November 16, 2007, November 19, 2007, and November 21, 2007. Surveys for Schweinitz's sunflower were conducted on October 18-20, 2011. **One population of Endangered (Schweinitz's sunflower, *Helianthus schweinitzii*), two populations of S (large witch alder, *Fothergilla major*) one population of LR (glade wild quinine, *Parthenium auriculatum*) and several populations of LR (smooth sunflower, *Helianthus laevigatus*) species were detected during the site visits.** An additional population of Schweinitz's sunflower, as well as a population of Georgia aster, were found during the October 2011 survey dates, but these populations are not on USFS property.

C. COMMUNITIES

Four common community types were found in the proposed activity areas: Dry Oak-Hickory Forest, Maintained/Disturbed, Timbered Scrub/Shrub and Loblolly Pine Plantation. The Dry Oak-Hickory Forest is described in detail by Schafale and Weakley (1990). The Maintained/Disturbed Community included a power line right-of-way dominated by grasses and forbes, and ruderal roadside edge. Most of the herbaceous diversity was associated with the Dry Oak-Hickory Forest Community. There were no significant rock outcrops or seeps.

These communities and their associated plant species are described in detail in the Natural Resources Technical Report (NRTR). The Mixed Pine/Hardwood Forest and Mixed Hardwood Forest communities described in the NRTR are similar to the Dry Oak-Hickory Forest described by Schafale and Weakley (1990).

IV. POTENTIAL BOTANICAL EFFECTS TO T and E, S and LR plants.

There are approximately 450 individuals of T and E, S or LR plant species within the 500 ft wide project study corridor. Approximately 100 individuals of the S plant species large witch alder (*Fothergilla major*), 300 individuals of the LR plant species smooth sunflower (*Helianthus laevigatus*), 35 individuals of the E plant species Schweinitz's sunflower (*Helianthus schweinitzii*) and several (less than 20) individuals of the LR plant species glade wild quinine (*Parthenium auriculatum*) were found in the activity area. It is not anticipated that all of these individuals will be affected or impacted (direct, indirect or cumulative) since construction will not occur throughout the entire 500 ft wide project study corridor. As design is finalized, NCDOT will have a more accurate estimation of how many individuals will be affected. This conclusion is supported by the following:

- 1) Site specific botanical surveys did reveal the presence of T and E, S or LR species, or habitat that is specific to T and E, S and LR species.

2) Dry Oak-Hickory Forest, Maintained/Disturbed, Timbered Scrub/Shrub, and Loblolly Pine Plantation communities are common community types within the Uwharrie National Forest. The habitats and natural communities found within the activity area have potential for T and E, S and LR plant species occurrence.

Direct effects to the aforementioned species include any effect related to the actual construction of the project. These effects would include: clearing vegetation, placing fill material on top of plants, cut slopes (digging up plants). These direct effects would result in the death of all the individuals of the species in the construction corridor.

Indirect effects include effects that occur after project construction. These effects would include: additional stormwater flowing to where these species occur, additional drainage and the possibility of invasive species increasing in areas that are cleared. Indirect effects may result in the eventual death of individuals of the four species.

V. MITIGATION AND RATIONALE

Since there are known effects to T and E, S and LR plant species, some form of mitigation is recommended. Mitigation options include: transplanting, avoidance (flagging or fencing), using native plantings for erosion control, and habitat enhancement. NCDOT will discuss these options with USFS.

The large witch alder plants can possibly be avoided since they are located approximately 100 ft from the existing road. Smooth sunflower seeds were harvested from the impact area for potential mitigation needs in 2007 and were subsequently transferred to USFS. Seeds from the Schweinitz's sunflower population that may be affected (EO 028) were collected in 2011 and 2012 and stored for potential mitigation.

VI. SUMMARY OF EFFECT

The proposed project will potentially impact E, S and LR plant species. The Biological Conclusion for Schweinitz's sunflower is May Affect, Likely to Adversely Affect. Therefore, formal consultation with the U.S. Fish and Wildlife Service is required.

This project may impact individuals of the three S and LR species (smooth sunflower, large witch alder and glade wild quinine), but will not affect the viability of any of the three species across the forest. Discussions will occur with the USFS to determine avoidance and minimization options.

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Appendix 1. Forest Service Endangered (E), Sensitive (S) and Locally Rare (LR) list of plant species on the Uwharrie National Forest, North Carolina (October 2012).

SCIENTIFIC NAME	FOREST SERVICE STATUS (E, S, LR)	COMMON NAME	NATURAL HABITAT IN WHICH SPECIES OCCUR	LIKELIHOOD OF OCCURRENCE AND CONCLUSION
NONVASCULAR				
<i>Scopelophila cataractae</i>	S	Agoyan cataract moss	Prefers copper-rich soils	Habitat not present
<i>Xanthoparmelia monticola</i>	S	A rock-shield lichen	Prefers high elevation rocky summits and mafic glades	Habitat not present
VASCULAR				
<i>Helianthus schweinitzii</i>	E	Schweinitz's sunflower	Open forests, woodlands and roadsides	Found during surveys
<i>Amorpha schwerinii</i>	S	Piedmont indigo bush	Southern Piedmont Dry Oak or Oak-Pine Forest	Habitat present, but not found during surveys
<i>Berberis canadensis</i>	S	American barberry	Woodlands & Glades, typically associated with mafic soils	Habitat not present
<i>Carex impressinervia</i>	S	Ravine sedge	Southern Piedmont Alluvial Forest	Habitat not present
<i>Danthonia epilis</i>	S	Bog oat-grass	Seeps around rock outcrops, granitic domes	Habitat not present
<i>Eurybia mirabilis</i>	S	Piedmont aster	Mesic Mixed Hardwood Forest, Piedmont Basic Mesic Forest	Habitat not present
<i>Fothergilla major</i>	S	Large witch alder	Southern Piedmont Dry Oak or Oak-Pine Forest	Found during surveys
<i>Lindera subcoriacea</i>	S	Bog spicebush	Hillside Seepage Bog	Habitat not present
<i>Solidago plumosa</i>	S	Yadkin River goldenrod	Riverside mafic rock outcrops	Habitat not present
<i>Symphyotrichum georgianum</i>	S	Georgia aster	Glades, woodlands, savannas and open areas	Habitat present, but not found during surveys
<i>Anemone berlandieri</i>	LR	Southern anemone	Thin circumneutral soil adjacent to rock outcrops	Habitat not present
<i>Baptisia alba</i> var. <i>alba</i>	LR	Thick-pod white wild indigo	Southern Piedmont Dry Oak or Oak-Pine Forest, Roadsides	Habitat present, but not found during surveys
<i>Baptisia australis</i> var. <i>aberrans</i>	LR	Eastern prairie blue wild indigo	Southern Piedmont Dry Oak or Oak-Pine Forest, Roadsides. This species has been found over limestone of mafic rock	Habitat not present

			influenced plant communities.	
<i>Cardamine dissecta</i>	LR	Dissected toothwort	Southern Piedmont Alluvial Forest	Habitat not present
<i>Cirsium carolinianum</i>	LR	Carolina thistle	Glades, woodlands, and open areas over mafic rock	Habitat present, but not found during surveys
<i>Collinsonia tuberosa</i>	LR	Piedmont horsebalm	Thin circumneutral soil adjacent to rock outcrops	Habitat not present
<i>Desmodium fernaldii</i>	LR	Fernald's tick-trefoil	Dry to mesic hardwood-pine woodland	Habitat present, but not found during surveys
<i>Dichanthelium boreale</i>	LR	Northern witch grass	Open woods	Habitat present. Surveys for this species will be done in 2013.
<i>Gillenia stipulata</i>	LR	Indian physic	Southern Piedmont Dry Oak or Oak-Pine Forest, typically associated with mafic rock	Habitat not present
<i>Helenium brevifolium</i>	LR	Littleleaf sneezeweed	Southern Piedmont Dry Oak or Oak-Pine Forest, Roadsides	Habitat present, but not found during surveys
<i>Helianthus laevigatus</i>	LR	Smooth sunflower	Open forests, woodlands and roadsides	Found during surveys
<i>Matelea decipiens</i>	LR	Glade milkvine	Glades and woodlands, over mafic rock	Habitat not present
<i>Parthenium auriculatum</i>	LR	Glade wild quinine	Glades, woodlands, and open areas over mafic rock	Found during surveys
<i>Primula meadia</i>	LR	Eastern shooting star	Southern Piedmont Dry Oak or Oak-Pine Forest, Roadsides over mafic substrates	Habitat not present
<i>Pseudognaphalium helleri</i>	LR	Heller's rabbit tobacco	Glades, woodlands, and open areas over mafic rock	Habitat present, but not found during surveys
<i>Quercus austrina</i>	LR	Bluff oak	River bluff	Habitat not present
<i>Ruellia purshiana</i>	LR	Pursh's wild petunia	Southern Piedmont Dry Oak or Oak-Pine Forest over mafic rock substrates	Habitat not present
<i>Salvia azurea</i>	LR	Azure sage	Longleaf pine-oak woodland	Habitat present, but not found during surveys
<i>Sedum glaucophyllum</i>	LR	Cliff stonecrop	Rock outcrops, glades, typically over calcareous or mafic substrate	Habitat not present
<i>Smilax hugeri</i>	LR	Huger's carrion-flower	Mesic mixed hardwood forest, piedmont basic mesic forest	Habitat present, but not found during surveys
<i>Solidago radula</i>	LR	Western Rough Goldenrod	Glades, woodlands, and open areas over	Habitat not present

			mafic rock	
<i>Stachys</i> sp. 1	LR	Undescribed hedge nettle	Sandy alluvium of Southern Piedmont Alluvial Forest	Habitat not present
<i>Stewartia ovata</i>	LR	Mountain Camellia	Bluffs and Forests, usually with Rhododendron	Habitat not present
<i>Tradescantia virginiana</i>	LR	Virginia spiderwort	Basic Mesic Hardwood Forest, woodlands	Habitat present, but not found during surveys
<i>Tridens chapmanii</i>	LR	Chapman's Redtop	Xeric Pine and Oak Forests, sandy roadsides	Habitat present, but not found during surveys
<i>Trifolium reflexum</i>	LR	Buffalo clover	Open forests, woodlands and roadsides	Habitat present, but not found during surveys
<i>Viola walteri</i>	LR	Prostrate Blue Violet	Mesic Hardwoods	Habitat not present

