STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

February 28, 2023

Eric Alsmeyer
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SUBJECT: **Application for an Individual Section 404 and Section 401 Water Quality Certification Version 2** for the proposed widening of US 158 from the 4-lane roadway north of I-40 in Forsyth County to US 220 in Guilford County (TIP No. R-2577ABC), Divisions 7 and 9. Debit $570 from WBS 37405.1.1

Dear Mr. Alsmeyer,

This revised permit application replaces the previous application submitted on January 27th, 2023. This revised application incorporates revisions resulting in additional impacts at Permit Site 6 (A through D). These revisions affected multiple sections and tables throughout the previous application which have been updated with this submittal.

The North Carolina Department of Transportation (NCDOT) proposes to improve US 158 (Reidsville Road) from the four-lane roadway north of US 421/I-40 Business in Winston-Salem (Forsyth County) to US 220 (I-73) in Stokesdale (Guilford County) for a total length of approximately 18.8 miles. The project proposes to widen the existing two-lane, two-way roadway to a multi-lane, median-divided facility, including a new-location section to bypass the existing US 158 alignment in Stokesdale. R-2577 is divided into three sections labeled A, B and C.

This is an application for a phased project. Enclosed you will find the project map for locations of all sections in this phased application. Please see the enclosed ENG 4345 for all project sections. For sections going to LET within five years, see the attached North Carolina Division of Mitigation Services (NCDMS) acceptance letter for R-2577A and the attached Stream Mitigation Summary for that section. Please see the attached meeting

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minutes for Concurrence Points 4B and 4C, State Stormwater Management Plans (SMP), final permit drawings for section R-2577A, and final roadway design plans for R-2577A.

Also, attached are the preliminary impact maps for all sections in the preliminary design stage (R-2577B & C). See Tables 1, 2, and 3 for summary of impacts. See Table 4 for descriptions of section limits.

Table 1. Summary of Water Resources Impacted

Section	Design Stage	Proposed Let	Total # Wetlands Impacted	Total # Streams Impacted
R-2577A	Final	December 2023	2	7
R-2577B	Preliminary	Post Year	9	10
R-2577C	Preliminary	Post Year	13	13
Totals			**24**	**30**

Table 2. Summary of Wetland Impacts

Section	Design Stage	Wetland Impact Area (ac)	Impacts Requiring Mitigation (ac)
R-2577A	Final	0.06	0.06
R-2577B	Preliminary*	0.32	0.32
R-2577C	Preliminary*	1.36	1.36
Total		**1.74**	**1.72**

*Preliminary impacts were determined by measuring 25' outside of preliminary slope stake lines, and all impacts are assumed to require mitigation.

Table 3. Summary of Stream Impacts

Section	Design Stage	Stream Impact Length (lf)	DWR	USACE	Impacts Requiring Mitigation (lf)
R-2577A	Final	1,632	331	1,632	1,202
R-2577B	Preliminary*	2,210	146	2,210	2,210
R-2577C	Preliminary*	4,179	850	4,179	4,179
Total		**8,021**	**1,327**	**8,021**	**7,591**

*Preliminary impacts were determined by measuring 25' outside of preliminary slope stake lines, and all impacts are assumed to require mitigation.

Purpose and Need:

The purpose of the project is to improve the traffic carrying capacity and level of service (LOS) along US 158 within the project limits. The project is needed to correct existing transportation deficiencies along this section of US 158 that cause additional travel delays, increase the potential for accidents, and contribute to the inefficient operation of motor vehicles.

Alternatives Considered:

Sections A and B were divided into a total of seven widening option segments. Three widening options were considered for each segment: northern widening, southern widening, and transitional "best-fit" widening. The alternatives examined by the Merger Team are further detailed in the State EA-FONSI attached. The Merger Team, consisting of federal, state, and local resource and permitting agency representatives, narrowed these

options down to a single, preferred widening option for each of the seven segments. In Section C, six new-location alternatives and one improve-existing alternative were originally considered in the vicinity of Stokesdale. Two of the new-location alternatives were carried forward for detailed study. These bypass alternatives were Alternative 2, a southern bypass of the Stokesdale town center, and Alternative 3, a northern bypass of the Stokesdale town center.

NCDOT LEDPA/Selected Alternative:

NCDOT and the Merger Team concurred on the Least Environmentally Damaging Practicable Alternative (LEDPA) as a combination of northern and transitional widening options in Sections A and B. NCDOT and the Merger Team selected Alternative 3, the northern bypass, for Section C.

Summary of Jurisdictional Impacts:

The preliminary proposed impacts for the overall project (TIP Nos. R-2577ABC) will be approximately 1.72 acres of permanent wetland impacts and 7,591 linear feet of permanent stream impacts. A total of the individual water resources impacted by each section can be found in Table 1. Reference Tables 2 and 3 for a breakdown of impacts by section.

The impacts reported in this Individual Permit Application for R-2577 Section A are based on final design plans. The proposed impacts for the remaining project sections were determined by offsetting preliminary slope stake lines outward 25 feet on both sides of the alignment and counting impacts to all jurisdictional features within the resulting area. As the final design is completed for each of the remaining sections, impacts will be updated, and permit modification requests will be submitted, as necessary.

Summary of Utility Impacts:

There will be no impacts associated with utility relocations for R-2577A. For sections B and C, the utility relocations will be determined during final design.

Summary of Mitigation:

The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the State Environmental Policy Act (SEPA) and design processes. However, project impacts will necessitate compensatory mitigation for the unavoidable impacts. Mitigation for R-2577A (final design) has been approved by the Division of Mitigation Services (DMS) for impacts to wetlands and streams. Additional mitigation for stream impacts for R-2577A has been debited from Brushy Mountain Mitigation Site and Little Peters Creek Mitigation Site. See Tables 2 and 3 for a summary of impacts and Table 12 for a summary of proposed mitigation. These mitigable impacts include 7,591 linear feet of permanent stream impact and 1.72 acres of permanent wetland impact. It has been determined that onsite mitigation is not an option for this project. R-2577B and R-2577C are due to let post year, therefore no mitigation is proposed for these sections at this time.

SEPA DOCUMENT STATUS

A State Environmental Assessment Finding of No Significant Impact (State EA-FONSI) was approved for this project on December 13, 2018.

In compliance with the SEPA/404 Merger Process, Concurrence Point 4B and 4C were reached for R-2577A on June 12, 2019, and November 20, 2019, respectively.

PROJECT SCHEDULE

The project will be permitted in phases due to project size, funding and STIP schedule. Table 4 describes the proposed project sections and phasing. Permit modification requests will be submitted as the final design is completed for each of the remaining sections according to the phasing dates provided in Table 4.

Table 4. Project Phasing for the Widening of US 158

Section	Approximate Section Limits	Approximate Length (mi)	Construction Letting
R-2577A	Begins at Old Greensboro Road in Winston-Salem and extends to Belews Creek Road (SR 1965) in Forsyth County	**5.6**	March 2024
R-2577B	Begins at Belews Creek Road (SR 1965) in Forsyth County and extends to Anthony Road (SR 2034) in Guilford County	**7.1**	Post Year
R-2577C	Begins at Anthony Road (SR 2034) in Guilford County and extends to the junction of US 158 and US 220 (I-73) in Stokesdale, including a new location bypass section of existing US 158 through Stokesdale	**6.1**	Post Year

INDEPENDENT UTILITY

The subject project has characteristics of independent utility:

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope,
(2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;
(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Waters within the project area are located in the Cape Fear River Basin (HUC 03030002), Roanoke River Basin (HUC 03010103) and Yadkin River Basin (HUC 03040101). There are six (6) named streams (see Table 5 – Project Area Streams) and their associated unnamed tributaries within the project limits. There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply Waters (WS-I or WS-II) waters within 1.0 mile of the project area.

Jurisdictional Determination:
An updated Preliminary Jurisdictional Determination (PJD) was obtained from Nicole Braspennickx (USACE) on November 26, 2018, for R-2577 - Sections A, B and C. John Thomas (USACE) and Amy Euliss (NCDWR) attended the field visits on January 10, 2012 and February 1, 2012. Jurisdictional calls for an updated PJD for the R-2577 project were obtained on November 26, 2018.

303(d) Impaired Waters:
No streams are listed for turbidity or sediment on the North Carolina 2022 Final 303(d) list of impaired waters.

Table 5. Project Area Streams

Stream Name	Stream Index Number	Best Usage Class	Description
Cape Fear River Basin HUC 03030002			
Troublesome Creek	16-6-(0.3)	WS-III, NSW	From source to Rockingham County SR 2423
Roanoke River Basin HUC 03010103			
Kings Creek	22-27-8-3	B	From source to East Belews Creek Arm of Belews Lake
Belews Creek	22-27-(2)	C	From Town of Kernersville Water Supply Dam to Forsyth County SR 1966 Extension
Left Fork Belews Creek	22-27-5	C	From source to Belews Creek
Yadkin River Basin HUC 03040101			
Martin Mill Creek	12-94-12-3-1	WS-III	From source to Lowery Mill Creek
Lowery Mill Creek	12-94-12-3-(0.5)	WS-III	From source to a point 0.6 mile upstream of mouth

IMPACTS TO WATERS OF THE U.S.