BIOLOGICAL EVALUATION
FOR THE
PROPOSED WIDENING OF NC 24/27 FROM
EAST OF THE PEE DEE RIVER TO WEST OF
SR 1134 (WADEVILLE ROAD)
UWHARRIE NATIONAL FOREST
MONTGOMERY COUNTY
NORTH CAROLINA

TIP # R-2527

WBS ELEMENT 35572.1.1

January 14, 2014

Contact Person:
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I. INTRODUCTION

The North Carolina Department of Transportation proposes to widen NC 24/27 to a four-lane divided facility in Montgomery County, North Carolina. The proposed project, TIP No. R-2527, will widen NC 24/27 from east of the Pee Dee River to west of SR 1134 (Wadeville Road) (approximately 9 miles). Portions of this project are in the Uwharrie National Forest. The proposed project would affect U.S. Forest Service (USFS) property along the existing and proposed right-of-way.

Approximately 50 acres of USFS land falls within the 500 ft project study corridor. As design is finalized, the acreage will decrease.

II. SPECIES CONSIDERED AND METHODS

The potential effects on Sensitive (S) species are evaluated. The S species list is maintained by the Uwharrie National Forest Service, Asheville, N.C. Potential direct and indirect effects to S species were analyzed in areas where road widening is proposed. This area is referred to as the activity area.

Potentially affected rare species were identified by:

- (1) Reviewing the list of S species of the Uwharrie National Forest in Montgomery Co. and streamlining this list to include only species that exist within the natural communities found at the project site.
- (2) Consulting the element occurrence records of rare species as maintained by the North Carolina Natural Heritage Program (NCNHP 2012).
- (3) Consulting with NCNHP, USFS, and NC Wildlife Resource Commission (NCWRC) personnel who are knowledgeable of the area and its fauna.
- (4) Conducting field surveys in the activity area.

Surveys were conducted within the Forest Service property that may be impacted by the proposed road improvements. While the inventory assessed all plants and animals encountered, particular focus was directed for species listed with Threatened (T), Endangered (E) or S status.

III. EXISTING BIOLOGICAL CONDITION

A. T&E and FOREST SENSITIVE SPECIES

The Forest Service's rare species resource lists for Montgomery Co. includes three T&E species (2 Terrestrial and 1 Botanical) and 22 S species (7 Aquatic, 4 Terrestrial, and 11 Botanical).

Many of these species were ruled out due to a lack of suitable habitat in the activity area or the species has a well-known distribution that does not include the activity area. Below is a list of the T&E and S species with the reason for its elimination from the list or whether it could potentially occur in the vicinity of the activity area (bold font). Most botanical, terrestrial, and aquatic species that could potentially occur were ruled out either during the surveys or because they were “historic or extirpated” or “obscure records.” The number of species on this list was substantially reduced and summarized for the following reasons:

1. Lack of suitable habitat for the species in the activity area.
2. The species has a well-known distribution that does not include the activity area.
3. Conclusions were also based on personal communication with experts in the field of study.

Threatened and Endangered Species

Birds

1. *Picoides borealis* (red-cockaded woodpecker), federally endangered, prefers mature open pine forests, mainly in longleaf pine (breeding evidence only). NCNHP has a 1994 record for a cavity tree approximately 2.4 mi south of the study corridor. Survey were conducted for this species from March 8, 2006-March 27, 2007. The surveyed areas within 0.5 mile of the project did contain pine-dominated forests. The pines within the surveyed areas were composed of young pines (between 20 to 30 years old) that would not provide suitable nesting habitat. Two areas contained older long-leaf pines (between 30 to 60 years old). The first area, located approximately 1.0 mile west of the railroad and 0.4 mile north NC 24-27, is small with scattered mature pines. An inactive cavity tree was observed within this stand. The second area is located approximately 0.3 mile north of the Additional Study Area associated with the railroad. This area provides the best potential nesting habitat, however, the older trees are scattered throughout the stand which are dominated by younger pines between 20 to 30 years old. The area within 0.5 mile of these stands is fragmented due to clear cutting. No RCWs were observed during surveys. This species is not further analyzed.

Mammals

1. *Puma concolor cougar* (eastern cougar), federally endangered, prefers extensive forests in remote areas. This species is believed to be extirpated in North Carolina. This species is not further analyzed.

Vascular Plants

1. *Helianthus schweinitzii* (Schweinitz's sunflower), federally endangered, prefers open woods and roadsides. This species was found during surveys.

Sensitive Species

Mollusks

1. *Elliptio roanokensis* (Roanoke slabshell), occurs in most Atlantic drainages. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Fusconaia masoni* (Atlantic pigtoe), occurs in most Atlantic drainages in the lower Piedmont. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
3. *Lasmigona subviridis* (green floater), occurs in the Yadkin/Pee Dee River basin. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
4. *Toxolasma pullus* (Savannah lilliput), occurs in a number of Atlantic drainages. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
5. *Villosa vaughaniana* (Carolina creekshell), occurs in the Pee Dee River basin. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

Fish

1. *Etheostoma collis* (Carolina darter), occurs in streams in the Piedmont. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.
2. *Etheostoma mariae* (pinewoods darter), possibly occurs in the Pee Dee River basin. Current records for Montgomery Co. exist. This species was not found during surveys. This species is not further analyzed.

Terrestrial Insects

1. *Cicindela patruela* (Northern barrens tiger beetle), occurs in sandy soil in open pine or pine-oak woods. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

Amphibians

1. ***Ambystoma talpoideum* (mole salamander), breeds in fish-free semipermanent woodland ponds and forages in adjacent woodlands. Suitable habitat was observed in the activity area. This species was observed outside of the 500 ft wide project study corridor (approximately 300 ft from NC 24/27), but on Forest Service property. No impacts to this species are anticipated since it was found outside of the project corridor. This species is not further analyzed.**

Birds

1. *Haliaeetus leucocephalus* (bald eagle), prefers mature forests near large bodies of water for nesting, and lakes and sounds for nesting sites and regular non-breeding sites. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
2. ***Lanius ludovicia* (loggerhead shrike), prefers fields and pastures during the breeding season only. Suitable habitat was observed in the activity area. This species was not observed during surveys. No impacts to this species are anticipated. This species is not further analyzed.**

Nonvascular Plants

1. *Scopelophila cataractae* (Agoyan cataract moss), prefers copper-rich soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
2. *Xanthoparmelia monticola* (a rock-shield lichen), prefers high elevation rocky summits and mafic glades. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

Vascular Plants

1. ***Amorpha schwerinii* (Piedmont indigo bush), prefers dry forests. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys. There is an occurrence of this species outside of the 500 ft wide project study corridor (approximately 600 ft from NC 24/27). This species is not further analyzed.**
2. *Berberis canadensis* (American barberry), prefers open forests and glades on basic soils. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
3. *Carex impressinervia* (ravine sedge), prefers rich alluvial forests. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
4. *Danthonia epilis* (bog oatgrass), occurs in seepage bogs and wet seepy power lines. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
5. *Eurybia mirabilis* (Piedmont aster), prefers rich slopes and bottomlands. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
6. ***Fothergilla major* (large witch-alder), occurs on dry ridge tops, in bluff forests, seepage wetlands, and Piedmont longleaf pine forests. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was found during surveys.**
7. *Lindera subcoriacea* (bog spicebush), prefers streamhead pocosins, white cedar swamps, and seepage slopes. Current records for Montgomery Co. exist. Suitable habitat was not

observed in the activity area, therefore there are no impacts. This species is not further analyzed.

8. *Solidago plumosa* (Yadkin River goldenrod), prefers riverside rocks. Current records for Montgomery Co. exist. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
9. *Symphotrichum georgianum* (Georgia aster), prefers open woods and roadsides. Current records for Montgomery Co. exist. Suitable habitat was observed in the activity area. This species was not found during surveys within National Forest land. This species has been found along NC 24/27 on private land in Stanly County approximately 5-6 miles away from USFS property. This species is not further analyzed.

B. RARE SPECIES SURVEYS

Multiple surveys were conducted in the activity area to ensure that seasonal variability in species numbers and optimal survey windows for flowering plants were taken into account. Because the S and LR lists contain a broad spectrum of plants and animals, it was necessary to bring in expertise from a wide spectrum of biologists. Qualifications of principle investigators are included at the end of this document.

Survey Dates: 4/04-5/04 (Schweinitz's sunflower), 9/04 (bald eagle), 3/8/06-3/27/07 (Red-cockaded woodpeckers), 4/10/06 (bald eagle), 9/9/06-10/18/06 (Schweinitz's sunflower, smooth coneflower), 3/27/07 (bald eagle), 5/21/07 (plants), 5/22/07 (birds), 6/25/07 (bats), 6/26/07 (salamander, plants, bats), 6/27/07 (salamanders), 8/16/07 (mussels, terrestrial insects), 10/24/07 (plants), 10/25/07, 11/1/07 (plants), 11/2/07 (plants), 11/7/07 (plants), 11/16/07 (plants), 11/19/07 (plants), 11/21/07 (plants)

C. COMMUNITIES

Four common community types were found in the proposed activity areas: Dry Oak-Hickory Forest, Maintained/Disturbed, Timbered Scrub/Shrub and Loblolly Pine Plantation. The Dry Oak-Hickory Forest is described in detail by Schafale and Weakley (1990). The Maintained/Disturbed Community included a power line right-of-way dominated by grasses and forbes, and ruderal roadside edge. Most of the herbaceous diversity was associated with the Dry Oak-Hickory Forest Community. There were no significant rock outcrops or seeps.

These communities and their associated plant species are described in detail in the Natural Resources Technical Report (NRTR). The Mixed Pine/Hardwood Forest and Mixed Hardwood Forest communities described in the NRTR are similar to the Dry Oak-Hickory Forest described by Schafale and Weakley (1990).

IV. RESULTS AND POTENTIAL EFFECTS TO T, E and FOREST SERVICE S SPECIES

The proposed road widening project may affect or impact botanical and aquatic resources of the Uwharrie National Forest due to occurrence of E and Forest Service S plants or aquatic animals in the vicinity of the project area.

A larva of the S terrestrial animal species mole salamander (*Ambystoma talpoideum*) was found in an upland pool in the activity area. Mole salamanders occupy underground burrows in pine savannas, hardwood forests, and swamps and breed in fish-free semi-permanent woodland ponds and forage in adjacent woodlands. This species is found in Alleghany, Buncombe, Cherokee, Guilford, Henderson, Macon, Montgomery, Person, Polk, Richmond, Rockingham, Rowan, Surry, and Union Counties. The mole salamander is considered a species of special concern by the North Carolina Natural Heritage Program (NCNHP). This species can be avoided, as it is located approximately 300 feet from the existing alignment.

Approximately 100 individuals of the S plant species large witch alder (*Fothergilla major*) were found in forested areas in the activity area. Large witch alder is found on dry ridgetops or bluff forests, seepage wetlands, and Piedmont longleaf pine forests. This species is found in Burke, Chatham, Harnett, McDowell, Montgomery, Orange, Person, Rutherford, Stanly, Stokes, Transylvania, and Wake Counties. Large witch alder is considered a significantly rare species throughout its range by NCNHP. This species can be avoided, as it is located approximately 100 feet from the existing alignment.

Approximately 35 individuals of the federally endangered plant species Schweinitz's sunflower (*Helianthus schweinitzii*) were found adjacent to the railroad in the activity area. Schweinitz's sunflower is found in open woods and roadsides. This species is found in Anson, Cabarrus, Davidson, Gaston, Mecklenberg, Montgomery, Randolph, Rowan, Stanly, Stokes, Surry, and Union Counties. Schweinitz's sunflower is considered an endangered species by the United States Fish and Wildlife Service (USFWS). This population of Schweinitz's sunflower could be affected by the proposed project. If it is determined that this population will be affected, the plants will be transplanted to adjacent USFS land and formal consultation with the USFWS will be initiated.

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QUALIFICATIONS OF PRINCIPLE INVESTIGATORS:

- Investigator: Kathy Herring, Environmental Supervisor, NCDOT
 Education: B.S. Biology, University of South Carolina.
 Experience: Environmental Specialist/Supervisor, NCDOT, August 2004 – present.
 Environmental Biologist, NC Division of Water Quality, Biological Assessment Unit, December 1992 – July 2004.
 Environmental Biologist Supervisor, Normandeau Associates, Aiken, SC. April 1988 to November 1992 and February 1982 to August 1985.
 Aquatic Biologist Chadwick and Associates, Inc. Denver, CO, November 1986 to March 1988.
 Project Manager - The Potential Effects of Flow Fluctuations on Establishing a Balanced Biological Community in Discharge Streams at the Savannah River Plant, Aiken, SC.
 Academy of Natural Sciences of Philadelphia, September 1985 to September 1986
 Expertise: Freshwater fish and benthic macroinvertebrate collection and identification; aquatic habitat evaluations and function; biocriteria and biotic indices evaluations; Endangered species (terrestrial/aquatic) surveys; data analysis/report writing. SCUBA diving certified.
- Investigator: Karen M. Lynch, Environmental Supervisor, NCDOT
 Education: B.S. Wildlife Biology and Fisheries, North Carolina State University.
 Experience: Environmental Supervisor, NCDOT July 2003- present.
 Environmental Specialist, NCDOT, November 1998 – July 2003.
 Environmental Biologist, NC Division of Water Quality, November 1984-October 1998.
 Expertise: Section 7 field investigations; NEPA documentation, protected species (terrestrial/aquatic) surveys, benthic macroinvertebrate collection, water quality analyses, aquatic plant surveys. Permitted to survey for State and Federal Threatened and Endangered mussels. SCUBA certified.
- Investigator: Jason Mays, Environmental Specialist
 Education: B.S. Biological Sciences, UNC Chapel Hill.
 Experience: NCWRC Field Biologist May 2002-October 2003.
 Environmental Specialist, NCDOT, March 2003- Present.
 Expertise: Section 7 field investigations, protected species (terrestrial/aquatic) surveys, 404/401 permitting, wetland delineation/ determination, GIS studies.
- Investigator: Michael Sanderson
 Education: B.S. Fisheries and Wildlife Science, North Carolina State University.
 Experience: Environmental Specialist, NCDOT April 2004- present.
 Wildlife Research Biologist, Down to Earth Environmental, February – June,

2003.

Wildlife Research Technician, NC Cooperative Fish and Wildlife Research unit, 1991- 1999.

Biological Science Technician (Wildlife), US Fish and Wildlife Service, 1995-1997.

Expertise: Bird surveys, behavioral analysis, habitat use/evaluation, Section 7 field investigations, protected species (terrestrial/aquatic) surveys, wetland delineation, SCUBA certified.

Investigator: Logan Williams

Education: B.A. Philosophy, North Carolina State University, December 1981.

M.S. Entomology, North Carolina State University, May 1994.

Experience: Environmental Supervisor, NCDOT, 2002-present.

Entomologist, NC Dept. of Agriculture, 2001-2002.

Natural Systems Specialist, NCDOT, 1995-2000.

Supervisor of Apiary Inspection, NC Dept of Agriculture, 1988-1995.

Expertise: Coordinate and conduct Section 7 investigations (aquatic and terrestrial). Identification of aquatic benthic macroinvertebrates. Wetland Mitigation. Ecological studies, NEPA documentation. SCUBA certified.

Investigator: Dennis W. Herman

Education: B.S. Biology, Western Carolina University.

Experience: Environmental Program Consultant, NCDOT, August 2004-present.

Coordinator of Living Collections, NC Museum of Natural Sciences, June 1996-August 2004.

Assistant Curator of Herpetology, Zoo Atlanta, 1981-1996.

Senior Zoo Keeper of Herpetology & Mammals, Atlanta Zoological Park, 1972-1981.

Expertise: Section 7 investigations, protected species (terrestrial/aquatic) surveys, bog turtle & mountain bog specialist, ecological studies, rare plant identification, benthic macroinvertebrate collection, reptile and amphibian surveys.

Investigator: Matthew M. Haney

Education: B.S. Natural Resources-Ecosystem Assessment, North Carolina State University, Raleigh, North Carolina.

Experience: N.C. Dept. of Transportation Oct. 1999-present.

N.C. Forest Service May 1998-August 1998.

U.S. Forest Service, Center for Forested Wetlands Research May 1997-August 1997.

Expertise: Section 7 field investigations, NEPA documentation, wetland and aquatic investigations, protected species (terrestrial/aquatic) surveys.