Tables 6, 7 and 8 summarize the impacts to jurisdictional water resources for the final design of R-2577A. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream and wetland numbers correspond to the NRTR. A brief description of each impact site will follow the tables.

Table 6. R-2577A Wetland Impacts within the Yadkin Basin (03040101)

Permit Site	Wetland ID	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Excavation	Mechanized Clearing (ac)[1]	Impacts Requiring Mitigation[1,2]
5B	WHP	0.09	0.02	<0.01	0.02	0.04
5C	WHQ	0.02	0.02	--	--	0.02
Total Impacts			**0.04**	**<0.01**	**0.02**	**0.06**

[1] Impacts less than 0.005 are rounded down for totals [2]Mitigation will be provided by DMS

Table 7. R-2577A Stream Impacts within the Yadkin Basin (03040101)

Permit Site	Stream Name (P/I)*	Stream ID	Impact Type	Permanent Impact (lf)	Temporary Impact (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
1A	UT to Lowery Mill Creek (P)	SFC	Channel Armoring	25	22	25	--
1B	UT to Lowery Mill Creek (P)	SFC	Perm. Fill (72" RCP)	84	--	84	--
1C	UT to Lowery Mill Creek (P)	SFC	Perm. Fill	58	--	58	--
1D	UT to Lowery Mill Creek (P)	SFC	Perm. Fill (72" RCP)	77	--	77	--
1E	UT to Lowery Mill Creek (P)	SFC	Channel Armoring	24	22	24	--
2A	UT to Lowery Mill Creek (P)	SFB	Bank Stabilization	13	14	--	--
2B	UT to Lowery Mill Creek (P)	SFB	Channel Armoring	20	--	20	--
2C	UT to Lowery Mill Creek (P)	SFB	Perm Fill (6'X6' RCBC)	81	--	81	--
2D	UT to Lowery Mill Creek (P)	SFB	Perm Fill (6'X6' RCBC)	86	--	86	--
2E	UT to Lowery Mill Creek (P)	SFB	Channel Armoring	15	26	15	--

Table 7. Continued

Permit Site	Stream Name (P/I)*	Stream ID	Impact Type	Permanent Impact (lf)	Temporary Impact (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
3A	UT to Lowery Mill Creek (I)	SFA	Channel Armoring	29	9	29	--
3B	UT to Lowery Mill Creek (I)	SFA	Perm. Fill (60" RCP)	30	--	30	--
3C	UT to Lowery Mill Creek (I)	SFA	Perm Fill (60" RCP)	27	--	27	--
3D	UT to Lowery Mill Creek (I)	SFA	Bank Stabilization	63	--	--	--
4A	Lowery Mill Creek (P)	SEW	Bank Stabilization	114	--	--	--
4B	Lowery Mill Creek (P)	SEW	Bank Stabilization	88	--	--	--
5A	UT to Martin Mill Creek (P)	SET	Perm. Fill/ Channel Change	331	14	331	331
6A	Martin Mill Creek (P)	SES	Channel Armoring	24	6	24	--
6B	Martin Mill Creek (P)	SES	Perm. Fill (5'X5' RCBC) upstream	26	--	26	--
6C	Martin Mill Creek (P)	SES	Perm. Fill (5'X5' RCBC) downstream	56	--	56	--
6D	Martin Mill Creek (P)	SES	Channel Armoring	31	10	31	--
			Total Temporary Impacts	--	123		
			Total Permanent Impacts (Including Bank Stabilization):	1302			
			Bank Stabilization Impacts:	278			
			Total Impacts Requiring Mitigation:	**1,024 lf****			

*P = Perennial; I = Intermittent

1/ - Stream ID corresponds to R-2577ABC PJD labeling; **2/** - USACE stream mitigation is typically at a ratio of 2:1; **3/** Impacts to SFA are proposed at a ratio of 1:1 due to a rating of Low on NCSAM for 86 lf of permanent impact

** - Final mitigation requirement will be determined by USACE and DWR. Mitigation for stream impacts of 1,024 lf is offered with 86 lf at 1:1 ratio & 938 lf at 2:1 ratio from Brushy Mountain mitigation site.

Table 8. R-2577A Stream Impacts within the Roanoke Basin (03010103)

Permit Site	Stream Name (P/I)*	Stream ID	Impact Type	Permanent Impact (lf)	Temporary Impact (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
7A	Left Fork Belews Creek (I)	SEL	Perm Fill (48" RCP)	178	--	178	--
7B	Left Fork Belews Creek (I & P)	SEL	Bank Stabilization	16	13	--	--
			Total Temporary Impacts	--	13		
			Total Permanent Impacts (Including Bank Stabilization):	194			
			Bank Stabilization Impacts:	16			
			Total Impacts Requiring Mitigation:	**178 lf****			

*P = Perennial; I = Intermittent
1/ - Stream ID corresponds to R-2577ABC PJD labeling; **2/** - USACE stream mitigation is typically at a ratio of 2:1;
** - Final mitigation requirement will be determined by USACE and DWR. Mitigation for stream impacts of 178 lf is offered with at 2:1 ratio with 47.5 lf from DMS and 130.5 lf from Little Peters Creek mitigation site.

Permit Site 1A: There will be 47 lf of impacts to Stream SFC, 22 lf will be temporary and 25 lf will be permanent. The impacts are the result of armoring the channel to achieve post construction stability.

Permit Site 1B: There will be 84 lf of permanent impacts to Stream SFC. The impacts are the result of the installation of an inlet structure and 72-inch reinforced concrete pipe (RCP), and roadway fill.

Permit Site 1C: There will be 58 lf of permanent impacts to Stream SFC. The impacts are the result of roadway fill.

Permit Site 1D: There will be 77 lf of permanent impacts to Stream SFC. The impacts are the result of the installation of an outlet structure and 72-inch RCP, and roadway fill.

Permit Site 1E: There will be 46 lf of impacts to Stream SFC, 22 lf will be temporary and 24 lf will be permanent. The impacts are the result of armoring the channel to achieve post-construction stability.

Permit Site 2A: There will be 27 lf of impacts to Stream SFB, 14 lf will be temporary and 13 lf will be permanent. The impacts are the result of bank stabilization to achieve post-construction stability.

Permit Site 2B: There will be 20 lf of permanent impacts to Stream SFB. The impacts are the result of armoring the channel bed and bank to achieve post-construction stability.

Permit Site 2C: There will be 81 lf of permanent impacts to Stream SFB. The impacts are the result of the upstream extension of an inlet structure for a 6-foot by 6-foot reinforced concrete box culvert (RCBC).

Permit Site 2D: There will be 86 lf of permanent impacts to Stream SFB. The impacts are the result of the downstream extension of an inlet structure for a 6-foot by 6-foot reinforced concrete box culvert (RCBC).

Permit Site 2E: There will be 41 lf of impacts to Stream SFB, 26 lf will be temporary and 15 lf will be permanent. The impacts are the result of armoring channel bed and bank to achieve post-construction stability.

Permit Site 3A: There will be 38 lf of impacts to Stream SFA, 9 lf will be temporary and 29 lf will be permanent. The impacts are the result of armoring the channel to achieve post-construction stability.

Permit Site 3B: There will be 30 lf of permanent impacts to Stream SFA. The impacts are the result of the installation of an inlet structure, 60-inch RCP, and roadway fill.

Permit Site 3C: There will be 27 lf of permanent impacts to Stream SFA. The impacts are the result of the installation of an inlet structure, 60-inch RCP, and roadway fill.

Permit Site 3D: There will be 63 lf of permanent impacts to Stream SFA. The impacts are the result of bank stabilization associated with the 60-inch RCP.

Permit Site 4A: There will be 114 lf of permanent impacts to Stream SEW. The impacts are the result of upstream bank stabilization associated with a new dual bridge replacing an existing 3-barrel RCBC.

Permit Site 4B: There will be 88 lf of permanent impacts to Stream SEW. The impacts are the result of downstream bank stabilization associated with a new dual bridge replacing an existing 3-barrel RCBC. The rip rap channel is not part of the impacts at this site. It was previously impacted by the culvert.

Permit Site 5A: There will be 345 lf of impacts to Stream SET, 14 lf will be temporary and 331 lf will be permanent. The impacts are to the perennial section of SET due to roadway fill and channel change.

Permit Site 5B: There will be a 0.02-ac permanent impact to Wetland WHP. This impact involves <0.01 ac of excavation in the wetland and 0.02 ac of mechanized clearing in the wetland. The impacts are the result of roadway fill and channel change.

Permit Site 5C: There will be a 0.02-ac (total take) impact to Wetland WHQ. This impact does not involve wetland excavation or mechanized clearing in the wetland. The impacts are the result of roadway fill and channel change.