- Investigator: Neil Medlin
 Education: M.A. Biology, Appalachian State University.
 B.S. Biology, Appalachian State University.
 Experience: Environmental Specialist/Supervisor, NCDOT, January 2002-present.
 Environmental Biologist, NC Division of Water Quality,
 June 1990-January 2002.
 Environmental Biologist, FL Department of Environmental Protection
 (formerly Department of Environmental Regulation),
 August 1986-June 1990.
 Expertise: Freshwater fish and benthic macroinvertebrate collection and identification;
 aquatic habitat evaluations and function; biocriteria and biotic indices evaluations;
 Endangered species (terrestrial/aquatic) surveys and assessments; permitted to
 survey for State and Federal Threatened and Endangered mussels and fish.
- Investigator: Mary E. Frazer
 Education: B.S. Zoology, University of Wisconsin.
 M.E.M. (Master of Environmental Management), Resource Ecology, Duke
 University.
 Experience: Natural Systems Specialist, NCDOT, August 2000-present.
 Water Regulation Specialist, Wisconsin Department of Natural Resources, 1998-
 2000.
 Wisconsin Coastal Management Program, 1994-1998.
 Biologist, Soil and Environmental Consultants, 1992-1994.
 Expertise: Section 7 field investigations; NEPA documentation, wetland and aquatic
 investigations.
- Investigator: Melissa Miller
 Education: B.S. Fisheries and Wildlife Sciences, North Carolina State University.
 Experience: Environmental Biologist, NCDOT, February 2005-present.
 Assistant Wildlife Biologist, Howell Woods Environmental Learning
 Center, Four Oaks, NC, January 1999-February 2005.
 Expertise: Section 7 field investigations, protected species (terrestrial/aquatic) surveys.
- Investigator: Anne Burroughs
 Education: B.S. Biological Sciences, Minor in Environmental Science,
 North Carolina State University 1992.
 Experience: Biological Control Technician – NC Dept of Agriculture May 2001-April 2003.
 Environmental Specialist – NC Dept. of Transportation, May 2003-August 2003,
 January 2004-present.
 Expertise: Endangered species (terrestrial/aquatic) surveys; benthic macroinvertebrate
 collection.

- Investigator: Lance P. Fontaine, Ph.D.
 Education: Ph.D., Wildlife and Fisheries Sciences, Texas A&M University, 2008.
 M.S. Wildlife and Fisheries Sciences, Texas A&M University, 2002.
 B.S. Ecological & Evolutionary Biology, Tulane University, 1999.
 Experience: Environmental Specialist, NCDOT, Raleigh, NC, October 2006 – Present.
 Lecturer, University of California at Irvine, January 2006 – September 2006.
 Research Assistant, Wildlife and Fisheries Sciences, Texas A&M University,
 College Station, TX, August 2000 – December 2005.
 Pond Technician/Technical Consultant, Integrated Lakes Management, Gurnee, IL
 September 1999 – August 2000.
 Expertise: Endangered species (terrestrial/aquatic) surveys; section 7 field investigation;
 biological assessment preparation; water quality analysis; aquatic and wetland
 ecology studies; freshwater and marine fish ecology and ecophysiology studies;
 invasive and exotic species (terrestrial/aquatic) issues; statistical analysis; benthic
 macroinvertebrate collection; GIS studies; prescribed burns.
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 Education: B.S. Natural Resource Management & Ecology, Colorado State University.
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TERRESTRIAL ANIMAL RESOURCES REPORT
FOR THE
PROPOSED WIDENING OF NC 24/27 FROM EAST
OF THE YADKIN-PEE DEE RIVER TO WEST OF SR 1134 (WADEVILLE ROAD)

UWHARRIE NATIONAL FOREST

MONTGOMERY COUNTY

NORTH CAROLINA

TIP # R-2527

WBS ELEMENT 35572.1.1

January 7, 2013

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I. INTRODUCTION

This report identifies the potential effects on terrestrial animal resources of a proposed road widening of NC 24/27 from east of the Yadkin-Pee Dee River to west of SR 1134 (Wadeville Road). The proposed project would affect U.S. Forest Service (USFS) property along the existing and proposed right-of-way. The project area is in the Uwharrie Ranger District, Uwharrie National Forest, Montgomery Co., North Carolina. This project is located in the Piedmont III ecoregion, and the Carolina Slate Belt level IV ecoregion (Griffith et al. 2002). Habitat types found in the proposed activity areas include Mixed Pine-Hardwood Forest, Maintained/Disturbed, Timbered Scrub Shrub, and Pine Plantation. The natural communities are described in detail by Schafale and Weakley (1990). The elevation of the study area is approximately 300 to 600 feet above mean sea level.

Approximately 50 acres of USFS land falls within the 500 ft project study corridor. As design is finalized, this acreage will decrease.

II. SPECIES CONSIDERED AND METHODS

The potential effects on USFS Sensitive (S) and Locally Rare (LR) terrestrial animal species are evaluated. Threatened (T) and Endangered (E) terrestrial animal species are evaluated in the Biological Evaluation report. LR species are usually peripheral or disjunct. Potential direct and indirect effects to S and LR animal species were analyzed in the areas where road widening is proposed. This area is referred to as the activity area and is shown in the attached project map (Figure 1 of Biological Evaluation).

Potentially affected terrestrial animal species were identified by:

- 1) Reviewing the list of S and LR animal species of the Uwharrie National Forest in Montgomery Co. (Appendix 1) and streamlining this list to include only the species that exist within the habitats found at the project site.
- 2) Consulting element occurrence records of animals as maintained by the North Carolina Natural Heritage Program (NCNHP) using the most up-to-date information in their database (http://nhpweb.enr.state.nc.us/nhis/public/gmap75_main.phtml)(August 10, 2012).
- 3) Consulting with NCNHP, NC Wildlife Resources Commission, US Fish and Wildlife Service and USFS personnel who are knowledgeable of the area and its flora.
- 4) Conducting field surveys in areas designated for ground disturbing activities. Surveys were conducted within the Forest Service property that will be impacted by the proposed road widening.

III. TERRESTRIAL ANIMAL RESOURCES:

A. T&E, SENSITIVE, AND LOCALLY RARE SPECIES

The 2011 revised rare terrestrial species list for Montgomery Co. (Appendix 1) includes nine T&E, S, and LR species: two invertebrates (1 S and 1 LR), one amphibian (1 S), one reptile (2 LR), three birds (2 S and 1 E), and one mammal (1 E). This list of animals that could potentially be impacted by the project was substantially reduced and summarized for the following reasons:

- 1) Lack of suitable habitat for the species in the project area. This may include elevation and/or forest type.
- 2) The species has a well-known distribution that does not include the project area or has never been recorded in Montgomery Co.
- 3) Based on field surveys of potential habitat, no habitat was observed in the activity area.
- 4) Conclusions were also based on personal communication with experts in the field.

Endangered and Threatened Species

A detailed discussion of the T&E terrestrial species is included in the accompanying Biological Evaluation along with the botanical and aquatic species and will not be included in this report. The S and LR terrestrial species are discussed below.

Sensitive Species

Four Forest Service S terrestrial species are listed for the Uwharrie National Forest in Montgomery Co. All four species were ruled out due to lack of suitable habitat, not being observed during surveys, or occurring outside of the project study corridor.

Insects

1. *Cicindela patruela* (Northern barrens tiger beetle), occurs in sandy soil in open pine or pine-oak woods. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

Amphibians

1. *Ambystoma talpoideum* (mole salamander), breeds in fish-free semipermanent woodland ponds and forages in adjacent woodlands. Suitable habitat was observed in the activity area. This species was observed outside of the 500 ft wide project study corridor (approximately 300 ft from NC 24/27). No impacts to this species are anticipated. This species is not further analyzed.

Birds

1. *Haliaeetus leucocephalus* (bald eagle), prefers mature forests near large bodies of water for nesting, and lakes and sounds for nesting sites and regular non-breeding sites. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.
2. *Lanius ludovicia* (loggerhead shrike), prefers fields and pastures during the breeding season only. Suitable habitat was observed in the activity area. This species was not observed during surveys. No impacts to this species are anticipated. This species is not further analyzed.

Locally Rare Species

Three Forest Service LR terrestrial species are listed for the Uwharrie National Forest in Montgomery Co. All three species were ruled out due to lack of suitable habitat or not being observed during surveys.

Insects

1. *Erynnis martialis* (mottled duskywing), occurs in upland woods and wooded edges. The host plant for this species is New Jersey tea (*Ceanothus americanus*). Suitable habitat was observed in the activity area. This species was not observed during surveys. No impacts to this species are anticipated. This species is not further analyzed.

Reptiles

1. *Ophiosaurus attenuatus* (slender glass lizard), prefers old fields, wooded edges, and open woods. Suitable habitat was observed in the activity area. This species was not observed during surveys. No impacts to this species are anticipated. This species is not further analyzed.
2. *Pituophis melanoleucus melanoleucus* (Northern pine snake), prefers dry and sandy woods, mainly in pine/oak sandhills. Suitable habitat was not observed in the activity area, therefore there are no impacts. This species is not further analyzed.

B. TERRESTRIAL SPECIES SURVEYS

Multiple surveys were conducted for Forest Service S and LR species in the activity area in suitable habitat by NCDOT biologists with varying expertise with invertebrates, amphibians, reptiles, birds, and mammals. Qualifications of principle investigators are included in Biological Evaluation report.

Surveys Dates: 5/21/2007-5/22/2007, 6/25/2007-6/27/2007, 8/16/2007, and 3/20/2008.

A list of all terrestrial species detected can be found in Appendix 2. One S species (mole salamander) was found during the site visits. However, this occurrence is outside of the 500 ft wide project study corridor (approximately 300 ft from NC 24/27).

C. COMMUNITIES

Four common community types were found in the proposed activity areas: Dry Oak-Hickory Forest, Maintained/Disturbed, Timbered Scrub/Shrub and Loblolly Pine Plantation. The Dry Oak-Hickory Forest is described in detail by Schafale and Weakley (1990). Of these communities, the Dry Oak-Hickory Forest Community dominates. This community encompasses the Mixed Pine/Hardwood Forest and Mixed Hardwood Forest communities that are described in the Natural Resources Technical Report (NRTR). Plant species found in this community can be found in the NRTR.

IV. POTENTIAL EFFECTS TO ANIMAL SPECIES OF CONCERN AND SPECIES OF INTEREST

There are no known effects or impacts (direct, indirect or cumulative) to any S or LR animal species. This conclusion is supported by the following:

- 1) Literature review, North Carolina Natural Heritage Program files, site specific surveys and consultation with experts in the field did not reveal the presence of any S or LR species or habitat that is specific to S and LR species.
- 2) The community types found at the project site are common community types within the Uwharrie National Forest and the habitats found within this proposal have a low potential for S and LR animal species to occur.

V. MITIGATION AND RATIONALE

Since there are no effects to any T & E, S and LR aquatic species, there is no recommended mitigation.

VI. SUMMARY OF EFFECT

The proposed improvements to R-2527 are not likely to adversely affect any S or FC terrestrial species on the USDA Forest Service S and LR list for Montgomery County due to nonoccurrence in the vicinity of the activity area. No mitigation is recommended. The proposed project will not affect any Federally listed or proposed listed aquatic species. Formal consultation with the U.S. Fish and Wildlife Service is not required.

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- NCDOT. 2007. Mist net surveys for bats at North Carolina Department of Transportation's proposed NC 24/27 road widening (TIP NO. R-2527) in Montgomery County, North Carolina. Unpublished.
- Natural Systems report for R-2527. 2004 and 2007. HDR Engineering, Inc. of the Carolinas and the North Carolina Department of Transportation.
- Schafale, M. P. and Weakley A., 1990. *Classification of the Natural Communities of North Carolina: Third Approximation*. North Carolina Natural Heritage Program, Raleigh, North Carolina.

Potter, E., Parnell, J., Teulings, P., and Davis, R., 2006, *Birds of the Carolinas*, second edition. University of North Carolina Press.

WORLD WIDE WEB REFERENCES:

North Carolina Natural Heritage Program: <http://www.ncnhp.org/>

US Fish and Wildlife Service in NC: <http://www.fws.gov/nc-es/es/countyfr.html>

OTHER SOURCES:

Bat Blitz data from Southeastern Bat Diversity Network (SBDN), 2004

Appendix 1. List of Forest Service Endangered, S, and LR Terrestrial Animal Species for the Uwharrie National Forest (October 2012). *Species that were detected are listed in bold.

SCIENTIFIC NAME	COMMON NAME	STATUS	NHP-LISTED COMMUNITY OR HABITAT AND RECORDS	LIKELIHOOD OF OCCURRENCE AND CONCLUSION
Mammals				
<i>Puma concolor cougar</i>	Eastern cougar	E	Extensive forests and remote areas	This species is extirpated in N.C. and across most of its range.
Birds				
<i>Picoides borealis</i>	Red-cockaded Woodpecker (RCW)	E	Open Pine woods	NHP has a 1994 record for a cavity tree approximately 2.4 mi south of the study corridor. An inactive cavity tree was observed during surveys from March 8, 2006-March 27, 2007. No RCWs were observed during surveys.
<i>Haliaeetus leucocephalus</i>	Bald Eagle	S	Mature forests near large bodies of water	A known bald eagle nest is located approximately 7000 ft southwest of the

			for nesting	project's west terminus. This nest is located outside the boundaries of the Uwharrie National Forest.
<i>Lanius ludovicianus</i>	Loggerhead Shrike		fields and pastures	This species has been observed recently in Montgomery County, but was not detected during surveys on May 22, 2007.
S				
Insects				
<i>Cicindela patruela</i>	Northern barrens tiger beetle		Occurs in sandy soil in open pine or pine-oak woods	Suitable habitat was not observed for this species.
	Mottled duskywing		Occurs in upland woods and wooded edges; host plant-New Jersey tea (<i>Ceanothus americanus</i>)	This species has been observed recently in Montgomery County, but was not detected during surveys.
<i>Erynnis martialis</i>		LR		
Amphibians				
<i>Ambystoma talpoideum</i>	Mole salamander		Breeds in fish-free semipermanent woodland ponds and forages in adjacent woodlands	This species was observed during surveys, but this occurrence is outside of the 500 ft project study corridor.
S				
Reptiles				
<i>Ophiosaurus attenuatus</i>	Slender glass lizard	LR	Prefers old fields, wooded edges, and open woods	This species was not observed during surveys.
<i>Pituophis melanoleucus melanoleucus</i>	Northern pine snake	LR	Prefers dry and sandy woods, mainly in pine/oak sandhills	This species has been observed recently in Montgomery County, but suitable habitat was not observed for this species.

Forest Service Status (FS) is designated by the U.S. Forest Service. Sensitive and locally rare species are protected under provisions of the National Forest Management Act and directions set forth in FS manual 2670.

STATUS CODE	STATUS	DESCRIPTION
E	Endangered	A taxon which is in danger of extinction throughout all or a significant portion of its range
T	Threatened	A taxon which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range
S	Sensitive	Species at risk of extinction in a portion of their range as evidenced by downward trends in population numbers or density, or downward trends in habitat capability.
FC	Forest Concern	Species not at risk of extinction, even in a portion of their range, and not showing a downward population trend over their range as a whole within North Carolina.

Appendix 2: Terrestrial Animal Detections for R-2527

This list represents animal detections during surveys in the activity area and areas immediately adjacent. It is not exhaustive. Other species may exist in the project area.

Insects:

Fawn darner	<i>Boyeria vinosa</i>
Ebony jewelwing	<i>Calopteryx maculata</i>
Painted lady	<i>Vanessa cardui</i>
Summer azure	<i>Celastrina neglecta</i>
Eastern tiger swallowtail	<i>Papilio glaucus</i>

Birds:

Black vulture	<i>Coragyps atratus</i>
Turkey vulture	<i>Cathartes aura</i>
Red-shouldered hawk	<i>Buteo lineatus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Rock pigeon	<i>Columba livia</i>
Mourning dove	<i>Zenaida macroura</i>
Yellow-billed cuckoo	<i>Coccyzus americanus</i>
Great horned owl	<i>Bubo virginianus</i>
Whip-poor-will	<i>Caprimulgus vociferus</i>
Chimney swift	<i>Chaetura pelagica</i>
Ruby-throated hummingbird	<i>Archilochus colubris</i>
Red-bellied woodpecker	<i>Melanerpes carolinus</i>
Downy woodpecker	<i>Picoides pubescens</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Eastern wood-pewee	<i>Contopus virens</i>
Acadian flycatcher	<i>Empidonax virescens</i>
Eastern phoebe	<i>Sayornis phoebe</i>
Great crested flycatcher	<i>Myiarchus crinitus</i>
White-eyed vireo	<i>Vireo griseus</i>
Yellow-throated vireo	<i>Vireo flavifrons</i>
Red-eyed vireo	<i>Vireo olivaceus</i>
Blue jay	<i>Cyanocitta cristata</i>
American crow	<i>Corvus brachyrhynchos</i>
Fish crow	<i>Corvus ossifragus</i>
Carolina chickadee	<i>Poecile carolinensis</i>
Tufted titmouse	<i>Baeolophus bicolor</i>
White-breasted nuthatch	<i>Sitta carolinensis</i>
Brown-headed nuthatch	<i>Sitta pusilla</i>
Carolina wren	<i>Thryothorus ludovicianus</i>
Blue-gray gnatcatcher	<i>Poliophtila caerulea</i>

Eastern bluebird	<i>Sialia sialis</i>
Wood thrush	<i>Hylocichla mustelina</i>
American robin	<i>Turdus migratorius</i>
Brown thrasher	<i>Toxostoma rufum</i>
European starling	<i>Sturnus vulgaris</i>
Northern parula	<i>Parula americana</i>
Yellow-throated warbler	<i>Dendroica dominica</i>
Pine warbler	<i>Dendroica pinus</i>
Prairie warbler	<i>Dendroica discolor</i>
Black-and-white warbler	<i>Mniotilta varia</i>
Ovenbird	<i>Seiurus aurocapilla</i>
Northern waterthrush	<i>Seiurus noveboracensis</i>
Common yellowthroat	<i>Geothlypis trichas</i>
Hooded warbler	<i>Wilsonia citrina</i>
Yellow-breasted chat	<i>Icteria virens</i>
Summer tanager	<i>Piranga rubra</i>
Scarlet tanager	<i>Piranga olivacea</i>
Eastern towhee	<i>Pipilo erythrophthalmus</i>
Field sparrow	<i>Spizella pusilla</i>
Song sparrow	<i>Melospiza melodia</i>
Northern cardinal	<i>Cardinalis cardinalis</i>
Indigo bunting	<i>Passerina cyanea</i>
Common grackle	<i>Quiscalus quiscula</i>
Brown-headed cowbird	<i>Molothrus ater</i>
American goldfinch	<i>Carduelis tristis</i>

Mammals:

Big brown bat	<i>Eptesicus fuscus</i>
Red bat	<i>Lasiurus borealis</i>
Evening bat	<i>Nycticeius humeralis</i>
Eastern pipistrelle	<i>Pipistrellus subflavus</i>
White-tailed deer	<i>Odocoileus virginianus</i>

Amphibians and Reptiles:

Upland chorus frog	<i>Pseudacris feriarum</i>
Gray treefrog	<i>Hyla chrysoscelis</i>
Eastern narrowmouth toad	<i>Gastrophryne carolinensis</i>
Three-lined salamander	<i>Eurycea guttolineata</i>
Mole salamander	<i>Ambystoma talpoideum</i>
Northern dusky salamander	<i>Desmognathus fuscus</i>
Eastern box turtle	<i>Terrapene carolina</i>

Black rat snake	<i>Elaphe obsoleta</i>
Black racer	<i>Coluber constrictor</i>

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R-2527 notes from data warehouse

10/20/11 Two clumps of sunflowers located on RR tracks south of 24-27. On east side of tracks across from the beaver pond, we will collect seeds and work with USFS to provide a site for them and the plants themselves.