Permit Site 6A: There will be 30 lf of impacts to Martin Mill Creek (SES), 6 lf will be temporary and 24 lf will be permanent. The impacts are the result of armoring the channel to achieve post-construction stability.

Permit Site 6B: There will be 26 lf of permanent impacts to Martin Mill Creek (SES). The impacts are the result of the extension of an inlet structure for a 5-foot by 5-foot reinforced concrete box culvert (RCBC), and installation of a trenchless 48" supplemental pipe.

Permit Site 6C: There will be 56 lf of permanent impacts to Martin Mill Creek (SES). The impacts are the result of the extension of an outlet structure and 5-foot by 5-foot RCBC, and installation of a trenchless 48" supplemental pipe.

Permit Site 6D: There will be 41 lf of impacts to Martin Mill Creek (SES), 10 lf will be temporary and 31 lf will be permanent. The impacts are the result of armoring the channel to achieve post-construction stability.

Permit Site 7A: There will be 178 lf of permanent impacts to the intermittent portion Stream SEL. The impacts are the result of roadway fill and the installation of a 48" reinforced concrete pipe.

Permit Site 7B: There will be 29 lf of impacts to the intermittent and perennial portions of SEL, 13 lf will be temporary and 16 lf will be permanent. The impacts are the result of bank stabilization to achieve post-construction stability.

Pipe Burial

Table 9 includes all cross pipes in jurisdictional streams and proposed burial depth of their inverts.

Table 9. Pipe Invert Burial Depth in Jurisdictional Streams for R-2577A

Pipe Location	Size & Material	Impact Site	Pipe Invert Burial Depth (feet)
-Y9- 15+16 / -L- 101+02	72" Welded Steel	1	0.0
-L- 107+57	6' X 6' RCBC Extension	2	0.0
-Y14- 13+31	60" RCP	3	0.0
-L2- 229+00	5' X 5' RCBC Extension / 48" Welded Steel	6	0.0
-L- 298+04 LT	48" RCP	7	0.0

CONSTRUCTION MORATORIUM

There are no construction moratoria for this project.

FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of October 31, 2022, the USFWS lists five federally protected species for the study area. (Table 10). The U.S. Army Corps of Engineers conducted an informal consultation with the U.S. Fish and Wildlife Service and received concurrence with May Affect Not Likely to Adversely Affect determination for Roanoke logperch on October 11th, 2022.

Summary of Species with Habitat:

Table 10 – ESA federally protected species within the study area*

Scientific Name	Common Name	Federal Status*	Habitat Present	Biological Conclusion	Survey Date
Glyptemys muhlenbergii	bog turtle	T(S/A)	Yes	Not Required	Not Required
Percina rex	Roanoke logperch	E	Yes	MA-NLAA	September 2021
Helianthus schweinitzii	Schweinitz's sunflower	E	Yes	No Effect	October 2021
Isotria medeoloides	small whorled pogonia	T	Yes	No Effect	June 2022
Perimyotis subflavus	tricolored bat	P	Yes	Not Required	Not Required

[1]IPaC data checked on 01/25/2023 and is attached to this document.
T – Threatened, E – Endangered, T(S/A) – Threatened due to similarity of appearance,
P- Proposed Endangered, MA-NLAA - May Affect – Not Likely to Adversely Affect,

Bog turtle
USFWS Recommended Survey Window: April 1 – October 1 (visual surveys); April 1-June 15 (optimal for breeding/nesting); May 1-June 30 (trapping surveys)

Biological Conclusion: Not Required
Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS.

Roanoke logperch
USFWS Optimal Survey Window: year round; April-June (optimal)

Biological Conclusion: May Affect – Not Likely to Adversely Affect
RK&K aquatics biologists conducted a habitat review of the project and determined that habit was present at the Belews Creek/US 158 crossing. A survey was conducted on September 29th, 2021 and Roanoke logperch was not observed. The aquatic species survey report is attached. A review of the NCNHP database updated July 5th, 2022, indicates no records of Roanoke logperch within 1.0 mile of the project study area. Concurrence was received on October 11th, 2022, from the USFWS on the May Affect – Not Likely to Adversely Affect and is attached.

Schweinitz's sunflower
USFWS Optimal Survey Window: late August - October

Biological Conclusion: No Effect

Habitat in the form of roadside rights-of-way, maintained power lines, utility rights-of-way, edges of thickets, and clearings are located throughout the study area. A survey was conducted and Schweinitz's sunflower was not observed. A review of the NCNHP database updated July 5th, 2022, indicates no records of Schweinitz's sunflower within 1.0 mile of the project study area.

Small whorled pogonia
USFWS Optimal Survey Window: mid May - early July

Biological Conclusion: No Effect

Habitat in the form of second to third successional growth mixed-deciduous and open, dry deciduous woods are located throughout the study area. A survey was conducted and Schweinitz's sunflower was not observed. A review of the NCNHP database updated July 5th, 2022, indicates no records of small whorled pogonia within 1.0 mile of the project study area.

Tricolored bat
USFWS Optimal Survey Window: May 15- August 15

Biological Conclusion: Not Required

Species listed as proposed do not require Section 7 consultation with the USFWS. Habitat in the form of trees and culverts are present. A review of the NCNHP database updated July 5th, 2022, indicates no records of tricolored bat within 1.0 mile of the project study area.

INDIRECT CUMULATIVE IMPACT ANALYSIS

The indirect and cumulative effects associated with the proposed project have been identified and assessed in the Land Use Scenario Assessment (LUSA) (NCDOT, 2018). Indirect and cumulative impacts were assessed within the Future Land Use Study Area (FLUSA) by predicting changes in development types within defined probable development areas (PDA) that could result from the proposed project. The LUSA identifies and analyzes three PDAs along US 158. The PDAs were assessed based on scope of development, development intensity, regional population and employment growth, pressure for land development, and planned/managed uses and impacts for both the No-Build and Build scenarios. According to local planners, the areas around PDAs 1 and 3 are expected to develop with or without the project. PDA 2 will develop faster with the project but will likely be equally influenced by the completion of the Winston-Salem Beltway. Qualitative analyses of the probable development patterns in the FLUSA also suggest that cumulative changes in land use resulting from this project, along with subsequent private and public development actions, are not likely to notably increase the area of impervious surfaces over the No-Build scenario.

CULTURAL RESOURCES

This project is subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implemented by the Advisory Council on Historic Preservation regulations for compliance with Section 106, for a licensed or permitted project that has an effect on a property listed on or eligible for listing in the National Register of Historic Places (NRHP).

Historic Resources:
Pursuant to the requirements of Section 106 of the NHPA, an intensive architectural field survey conducted in 2011 identified 390 resources of possible significance within the project study area. These findings were presented to the North Carolina State Historic Preservation Office (SHPO) on January 24, 2012, and 30 resources were identified as meriting further investigation. Additionally, the potential bypass routes around the Stokesdale town center were surveyed in March 2012, and an additional 90 resources were identified. These resources were reviewed with SHPO in May 2012, and it was determined that no further investigation was merited for the additional 90 resources. Of the 30 resources investigated, six were found eligible for NRHP listing. The Stokesdale Commercial Historic District was also determined eligible. Effects consultations between the SHPO and NCDOT were held on July 9, 2013, and September 22, 2015. They determined that the only NRHP-eligible property that would be adversely affected by the project is Edgewood Baptist Church (FY 3292) in Section A. After refinement of the preliminary designs, NCDOT held a meeting with the SHPO on January 8, 2018, and confirmed the historic property boundary for Edgewood Baptist Church. NCDOT agreed to investigate further minimization measures to the church and continue coordinating with the SHPO and the church. After completion of the preliminary design plans, NCDOT held additional coordination with the SHPO to revisit effects to the properties eligible for NRHP on January 9, 2018, and June 12, 2018. An avoidance alternative for the Edgewood Baptist Church vicinity was presented at the meeting in January 2018, which imposed minimal impacts to the church, but would require the relocation of seven residences across US 158 from the church. At the request of the SHPO, NCDOT developed a minimization alternative and presented it to the SHPO in June 2018.

The minimization alternative includes the following:

Edgewood Baptist Church
- Incorporated best-fit widening with a reduced median (23 feet instead of 30 feet) and a retaining wall in front of the church to minimize impacts to both the church and the residences located across from the church; will not require relocations of residences across from the church but will result in the loss of some parking spaces in front of the church and will require the church sign (two if needed) to be relocated.

Bel Air Drive-In Theater
- Minimizes ROW acquisition to the drive-in; preservation of access; no impacts to components; maintains 2:1 side slopes along the parcel.