3/28/13 Roberdo section of UWharrie NF was planted with six *Helianthus schweinitzii* individuals from the railroad site south of NC 24/27 (EO #28) as well as some previously collected seed from that subpopulation. The plants were moved under a BA written by USFS for sunflower management on Uwharrie. Seeds collected from the Stanly County NC 24/27 site were also sown EO (243).

4/15/13 Contract signed between USFS and NCDOT. DOT pays USFS and in return, USFS takes sunflowers from R-2527 and R-0623. **Transplants from Stanly County sunflower population will be taken by USFS closer to let date, after BA is completed.**

8/28/13 NCDOT paid USFS for sunflower mitigation contract.

2/20/14 Cheryl: changed status to "in progress" vs "complete" since Mary still coordinating with USFS on plant mitigation.

3/5/14 Remaining seeds from RR tracks planted USFS Roberdo site (Uwharrie NF) with Gary Kauffman.

6/17/14 Email from Gary Jordan: "Although it's ultimately up to the lead federal action agency to decide when to do formal consultation, I highly recommend not doing it until closer to the let date in this particular situation. If the first let date is 2019, then ideally, updated Schweinitz sunflower surveys would be conducted during the 2017 flowering season (late August - October). The BA could be written after that and the BO wrapped up sometime in early 2018....Putting formal consultation off until later would avoid replication of work and reduce costs."

R-2530B notes from warehouse

10/20/11 We will collect seeds for now and will attempt to work with Morrow Mtn State Park to provide a site for the seeds and the sunflower plants themselves.

Also to be impacted by the highway: a population of Georgia aster (EO 4?) on the south side of the highway. This species may be more rare than Schweinitz's sunflower and there is a multiple-agency effort underway to keep it off the endangered species list. NCDOT should do what it can to protect/preserve this population in a safe location.



AIR QUALITY REPORT

NC 24-27
from NC 740 in Albemarle to
the Proposed Troy Bypass (R-623), West of Troy

TIP Projects R-2530B, B-4974 and R-2527
WBS Elements 34446.1.6, 39922.1.1 and 35572.1.1

Stanly and Montgomery Counties

Prepared for:

North Carolina Department of Transportation
Project Development and Environmental Analysis Unit

Submitted by:

Human Environment Section
Traffic Noise & Air Quality Group

March 21, 2017

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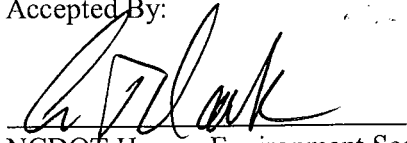
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Accepted By:



NCDOT Human Environment Section
Traffic Noise & Air Quality Group

3-23-17

Date

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1. Introduction

The North Carolina Department of Transportation (NCDOT) proposes widening NC 24-27 from NC 740 in Albemarle located in Stanly County to the Proposed Troy Bypass (R-623), west of Troy in Montgomery County. TIP project R-2530B involves widening existing NC 24-27 from west of NC 740 to the Pee Dee River in Stanly County from a two to three-lane facility to a four-lane divided facility. R-2530B will include a 23-foot raised median from NC 740 to SR 1731 (Sweet Home Church Road) and transition to a 46-foot depressed median from east of SR 1731 to the Pee Dee River in Stanly County. Project R-2530B will also involve a superstreet design in the areas where curb and gutter is proposed. TIP project B-4974 involves rehabilitating existing Bridge No. 51 over the Pee Dee River on the Stanly / Montgomery County line. TIP project R-2527 involves widening existing NC 24-27 from a two-lane facility to a four-lane divided facility with a 46-foot depressed median from the Pee Dee River to the proposed Troy Bypass, west of Troy in Montgomery County. The total length of the proposed project is approximately 14.6 miles long (see Vicinity Map).

The needs to be addressed by the proposed project include improving transportation deficiencies along NC 24-27 in the project study area, replacing the bridge over the Pee Dee River which is structurally deficient and maintaining and improving the mobility and connectivity functions of the NC 24-27 corridor as part of the Strategic Highway Corridor Vision and the North Carolina Intrastate System. A federal Environmental Assessment (EA) is being prepared for this project.

The “Best Fit” alignment alternative was analyzed in the Environmental Assessment (EA) for projects R-2530B and R-2527. This alternative widens NC 24-27 at locations that “best fit” the current road location and surrounding land uses. “Best fit” locations were evaluated and selected to improve the existing road alignment, minimize impacts, and permit maintenance of traffic during construction. Two alternatives were analyzed in the EA for project B-4974. Alternative 1 consists of replacing Bridge No. 51 with a new bridge south of the existing bridges, and Alternative 4 consists of removing the National Register-Eligible Bridge No. 51 and replacing it with a new bridge along the existing roadway alignment.

On November 21, 2013, the Land Trust for Central North Carolina offered to take ownership of Bridge No. 51 once NC 24-27 was widened and a replacement bridge was constructed. On August 18, 2014, the Land Trust for Central North Carolina withdrew their offer due to the additional financial burden specified by state legislation.

A Bridge No. 51 Rehabilitation Alternative was developed for consideration since both B-4974, Alternatives 1 and 4 required removal of Bridge No. 51. This alternative proposed to keep part of the existing National Register-Eligible Bridge No. 51 intact, replace and widen the bridge deck, and rehabilitate the arch ribs and arch piers while preserving the historic and architectural character of the original structure. The rehabilitation alternative is preferred for improving Bridge No. 51.

2. Air Quality Analysis

Air pollution originates from various sources. Emissions from industry and internal combustion engines are the most prevalent sources. The impact resulting from highway

construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), particulate matter, sulfur dioxide (SO₂), and lead (Pb) (listed in order of decreasing emission rate).

The Federal Clean Air Act of 1970 established the National Ambient Air Quality Standards (NAAQS). These were established in order to protect public health, safety, and welfare from known or anticipated effects of air pollutants. The NAAQS contain criteria for SO₂, particulate matter (PM₁₀, 10-micron and smaller, PM_{2.5}, 2.5 micron and smaller), CO, nitrogen dioxide (NO₂), ozone (O₃), and lead (Pb). The National and North Carolina Ambient Air Quality Standards are presented in Table 1.

The primary pollutants from motor vehicles are unburned hydrocarbons (HC), Nitrogen oxides (NO_x), CO, and particulates. HC and NO_x can combine in a complex series of reactions catalyzed by sunlight to produce photochemical oxidants such as O₃ and NO₂. Because these reactions take place over a period of several hours, maximum concentrations of photochemical oxidants are often found far downwind of the precursor sources. These pollutants are regional problems.

Table 1. National and North Carolina Ambient Air Quality Standards (NAAQS)					
Pollutant		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide (CO)		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead (Pb)		primary and secondary	Rolling 3 month average	0.15 µg/m ³ ⁽¹⁾	Not to be exceeded
Nitrogen Dioxide (NO ₂)		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb ⁽²⁾	Annual Mean
Ozone (O ₃)		primary and secondary	8 hours	0.070 ppm ⁽³⁾	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution (PM)	PM _{2.5}	primary	1 year	12.0 µg/m ³	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m ³	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m ³	98th percentile, averaged over 3 years
	PM ₁₀	primary and secondary	24 hours	150 µg/m ³	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO ₂)		primary	1 hour	75 ppb ⁽⁴⁾	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year
<p>(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m³ as a calendar quarter average) also remain in effect.</p> <p>(2) The level of the annual NO₂ standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.</p> <p>(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O₃ standards additionally remain in effect in some areas. Revocation of the previous (2008) O₃ standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.</p> <p>(4) The previous SO₂ standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO₂ standards or is not meeting the requirements of a SIP call under the previous SO₂ standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.</p>					
Source: US EPA, https://www.epa.gov/criteria-air-pollutants/naaqs-table , accessed November 15, 2016.					

3. Attainment Status

The proposed project is located in Stanly and Montgomery Counties, which have been determined to comply with the NAAQS. The proposed project is located in an attainment area; therefore, 40 CFR Parts 51 and 93 are not applicable. The proposed project is not anticipated to create any adverse effects on the air quality of this attainment area.