In a supplemental concurrence form signed November 30, 2022, NCDOT and SHPO agreed that this minimization alternative constitutes no adverse effect to the Edgewood Baptist Church if the specified commitments are met. These commitments include:

- Safety treatments along retaining wall in front (southeast of) church building.
- The rear (northwest side) of the retaining wall facing the church building will be finished with a brick veneer matching the church facade in bond and color. The barrier with moment slab will receive a warm, neutral stain to complement the brick veneer.
- The one-foot-tall fence will be black in color and conform (see design illustrated in the supplemental concurrence form).
- A seven-foot-wide grassed planting strip is also included in the design.
- The structure will not compromise any contributing element of the historic property.
- The driveway on Churchland Drive will be relocated further from the Reidsville Road intersection per request of the church. New location is at similar grade to existing.
- Temporary construction easement will be shifted northwest and existing driveway removed (see attached aerial in the supplemental concurrence form).
- Driveway relocation will not impact any contributing element of the historic property.

Table 11. Historic Resource Determinations

Section	Historic Resource	National Register Status	Effect
R-2577A	Edgewood Baptist Church	Determined Eligible, Criterion C, Criteria Considerations A & G	No Adverse Effect with Commitments
R-2577C	D.A. Jones House	Determined Eligible Criterion C	No Effect
R-2577C	Taylor-Edward House	Determined Eligible Criterion C	No Effect
R-2577C	Bi-Rite Supermarket	Determined Eligible Criterion A & C	No Effect
R-2577C	Wray House	Determined Eligible Criterion C	No Effect
R-2577A	Bel Air Drive-In Theater	Determined Eligible Criterion A	No Adverse Effect with Commitments
R-2577C	Stokesdale Commercial Historic District	Determined Eligible Criterion A & C	No Effect

Archaeological Resources:
NCDOT conducted an intensive archaeological survey and evaluation for the proposed widening and improvement of US 158. The survey identified 32 isolated finds and 34 archaeological sites. The 32 isolated finds have no information potential and are recommended not eligible for the NRHP under any of the four criteria. The 34 archaeological sites included one historic burial, 22 historic sites, one prehistoric site, and 10 multicomponent sites. All 34 sites are recommended not eligible for the NRHP under any of the four criteria. Site 31GF514** includes two human graves. Located in Section C, with the two graves outside of the construction footprint, but straddling both alternatives within the overall project study area. Although the site is not eligible for the NRHP, it should be avoided during any construction activities. If the gravesites cannot be avoided, the Office of State Archaeology (OSA) will make the determination as to how the removal and relocation of the gravesites be treated, i.e. by following either NC General Statute (GS) 65 or NC GS 70, Article 3. If treated under GS 65, removal and relocation will be handled by the NCDOT Right-of-Way Office. If treated under GS 70, Article 3, removal, and relocation will be handled by the NCDOT Archaeology Group in consultation with the Right-of-Way Office, next of kin, and the OSA.

Tribal Coordination:
Coordination with the Catawba was completed on April 21, 2020, the Catawba identified no immediate concerns regarding traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the project area. The Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.

FEMA COMPLIANCE

Forsyth and Guilford counties are participants in the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA). This project will involve construction activities on or adjacent to FEMA regulated streams. Based on the most current information available from the North Carolina Floodplain Mapping Program (NCFMP), the project will cross Lowery Mill Creek, Belews Creek, and Belews Lake, all of which have an associated 100-year floodplain. Additionally, the project will cross a regulatory floodway at Lowery Mill Creek and Belews Creek. The Hydraulics Unit will coordinate with the NCFMP to determine the status of the project with regard to applicability of the NCDOT Memorandum of Agreement with the NCFMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, engineers from NCDOT Divisions 7 and 9 shall submit sealed as-built construction plans to the NCDOT Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankments located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

WILD AND SCENIC RIVER SYSTEM

The project will not impact any designated Wild and Scenic Rivers, or any rivers included in the list of study rivers (Public Law 90-542, as amended).

MITIGATION OPTIONS

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

Avoidance and Minimization:
NCDOT has avoided impacting many wetlands and streams and reduced impacts to wetlands and streams to the greatest extent practicable. Wetland impacts have been kept to a minimum by avoiding ditching and channelization through wetlands. Existing drainage patterns to the wetlands have been kept to the extent practicable to maintain the hydrology feeding the wetlands. Other specific examples of avoidance and minimization measures include:

- Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to receiving streams and wetlands due to erosion and runoff.
- Drainage outfalls along the project have been analyzed to verify stability and outlet protection has been incorporated into the design for all proposed drainage improvements.
- Multiple proposed culverts utilize junction boxes to dissipate energy, reduce the slope of the pipe and provide reduced outlet velocity to the stream bed and bank.
- Additionally, rip rap channel stabilization has been provided at the outlets of large culverts where appropriate to reduce the threat of erosion.
- Rip rap bank stabilization has been provided where appropriate to promote bank stability.
- Storm drainage systems were discharged outside of jurisdictional features where practicable.
- Existing culverts at the following locations will be replaced with dual bridges:
    - Lowery Mill Creek – proposed bridge lengths of 85’
    - Belews Creek – proposed bridge lengths of 110’
- Bridge 164 over Belews Lake will be replaced with dual bridges (100’) and the vertical alignment has been adjusted at Belews Lake crossing (raised 4’).
- Side slopes will be reduced from 6:1 to 2:1, where possible and without requiring the installation of guardrail, to further minimize stream and wetland impacts:
    - R-2577 A&B an estimated reduction of 96 LF of overall stream impacts
    - R-2577 A&B segment 3 transitional widening
      an estimated reduction of 101 LF of stream impacts
    - R-2577C an estimated reduction of 21 LF of stream impacts

- Additional minimization measures for non-jurisdictional resources have been incorporated into the preliminary design plans
- Edgewood Baptist Church (eligible for National Register of Historic Places [NRHP]) – minimized impacts to church and residences across the street:
    - shifted alignment slightly to the south
    - reduced median width to 23'
    - tightened side slopes to 2:1
    - proposed retaining wall in front of church parking lot
- Drive-In Movie Theater (eligible for NRHP) tightened side slopes to reduce Impacts
- North of NC-66 the project incorporates the Design Standards for Sensitive Watersheds (DSSW) [15A NCAC 04B .0124(a)-(e). As a effort to avoid impacts to the Roanoke log perch.

Compensatory Mitigation:

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. Tables 2 and 3 summarize the wetland and stream impacts for each section of this project. This project will permanently impact 1.72 acres of wetlands and 8,032 linear feet of streams.

At this time, DMS will provide compensatory mitigation for wetlands in R-2577A. For stream mitigation, NCDOT acquired mitigation credits from DMS, Brushy Mountain Mitigation Site, and Little Peters Creek Mitigation Site. DMS will provide 95 credits for stream impacts in the Roanoke River Basin Cataloging Unit (03010103). Brushy Mountain Mitigation Site located in western North Carolina and is sponsored by Restoration Systems. The site is located on Macemore Road, three miles south of Elkin, in Yadkin County, North Carolina. This site is within the Yadkin River Basin Cataloging Unit (03040101) and will be used to offset impacts associated projects for NCDOT. To offset impacts associated with R-2577A, Restoration Systems will be debiting Brushy Mountain Mitigation Site for 1,962 linear feet. The Little Peters Creek Mitigation Site is located in Stokes County within the Roanoke River Basin Cataloging Unit (03010103). NCDOT acquired the 720 linear foot stream enhancement site to mitigate for unavoidable, jurisdictional impacts associated with future projects in the Roanoke River Basin. To offset impacts associated with R-2577A, NCDOT will be debiting Little Peters Creek Mitigation Site for 261 linear feet. Project sections R-2577B and R-2577C are not due to let within the next 5 years. Table 12 summarizes the total mitigation provided as 0.12 acres of wetland impacts and 2,318 linear feet of stream impacts. Compensatory mitigation for R-2577B and R-2577C will be provided accordingly during the subsequent permit modifications. These modifications will occur when final designs on the remaining sections have been completed.

Table 12. Summary of Mitigation Provided for Sections Letting within 5 Years

Section	Design Stage	Mitigation Provider	Wetland Impacts Requiring Mitigation (ac)	Stream Impacts Requiring Mitigation (lf)	Buffer Impacts Requiring Mitigation (sqft)
R-2577A	Final	DMS	0.12[1]	95[2]	--
R-2577A	Final	Brushy Mountain Mitigation Site	--	1,962[3]	--
R-2577A	Final	Little Peters Creek Mitigation Site	--	261[4]	--
Total			**0.12**	**2,318**	**--**

[1] Wetlands impacts of 0.06 acres mitigation is offered at a 2:1 ratio
[2] Stream impacts of 47.5 lf is offered at 47.5 lf at 2:1 ratio
[3]Stream impacts of 1,024 lf is offered at 86 lf at 1:1 ratio & 938 lf at 2:1 ratio
[4] Stream impacts of 130.5 lf is offered at 130.5 lf at 2:1 ratio

Explanation of mitigation provided
Section in Final Design (R-2577A)
Sections in Preliminary Design with LET dates are greater than 5 years (R-2577B and R-2577C).

Streams:

Total Project Impacts:	8,021 linear feet
Sections to Let >5 Years	-6,389 linear feet
Bank Stabilization for Final Design	-294 linear feet
Temporary Impacts	-136 linear feet
Balance	**1,202 linear feet**
Yadkin watershed mitigation	1,024 linear feet
Roanoke watershed mitigation	178 linear feet
Cape Fear watershed mitigation	0 linear feet

Wetlands:

Total Project Impacts:	1.74 acres
Sections to Let >5 Years	-1.68 acres
Balance	**0.06 acres**
Yadkin watershed mitigation	0.06 acres
Roanoke watershed mitigation	0 acres
Cape Fear watershed mitigation	0 acres

JORDAN LAKE RIPARIAN BUFFER IMPACTS

The portion of the project subject to the Jordan Lake Riparian Buffer rules is located in Section C and is currently in a preliminary design stage. Impacts to buffers will be determined upon final design.

REGULATORY APPROVALS

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Resources. In compliance with Section 143 215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit application previously noted in the application (see Subject line).

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Amy Euliss at aeuliss@ncdot.gov or (336) 747-7800. A copy of this application and distribution list will also be posted on the NCDOT website at http://connect.ncdot.gov/resources/Environmental/Pages.

Sincerely,

Amy Euliss

Amy Euliss
Division 9 PDEA Engineer

cc: NCDOT Permit Application Standard Distribution List

Attachments:
Project Area Map
ENG Form 4345
NCDMS Acceptance Letter
Brushy Mountain Mitigation Site Letter
Little Peters Creek Mitigation Site Letter
NCSAM Form (SFA)
USFWS IPaC
USFWS Consultation Letter
Concurrence Point 4B/4C Meeting Minutes
Tribal Coordination Documentation
November 2022 Effects Form
SEPA EA/FONSI
Stormwater Management Plan
Permit Drawings
Roadway Right-of-Way Plans
Preliminary Sections Permit Maps
Mailing Labels (Separate Electronic Attachment)

Project Area Map

R-2577ABC

US 158 Widening

STIP PROJECT: R-2577

Legend

- Freeway/Expressway
- Major Thoroughfare
- Minor Thoroughfare
- Proposed/Under Construction
- RailroadTrack
- County Line

Preferred Alternatives

- Project R-2577A
- Project R-2577B
- Project R-2577C

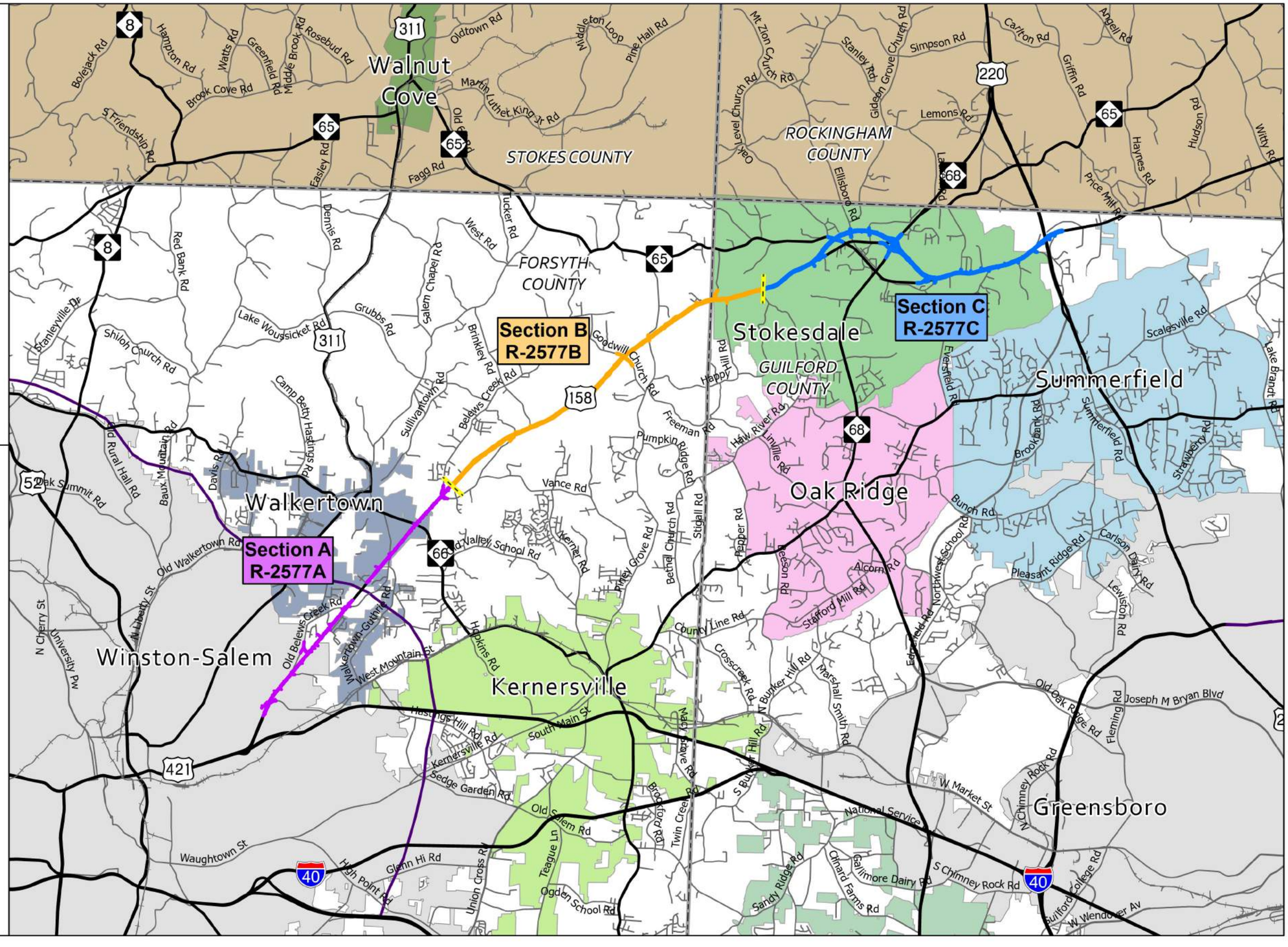
0 2 4 Miles

Schedule

R-2577A -Let Date: December 2023

R-2577B -Let Date: Post Year

R-2577C -Let Date: Post Year



ENG Form 4345

R-2577ABC

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

OMB APPROVAL NO. 0710-0003
EXPIRES: 28 FEBRUARY 2013

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Amy Middle - Last - Euliss	First - Middle - Last -
Company - NC Department of Transportation- Division 9	Company -
E-mail Address - aeuliss@ncdot.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	**9. AGENT'S ADDRESS:**
Address- 375 Silas Creek Parkway	Address-
City - Winston Salem State - NC Zip - 2712 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	**10. AGENTS PHONE NOs. w/AREA CODE**
a. Residence b. Business c. Fax	a. Residence b. Business c. Fax
(336)-747-7800	

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____
SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

R-2577ABC, Widening of US 158

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
See permit cover letter and attachments	Address
15. LOCATION OF PROJECT	City - State- Zip-
Latitude: ◦N See cover leter Longitude: ◦W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address- See attachments

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED
See attachments					

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Amy Eulis — SIGNATURE OF APPLICANT

February 3, 203 — DATE

SIGNATURE OF AGENT — DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address- See attachments

City - State - Zip -

e. Address-

City - State - Zip -

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See attachments					

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27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

NCDMS Acceptance Letter

R-2577ABC

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
MARC RECKTENWALD
Director

NORTH CAROLINA
Environmental Quality

January 23, 2023
Revised

Ms. Amy Euliss
Division 9 PDEA Engineer
North Carolina Department of Transportation
375 Silas Creek Parkway
Winston-Salem, North Carolina 27127-7167

Dear Ms. Euliss:

Subject: Mitigation Acceptance Letter:

R-2577A, US 158 Improvements, Forsyth County, WBS Number 37405.1.1

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory mitigation for the subject project. Based on the information supplied by you on October 3, 2022, and January 12 and 23, 2023, the impacts are located in CU 03010103 of the Roanoke River basin and 03040101 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Roanoke	03010103	CP	0	0	47.500	0	0	0
Impacts	Yadkin	03040101	CP	0	0	0	0.060	0	0

*Some of the stream and/or wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

NCDEQ-DMS will commit to implement sufficient compensatory mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from NCDEQ-DMS.

If you have any questions or need additional information, please contact Beth Harmon at 919-707-8420.

Sincerely,

Elizabeth Harmon

for James B. Stanfill
DMS Deputy Director

cc: Mr. Eric Alsmeyer, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: R-2577A Revised 2

North Carolina Department of Environmental Quality | Division of Mitigation Services
217 West Jones Street | 1652 Mail Service Center | Raleigh, North Carolina 27699-1652
919.707.8976

Brushy Mountain Mitigation Site Letter

R-2577ABC

Brushy Mountain Mitigation Site

NCDOT purchased mitigation credits from Brushy Mountain mitigation site located in western North Carolina and is sponsored by Restoration Systems. The site is located on Macemore Road, three miles south of Elkin, in Yadkin County, North Carolina. This site is within the Yadkin River Basin Cataloging Unit (03040101) and will be used to offset impacts associated projects for NCDOT.