4. Carbon Monoxide

Automobiles are considered the major source of CO in the project area. In order to determine the ambient CO concentration at a receptor near a highway, two concentration components must be used: local and background. The local concentration is defined as the CO emissions from cars operating on highways in the near vicinity (i.e., distances within 400 feet) of the receptor location. The background concentration is defined by the North Carolina Department of Environmental Quality as "the concentration of a pollutant at a point that is the result of emissions outside the local vicinity; that is, the concentration at the upwind edge of the local sources."

5. Ozone & Oxides

Automobiles are regarded as sources of HC and NO_x. HC and NO_x emitted from cars are carried into the atmosphere where they react with sunlight to form O₃ and NO₂. Automotive emissions of HC and NO_x are expected to decrease in the future due to the continued installation and maintenance of pollution control devices on new cars. However, regarding area-wide emissions, these technological improvements may be offset by the increasing number of cars on the transportation facilities of the area.

The photochemical reactions that form O₃ and NO₂ require several hours to occur. For this reason, the peak levels of ozone generally occur ten to twenty kilometers downwind of the source of HC emissions. Urban areas as a whole are regarded as sources of HC, not individual streets and highways. The emissions of all sources in an urban area mix in the atmosphere, and, in the presence of sunlight, this mixture reacts to form O₃, NO₂, and other photochemical oxidants. The best example of this type of air pollution is the smog that forms in Los Angeles, California.

6. Particulate Matter & Sulfur

Automobiles are not regarded as significant sources of particulate matter (PM) and SO₂. Nationwide, highway sources account for less than seven percent of PM emissions and less than two percent of SO₂ emissions. PM and SO₂ emissions are predominantly the result of non-highway sources (e.g., industrial, commercial, and agricultural). Because emissions of PM and SO₂ from automobiles are very low, there is no reason to suspect that traffic on the proposed project will cause air quality standards for PM and SO₂ to exceed the NAAQS.

This project is within an attainment area for PM_{2.5} and PM₁₀ and does not include significant increases in diesel traffic. Therefore, no quantitative PM_{2.5} or PM₁₀ analysis is required.

7. Lead

Automobiles without catalytic converters can burn regular gasoline. The burning of regular gasoline emits lead as a result of regular gasoline containing tetraethyl lead, which is added by refineries to increase the octane rating of the fuel. Newer cars with catalytic converters burn unleaded gasoline, thereby eliminating lead emissions. Also, the United States Environmental Protection Agency (EPA) has required the reduction in the lead content of leaded gasoline. The overall average lead content of gasoline in 1974 was approximately 0.53 gram per liter. By 1989, this composite average had dropped to 0.003 gram per liter. The Clean Air Act Amendments of 1990 (CAAA) made the sale, supply, or transport of leaded gasoline or lead

additives unlawful after December 31, 1995. Because of these reasons, it is not expected that traffic on the proposed project will cause the NAAQS for lead to be exceeded.

8. Mobile Source Air Toxics (MSAT)

8.1. Background

Controlling air toxic emissions became a national priority with the passage of the CAAA, whereby Congress mandated that the EPA regulate 188 air toxics, also known as hazardous air pollutants. The EPA assessed this expansive list in its 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 part of EPA's Integrated Risk Information System (IRIS).¹ In addition, EPA identified nine compounds with significant contributions from mobile sources that are among the national and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors from the 2011 National Air Toxics Assessment (NATA).² These are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. While FHWA considers these the priority MSAT, the list is subject to change and may be adjusted in consideration of future EPA rules.

8.2. Motor Vehicle Emissions Simulator (MOVES)

According to EPA, MOVES2014 is a major revision to MOVES2010 and improves upon it in many respects. MOVES2014 includes new data, new emissions standards, and new functional improvements and features. It incorporates substantial new data for emissions, fleet, and activity developed since the release of MOVES2010. These new emissions data are for light- and heavy- duty vehicles, exhaust and evaporative emissions, and fuel effects. MOVES2014 also adds updated vehicle sales, population, age distribution, and vehicle miles travelled (VMT) data.

MOVES2014 incorporates the effects of three new Federal emissions standard rules not included in MOVES2010. These new standards are all expected to impact MSAT emissions and include Tier 3 emissions and fuel standards starting in 2017 (79 FR 60344), heavy-duty greenhouse gas regulations that phase in during model years 2014-2018 (79 FR 60344), and the second phase of light duty greenhouse gas regulations that phase in during model years 2017-2025 (79 FR 60344). Since the release of MOVES2014, EPA has released MOVES2014a. In the November 2015 MOVES2014a Questions and Answers Guide,³ EPA states that for on-road emissions, MOVES2014a adds new options requested by users for the input of local VMT, includes minor updates to the default fuel tables, and corrects an error in MOVES2014 brake wear emissions. The change in brake wear emissions results in small decreases in PM emissions, while emissions for other criteria pollutants remain essentially the same as MOVES2014.

Using EPA's MOVES2014a model, as shown in Figure 1, FHWA estimates that even if VMT increases by 45 percent from 2010 to 2050 as forecast, a combined reduction of 91 percent in the total annual emissions for the priority MSAT is projected for the same time period.

¹ <https://www.epa.gov/iris>

² <https://www.epa.gov/national-air-toxics-assessment>

³ <https://www.epa.gov/moves/moves2014a-latest-version-motor-vehicle-emission-simulator-moves>

Diesel PM is the dominant component of MSAT emissions, making up 50 to 70 percent of all priority MSAT pollutants by mass, depending on calendar year. Users of MOVES2014a will notice some differences in emissions compared with MOVES2010b. MOVES2014a is based on updated data on some emissions and pollutant processes compared to MOVES2010b, and also reflects the latest Federal emissions standards in place at the time of its release. In addition, MOVES2014a emissions forecasts are based on lower VMT projections than MOVES2010b, consistent with recent trends suggesting reduced nationwide VMT growth compared to historical trends.

8.3. 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 arise on highway projects during the National Environmental Policy Act (NEPA) process. Even as the science emerges, the public and other agencies expect FHWA to address MSAT impacts in its 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.

8.4. NEPA Context

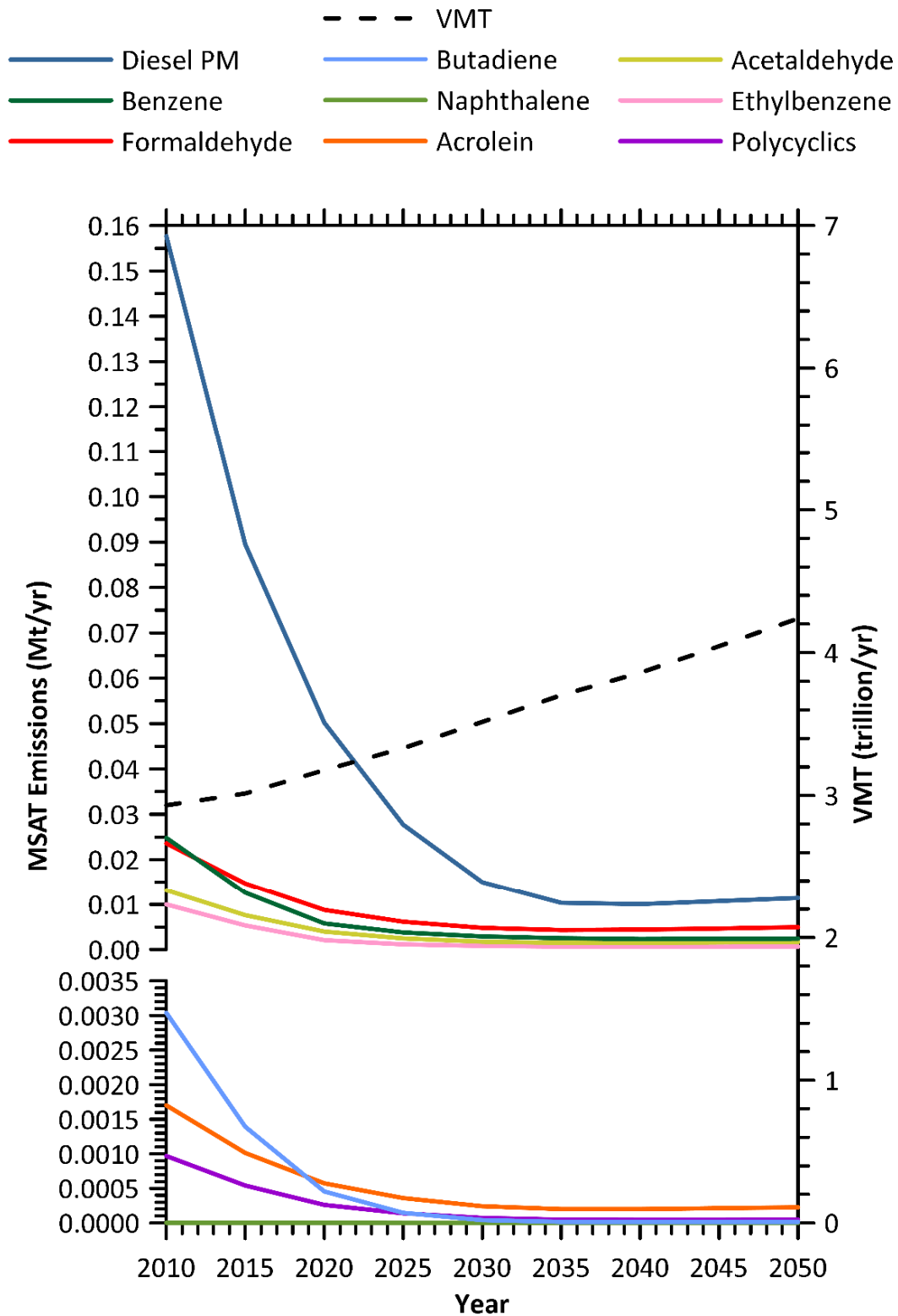
The NEPA requires, to the fullest extent possible, that the policies, regulations, and laws of the Federal Government be interpreted and administered in accordance with its environmental protection goals, and that Federal agencies use an interdisciplinary approach in planning and decision-making for any action that adversely impacts the environment (42 U.S.C. 4332). In addition to evaluating the potential environmental effects, FHWA must also take into account the need for safe and efficient transportation in reaching a decision that is in the best overall public interest (23 U.S.C. 109(h)). The FHWA policies and procedures for implementing NEPA are contained in regulation at 23 CFR Part 771.