In order to offset unavoidable impacts associated with R-2577A, Restoration Systems will be debiting Brushy Mountain mitigation site for 1,962 linear feet. Impacts along with ratios are shown below in the table.

PO Number	TIP	Debit Amount	Permit Date	Notes	Links
7700002105	B-5825	932		466 ft impacts at 2:1 ratio	
7700002105	R-2577A	1962		86' at 1:1 ratio & 938' @2:1 ratio	

Little Peters Creek Mitigation Site Letter

R-2577ABC

Little Peters Creek Mitigation Site
ONEID 029-005

The Little Peters Creek Mitigation Site is located in Stokes County within the USGS hydrologic unit 03010103 of the Roanoke River. NCDOT acquired the 720 linear foot stream enhancement site to mitigate for unavoidable, jurisdictional impacts associated with future projects in the Roanoke River Basin. Monitoring requirements were performed from 2008 to 2012 and the site was closed out in 2013. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03010103. Table 2 indicates all mitigation debits that have occurred per regulatory agency approval.

In order to offset 130.5 unavoidable impacts associated with R-2577A, the Martin Site/Little Peters Creek will be debited 261 linear feet of stream mitigation. The debit is listed in table 2 below.

Table 1. Mitigation Quantities Approved

HUC	Mitigation Type	Starting Amount (LN Ft.)	Additional Notes
3010103	Stream Enhancement	720	Agencies have lifted the hold.

Table 2. Mitigation Debits

Mitigation Type	DEBIT AMOUNT (LN.Ft)	Status	SITE TIP	Action ID#	Notes
Stream Enhancement	265	Close Out	Bridge #58 on Highway 311 over UT to Dan River (17BP.9.R.5)		Unable to find documentation to confirm debit
Stream Enhancement	194	Close Out	Bridge 103 on Stewart Road (17BP.9.R.22)		Unable to find documentation to confirm debit
Steam Enhancement	130.5	Close Out	R-2577A		130.5 impacts @2:1

NCSAM Form (SFA)

R-2577ABC

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #: NCDWR #:

INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).

PROJECT / SITE INFORMATION:

1. Project name (if any): R-2577 Reverification
2. Date of evaluation: 06/01/18
3. Applicant/owner name: NCDOT
4. Assessor name/organization: P Butler/CEI
5. County: Forsyth
6. Nearest named water body on USGS 7.5-minute quad: Lowery Mill Creek
7. River Basin: Yadkin
8. Site coordinates (decimal degrees, at lower end of assessment reach): 36.1417, -80.1675

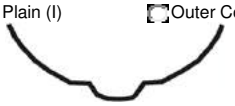
STREAM INFORMATION: (depth and width can be approximations)

9. Site number (show on attached map): SFA Downstream
10. Length of assessment reach evaluated (feet): 100
11. Channel depth from bed (in riffle, if present) to top of bank (feet): 4 ☐ Unable to assess channel depth.
12. Channel width at top of bank (feet): 6
13. Is assessment reach a swamp stream? ☐ Yes ☐ No
14. Feature type: ☐ Perennial flow ☒ Intermittent flow ☐ Tidal Marsh Stream

STREAM RATING INFORMATION:

15. NC SAM Zone: ☐ Mountains (M) ☒ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic valley shape **(skip for Tidal Marsh Stream):** ☒ a (more sinuous stream, flatter valley slope) ☐ b (less sinuous stream, steeper valley slope)





17. Watershed size: **(skip for Tidal Marsh Stream)** ☒ Size 1 (< 0.1 mi²) ☐ Size 2 (0.1 to < 0.5 mi²) ☐ Size 3 (0.5 to < 5 mi²) ☐ Size 4 (≥ 5 mi²)

ADDITIONAL INFORMATION:

18. Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that appy to the assessment area.
- ☐ Section 10 water
- ☐ Classified Trout Waters
- ☑ Water Supply Watershed (☐ I ☐ II ☒ III ☐ IV ☐ V)
- ☐ Essential Fish Habitat
- ☐ Primary Nursery Area
- ☐ High Quality Waters/Outstanding Resource Waters
- ☐ Publicly owned property
- ☐ NCDWR riparian buffer rule in effect
- ☐ Nutrient Sensitive Waters
- ☐ Anadromous fish
- ☐ 303(d) List
- ☐ CAMA Area of Environmental Concern (AEC)
- ☐ Documented presence of a federal and/or state listed protected species within the assessment area. List species:
- ☐ Designated Critical Habitat (list species):

19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ☐ Yes ☒ No

1. Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
- ☐ A Water throughout assessment reach.
- ☐ B No flow, water in pools only.
- ☐ C No water in assessment reach.

2. Evidence of Flow Restriction – assessment reach metric
- ☐ A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
- ☒ B Not A

3. Feature Pattern – assessment reach metric
- ☐ A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
- ☒ B Not A.

4. Feature Longitudinal Profile – assessment reach metric
- ☐ A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
- ☒ B Not A

5. Signs of Active Instability – assessment reach metric
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
- ☐ A < 10% of channel unstable
- ☐ B 10 to 25% of channel unstable
- ☒ C > 25% of channel unstable

6. Streamside Area Interaction – streamside area metric
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
☐ A	☐ A	Little or no evidence of conditions that adversely affect reference interaction
☒ B	☒ B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
☐ C	☐ C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide

7. Water Quality Stressors – assessment reach/intertidal zone metric
Check all that apply.
- ☐ A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
- ☑ B Excessive sedimentation (burying of stream features or intertidal zone)

- ☐ C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- ☐ D Odor (not including natural sulfide odors)
- ☐ E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section.
- ☐ F Livestock with access to stream or intertidal zone
- ☐ G Excessive algae in stream or intertidal zone
- ☐ H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
- ☐ I Other: _____ (explain in "Notes/Sketch" section)
- ☐ J Little to no stressors

8. Recent Weather – watershed metric

For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- ○ A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- ○ B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- ◉ C No drought conditions

9 Large or Dangerous Stream – assessment reach metric

☐ Yes ◉ No Is stream is too large or dangerous to assess? **If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition)**.

10. Natural In-stream Habitat Types – assessment reach metric

10a. ○ Yes ☐ No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- ☐ A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
- ☑ B Multiple sticks and/or leaf packs and/or emergent vegetation
- ☑ C Multiple snags and logs (including lap trees)
- ☑ D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter
- ☐ E Little or no habitat

Check for Tidal Marsh Streams only

- ☐ F 5% oysters or other natural hard bottoms
- ☐ G Submerged aquatic vegetation
- ☐ H Low-tide refugia (pools)
- ☐ I Sand bottom
- ☐ J 5% vertical bank along the marsh
- ☐ K Little or no habitat

**********REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS**********

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. ○ Yes ◉ No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- ☑ A Riffle-run section (evaluate 11c)
- ☑ B Pool-glide section (evaluate 11d)
- ☐ C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffles sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams)**. Not Present (NP) = absent, Rare (R) = present but ≤ 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
◉	☐	☐	☐	☐	Bedrock/saprolite
◉	☐	☐	☐	☐	Boulder (256 – 4096 mm)
☐	☐	◉	☐	☐	Cobble (64 – 256 mm)
☐	☐	◉	☐	☐	Gravel (2 – 64 mm)
☐	☐	◉	☐	☐	Sand (.062 – 2 mm)
☐	◉	☐	☐	☐	Silt/clay (< 0.062 mm)
☐	◉	☐	☐	☐	Detritus
☐	☐	◉	☐	☐	Artificial (rip-rap, concrete, etc.)

11d. ◉ Yes ☐ No Are pools filled with sediment? (**skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**

12. Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

12a. ◉ Yes ☐ No Was an in-stream aquatic life assessment performed as described in the User Manual?
If No, select one of the following reasons and skip to Metric 13. ☐ No Water ☐ Other: _____

12b. ◉ Yes ☐ No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1	>1	Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams.
☐	☐	Adult frogs
☑	☐	Aquatic reptiles
☐	☐	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
☐	☐	Beetles (including water pennies)
☑	☐	Caddisfly larvae (Trichoptera [T])
☐	☐	Asian clam (*Corbicula*)
☐	☐	Crustacean (isopod/amphipod/crayfish/shrimp)
☐	☐	Damselfly and dragonfly larvae
☐	☐	Dipterans (true flies)
☐	☐	Mayfly larvae (Ephemeroptera [E])
☐	☐	Megaloptera (alderfly, fishfly, dobsonfly larvae)
☑	☐	Midges/mosquito larvae
☐	☐	Mosquito fish (*Gambusia*) or mud minnows (*Umbra pygmaea)*
☐	☐	Mussels/Clams (not *Corbicula*)
☐	☐	Other fish
☐	☐	Salamanders/tadpoles
☐	☐	Snails
☐	☐	Stonefly larvae (Plecoptera [P])
☐	☐	Tipulid larvae

☐ ☐ Worms/leeches

13. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB	
☐ A	☐ A	Little or no alteration to water storage capacity over a majority of the streamside area
◉ B	◉ B	Moderate alteration to water storage capacity over a majority of the streamside area
☐ C	☐ C	Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)

14. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB	
☐ A	☐ A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
☐ B	☐ B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
☐ C	☐ C	Majority of streamside area with depressions able to pond water < 3 inches deep

15. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)
Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB	
☐ Y	☐ Y	Are wetlands present in the streamside area?
◉ N	◉ N	

16. Baseflow Contributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
Check all contributors within the assessment reach or within view of and draining to the assessment reach.

- ☑ A Streams and/or springs (jurisdictional discharges)
- ☐ B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
- ☐ C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
- ☐ D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
- ☐ E Stream bed or bank soil reduced (dig through deposited sediment if present)
- ☐ F None of the above

17. Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)
Check all that apply.

- ☐ A Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
- ☐ B Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
- ☐ C Urban stream (≥ 24% impervious surface for watershed)
- ☐ D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
- ☐ E Assessment reach relocated to valley edge
- ☑ F None of the above

18. Shading – assessment reach metric (skip for Tidal Marsh Streams)
Consider aspect. Consider "leaf-on" condition.

- ☐ A Stream shading is appropriate for stream category (may include gaps associated with natural processes)
- ◉ B Degraded (example: scattered trees)
- ☐ C Stream shading is gone or largely absent

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)
Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
☐ A	☐ A	☐ A	☐ A	≥ 100-feet wide or extends to the edge of the watershed
◉ B	☐ B	☐ B	☐ B	From 50 to < 100-feet wide
☐ C	◉ C	☐ C	☐ C	From 30 to < 50-feet wide
☐ D	☐ D	☐ D	◉ D	From 10 to < 30-feet wide
☐ E	☐ E	◉ E	☐ E	< 10-feet wide or no trees

20. Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)
Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB	
☐ A	☐ A	Mature forest
☐ B	☐ B	Non-mature woody vegetation or modified vegetation structure
☐ C	◉ C	Herbaceous vegetation with or without a strip of trees < 10 feet wide
◉ D	☐ D	Maintained shrubs
☐ E	☐ E	Little or no vegetation

21. Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)
Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).
If none of the following stressors occurs on either bank, check here and skip to Metric 22: ☐

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
☐ A	☐ A	☐ A	☐ A	☐ A	☐ A	Row crops
◉ B	☐ B	☐ B	☐ B	☐ B	☐ B	Maintained turf
☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	Pasture (no livestock)/commercial horticulture
☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	Pasture (active livestock use)

22. Stem Density – streamside area metric (skip for Tidal Marsh Streams)
Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB	
☐ A	◉ A	Medium to high stem density
☐ B	☐ B	Low stem density
◉ C	☐ C	No wooded riparian buffer or predominantly herbaceous species or bare ground

23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide.

LB	RB	
☐ A	☐ A	The total length of buffer breaks is < 25 percent.
☉ B	☉ B	The total length of buffer breaks is between 25 and 50 percent.
☐ C	☐ C	The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB	RB	
☐ A	☐ A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
☐ B	☉ B	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
☉ C	☐ C	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. ☐ Yes ☉ No Was a conductivity measurement recorded?
If No, select one of the following reasons. ☐ No Water ☐ Other: _____

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
☐ A <46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230

Notes/Sketch:

NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name	R-2577 Reverification	Date of Evaluation	06/01/18
Stream Category	Pa1	Assessor Name/Organization	P Butler/CEI

Notes of Field Assessment Form (Y/N)	NO
Presence of regulatory considerations (Y/N)	YES
Additional stream information/supplementary measurements included (Y/N)	NO
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)	Intermittent

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	**LOW**	**LOW**
(2) Baseflow	**HIGH**	**HIGH**
(2) Flood Flow	**LOW**	**LOW**
(3) Streamside Area Attenuation	**LOW**	**LOW**
(4) Floodplain Access	**MEDIUM**	**MEDIUM**
(4) Wooded Riparian Buffer	**LOW**	**LOW**
(4) Microtopography	**MEDIUM**	**MEDIUM**
(3) Stream Stability	**MEDIUM**	**MEDIUM**
(4) Channel Stability	**LOW**	**LOW**
(4) Sediment Transport	**MEDIUM**	**MEDIUM**
(4) Stream Geomorphology	**HIGH**	**HIGH**
(2) Stream/Intertidal Zone Interaction	NA	NA
(2) Longitudinal Tidal Flow	NA	NA
(2) Tidal Marsh Stream Stability	NA	NA
(3) Tidal Marsh Channel Stability	NA	NA
(3) Tidal Marsh Stream Geomorphology	NA	NA
(1) Water Quality	**LOW**	**LOW**
(2) Baseflow	**HIGH**	**HIGH**
(2) Streamside Area Vegetation	**LOW**	**LOW**
(3) Upland Pollutant Filtration	**LOW**	**LOW**
(3) Thermoregulation	**MEDIUM**	**MEDIUM**
(2) Indicators of Stressors	**YES**	**YES**
(2) Aquatic Life Tolerance	**MEDIUM**	NA
(2) Intertidal Zone Filtration	NA	NA
(1) Habitat	**LOW**	**LOW**
(2) In-stream Habitat	**MEDIUM**	**MEDIUM**
(3) Baseflow	**HIGH**	**HIGH**
(3) Substrate	**MEDIUM**	**MEDIUM**
(3) Stream Stability	**LOW**	**LOW**
(3) In-stream Habitat	**HIGH**	**HIGH**
(2) Stream-side Habitat	**LOW**	**LOW**
(3) Stream-side Habitat	**LOW**	**LOW**
(3) Thermoregulation	**MEDIUM**	**MEDIUM**
(2) Tidal Marsh In-stream Habitat	NA	NA
(3) Flow Restriction	NA	NA
(3) Tidal Marsh Stream Stability	NA	NA
(4) Tidal Marsh Channel Stability	NA	NA
(4) Tidal Marsh Stream Geomorphology	NA	NA
(3) Tidal Marsh In-stream Habitat	NA	NA
(2) Intertidal Zone Habitat	NA	NA
Overall	**LOW**	**LOW**

NC SAM FIELD ASSESSMENT FORM
Accompanies User Manual Version 2.1

USACE AID #: NCDWR #:

INSTRUCTIONS: Attach a sketch of the assessment area and photographs. Attach a copy of the USGS 7.5-minute topographic quadrangle, and circle the location of the stream reach under evaluation. If multiple stream reaches will be evaluated on the same property, identify and number all reaches on the attached map, and include a separate form for each reach. See the NC SAM User Manual for detailed descriptions and explanations of requested information. Record in the "Notes/Sketch" section if any supplementary measurements were performed. See the NC SAM User Manual for examples of additional measurements that may be relevant.
NOTE EVIDENCE OF STRESSORS AFFECTING THE ASSESSMENT AREA (do not need to be within the assessment area).

PROJECT / SITE INFORMATION:

1. Project name (if any): R-2577 Reverification
2. Date of evaluation: 05/31/18
3. Applicant/owner name: NCDOT
4. Assessor name/organization: J Grubb, P Butler/CEI
5. County: Forsyth
6. Nearest named water body on USGS 7.5-minute quad: Lowery Mill Creek
7. River Basin: Yadkin
8. Site coordinates (decimal degrees, at lower end of assessment reach): 36.1417, -80.1625

STREAM INFORMATION: (depth and width can be approximations)

9. Site number (show on attached map): SFA - Upstream
10. Length of assessment reach evaluated (feet): 100
11. Channel depth from bed (in riffle, if present) to top of bank (feet): .5 ☐ Unable to assess channel depth.
12. Channel width at top of bank (feet): 3-4
13. Is assessment reach a swamp stream? ☐ Yes ☐ No
14. Feature type: ☐ Perennial flow ☒ Intermittent flow ☐ Tidal Marsh Stream

STREAM RATING INFORMATION:

15. NC SAM Zone: ☐ Mountains (M) ☒ Piedmont (P) ☐ Inner Coastal Plain (I) ☐ Outer Coastal Plain (O)
16. Estimated geomorphic valley shape **(skip for Tidal Marsh Stream):** ☒ a (more sinuous stream, flatter valley slope) ☐ b (less sinuous stream, steeper valley slope)
17. Watershed size: **(skip for Tidal Marsh Stream)** ☒ Size 1 (< 0.1 mi²) ☐ Size 2 (0.1 to < 0.5 mi²) ☐ Size 3 (0.5 to < 5 mi²) ☐ Size 4 (≥ 5 mi²)

ADDITIONAL INFORMATION:

18. Were regulatory considerations evaluated? ☒ Yes ☐ No If Yes, check all that appy to the assessment area.
- ☐ Section 10 water
- ☐ Classified Trout Waters
- ☑ Water Supply Watershed (☐ I ☐ II ☒ III ☐ IV ☐ V)
- ☐ Essential Fish Habitat
- ☐ Primary Nursery Area
- ☐ High Quality Waters/Outstanding Resource Waters
- ☐ Publicly owned property
- ☐ NCDWR riparian buffer rule in effect
- ☐ Nutrient Sensitive Waters
- ☐ Anadromous fish
- ☐ 303(d) List
- ☐ CAMA Area of Environmental Concern (AEC)
- ☐ Documented presence of a federal and/or state listed protected species within the assessment area. List species:
- ☐ Designated Critical Habitat (list species):

19. Are additional stream information/supplementary measurements included in "Notes/Sketch" section or attached? ☐ Yes ☒ No

1. Channel Water – assessment reach metric (skip for Size 1 streams and Tidal Marsh Streams)
- ☒ A Water throughout assessment reach.
- ☐ B No flow, water in pools only.
- ☐ C No water in assessment reach.