8.5. Consideration of MSAT in NEPA Documents

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

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

For projects warranting MSAT analysis, all nine priority MSAT should be considered.



Source: EPA MOVES2014a.

Figure 1. National MSAT Emission Trends 2010 - 2050 for Vehicles Operating on Roadways Using EPA's MOVES2014a Model

(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;
- Projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; and
- Other projects with no meaningful impacts on traffic volumes or vehicle mix.

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

FHWA anticipates that most highway projects that need an MSAT assessment will fall into this category. Examples of these types of projects are minor widening projects; new interchanges; replacing a signalized intersection on a surface street; and 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 should 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 should 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 NEPA document 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), this discussion 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. FHWA expects 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 PM 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 150,000⁴ or greater by the design year;

And also

- Be proposed to be located in proximity to populated areas.

Projects falling within this category should be more rigorously assessed for impacts. If a project falls within this category, the project sponsor should contact the Office of Natural Environment (HEPN) and the Office of Project Development and Environmental Review (HEPE) in FHWA Headquarters for assistance in developing a specific approach for assessing impacts. This approach would include 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 the assistance outlined above.

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.

The project sponsor should also consult with HEPN and HEPE if a project does not fall within any of the types of projects listed in Category (3) above, but may have the potential to substantially increase future MSAT emissions.

Projects R-2530B, B-4974 and R-2527 fall under Category (1) because the projects have no meaningful impact on traffic volumes or vehicle mix. The project's Design Year traffic ranges from 10,500 to 20,500 vehicles per day (VPD) along NC 24-27 under both the No-Build and Build conditions.

The purpose of this project is to improve transportation deficiencies along NC 24-27 in the project study area, rehabilitate the bridge over the Pee Dee River which is structurally deficient and maintaining and improving the mobility and connectivity functions of the NC 24-27 corridor as part of the Strategic Highway Corridor Vision and the North Carolina Intrastate System by widening NC 24-27 to a four lane divided facility and rehabilitating Bridge No. 51 over the Pee Dee River. This project has been determined to generate minimal

⁴ Using EPA's MOVES2014a emissions model, FHWA determined that this range of AADT would result in emissions significantly lower than the Clean Air Act definition of a major hazardous air pollutant (HAP) source, i.e., 25 tons/yr. for all HAPs or 10 tons/yr. for any single HAP. Variations in conditions such as congestion or vehicle mix could warrant a different range for AADT.

air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the no-build alternative.

Moreover, Environmental Protection Agency (EPA) regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050 while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

9. Construction Air Quality

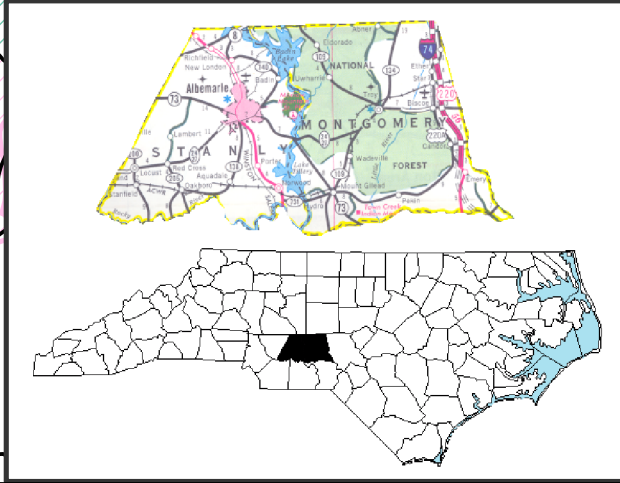
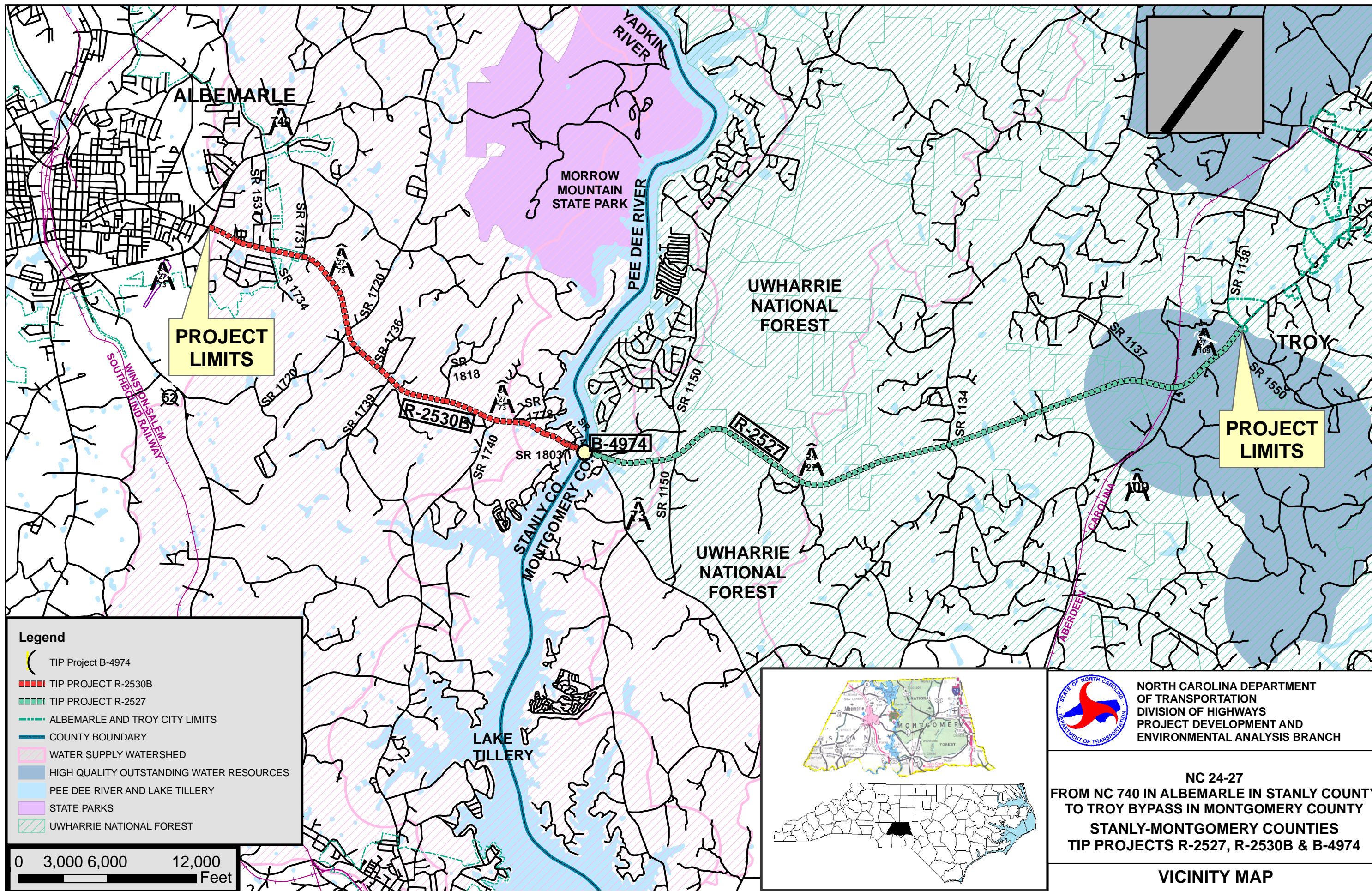
Air Quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. During construction of the proposed project, all materials resulting from clearing and grubbing, demolition or other operations will be removed from the 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 State Implementation Plan (SIP) for air quality in compliance with 15A NCAC 2D.1903. 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.

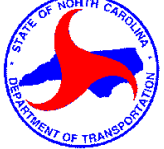
During construction, measures will be taken to reduce the dust generated by construction, by wet suppression or equivalent, when the control of dust is necessary for the protection and comfort of motorists or area residents.

10. 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 proposed project is located in Stanly and Montgomery Counties, which comply with the NAAQS. Therefore, the project 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. No additional reports are necessary.





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

NC 24-27
FROM NC 740 IN ALBEMARLE IN STANLY COUNTY
TO TROY BYPASS IN MONTGOMERY COUNTY
STANLY-MONTGOMERY COUNTIES
TIP PROJECTS R-2527, R-2530B & B-4974

VICINITY MAP