2. Evidence of Flow Restriction – assessment reach metric
- ☒ A At least 10% of assessment reach in-stream habitat or riffle-pool sequence is adversely affected by a flow restriction or fill to the point of obstructing flow or a channel choked with aquatic macrophytes or ponded water or impounded on flood or ebb within the assessment reach (examples: undersized or perched culverts, causeways that constrict the channel, tidal gates).
- ☐ B Not A

3. Feature Pattern – assessment reach metric
- ☒ A A majority of the assessment reach has altered pattern (examples: straightening, modification above or below culvert).
- ☐ B Not A.

4. Feature Longitudinal Profile – assessment reach metric
- ☐ A Majority of assessment reach has a substantially altered stream profile (examples: channel down-cutting, existing damming, over widening, active aggradation, dredging, and excavation where appropriate channel profile has not reformed from any of these disturbances).
- ☒ B Not A

5. Signs of Active Instability – assessment reach metric
Consider only current instability, not past events from which the stream has currently recovered. Examples of instability include active bank failure, active channel down-cutting (head-cut), active widening, and artificial hardening (such as concrete, gabion, rip-rap).
- ☒ A < 10% of channel unstable
- ☐ B 10 to 25% of channel unstable
- ☐ C > 25% of channel unstable

6. Streamside Area Interaction – streamside area metric
Consider for the Left Bank (LB) and the Right Bank (RB).

LB	RB	
☐ A	☐ A	Little or no evidence of conditions that adversely affect reference interaction
☒ B	☒ B	Moderate evidence of conditions (examples: berms, levees, down-cutting, aggradation, dredging) that adversely affect reference interaction (examples: limited streamside area access, disruption of flood flows through streamside area, leaky or intermittent bulkheads, causeways with floodplain constriction, minor ditching [including mosquito ditching])
☐ C	☐ C	Extensive evidence of conditions that adversely affect reference interaction (little to no floodplain/intertidal zone access [examples: causeways with floodplain and channel constriction, bulkheads, retaining walls, fill, stream incision, disruption of flood flows through streamside area] or too much floodplain/intertidal zone access [examples: impoundments, intensive mosquito ditching]) or floodplain/intertidal zone unnaturally absent or assessment reach is a man-made feature on an interstream divide

7. Water Quality Stressors – assessment reach/intertidal zone metric
Check all that apply.
- ☐ A Discolored water in stream or intertidal zone (milky white, blue, unnatural water discoloration, oil sheen, stream foam)
- ☐ B Excessive sedimentation (burying of stream features or intertidal zone)

- ☐ C Noticeable evidence of pollutant discharges entering the assessment reach and causing a water quality problem
- ☐ D Odor (not including natural sulfide odors)
- ☐ E Current published or collected data indicating degraded water quality in the assessment reach. Cite source in the "Notes/Sketch" section.
- ☐ F Livestock with access to stream or intertidal zone
- ☐ G Excessive algae in stream or intertidal zone
- ☐ H Degraded marsh vegetation in the intertidal zone (removal, burning, regular mowing, destruction, etc.)
- ☑ I Other: Below Road - Salvage Yard (explain in "Notes/Sketch" section)
- ☐ J Little to no stressors

8. Recent Weather – watershed metric

For Size 1 or 2 streams, D1 drought or higher is considered a drought; for Size 3 or 4 streams, D2 drought or higher is considered a drought.

- ☐ A Drought conditions and no rainfall or rainfall not exceeding 1 inch within the last 48 hours
- ☐ B Drought conditions and rainfall exceeding 1 inch within the last 48 hours
- ◉ C No drought conditions

9 Large or Dangerous Stream – assessment reach metric

☐ Yes ◉ No Is stream is too large or dangerous to assess? **If Yes, skip to Metric 13 (Streamside Area Ground Surface Condition)**.

10. Natural In-stream Habitat Types – assessment reach metric

10a. ☐ Yes ☐ No Degraded in-stream habitat over majority of the assessment reach (examples of stressors include excessive sedimentation, mining, excavation, in-stream hardening [for example, rip-rap], recent dredging, and snagging) **(evaluate for size 4 Coastal Plain streams only, then skip to Metric 12)**

10b. **Check all that occur** (occurs if > 5% coverage of assessment reach) **(skip for Size 4 Coastal Plain streams)**

- ☐ A Multiple aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
- ☐ B Multiple sticks and/or leaf packs and/or emergent vegetation
- ☐ C Multiple snags and logs (including lap trees)
- ☐ D 5% undercut banks and/or root mats and/or roots in banks extend to the normal wetted perimeter
- ☑ E Little or no habitat

Check for Tidal Marsh Streams only

- ☐ F 5% oysters or other natural hard bottoms
- ☐ G Submerged aquatic vegetation
- ☐ H Low-tide refugia (pools)
- ☐ I Sand bottom
- ☐ J 5% vertical bank along the marsh
- ☐ K Little or no habitat

**********REMAINING QUESTIONS ARE NOT APPLICABLE FOR TIDAL MARSH STREAMS**********

11. Bedform and Substrate – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

11a. ☐ Yes ◉ No Is assessment reach in a natural sand-bed stream? **(skip for Coastal Plain streams)**

11b. Bedform evaluated. **Check the appropriate box(es).**

- ☑ A Riffle-run section (evaluate 11c)
- ☑ B Pool-glide section (evaluate 11d)
- ☐ C Natural bedform absent **(skip to Metric 12, Aquatic Life)**

11c. In riffles sections, check all that occur below the normal wetted perimeter of the assessment reach – whether or not submerged. **Check at least one box in each row (skip for Size 4 Coastal Plain Streams and Tidal Marsh Streams)**. Not Present (NP) = absent, Rare (R) = present but ≤ 10%, Common (C) = > 10-40%, Abundant (A) = > 40-70%, Predominant (P) = > 70%. Cumulative percentages should not exceed 100% for each assessment reach.

NP	R	C	A	P	
◉	☐	☐	☐	☐	Bedrock/saprolite
◉	☐	☐	☐	☐	Boulder (256 – 4096 mm)
◉	☐	☐	☐	☐	Cobble (64 – 256 mm)
☐	☐	◉	☐	☐	Gravel (2 – 64 mm)
☐	☐	☐	☐	☐	Sand (.062 – 2 mm)
◉	☐	☐	☐	☐	Silt/clay (< 0.062 mm)
◉	☐	☐	☐	☐	Detritus
☐	☐	☐	☐	◉	Artificial (rip-rap, concrete, etc.)

11d. ☐ Yes ◉ No Are pools filled with sediment? (**skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)**

12. Aquatic Life – assessment reach metric (skip for Size 4 Coastal Plain streams and Tidal Marsh Streams)

12a. ◉ Yes ☐ No Was an in-stream aquatic life assessment performed as described in the User Manual?
If No, select one of the following reasons and skip to Metric 13. ☐ No Water ☐ Other: _____

12b. ☐ Yes ◉ No Are aquatic organisms present in the assessment reach (look in riffles, pools, then snags)? If Yes, check all that apply. If No, skip to Metric 13.

1	>1	Numbers over columns refer to "individuals" for size 1 and 2 streams and "taxa" for size 3 and 4 streams.
☐	☐	Adult frogs
☐	☐	Aquatic reptiles
☐	☐	Aquatic macrophytes and aquatic mosses (include liverworts, lichens, and algal mats)
☐	☐	Beetles (including water pennies)
☐	☐	Caddisfly larvae (Trichoptera [T])
☐	☐	Asian clam (*Corbicula*)
☐	☐	Crustacean (isopod/amphipod/crayfish/shrimp)
☐	☐	Damselfly and dragonfly larvae
☐	☐	Dipterans (true flies)
☐	☐	Mayfly larvae (Ephemeroptera [E])
☐	☐	Megaloptera (alderfly, fishfly, dobsonfly larvae)
☐	☐	Midges/mosquito larvae
☐	☐	Mosquito fish (*Gambusia*) or mud minnows (*Umbra pygmaea)*
☐	☐	Mussels/Clams (not *Corbicula*)
☐	☐	Other fish
☐	☐	Salamanders/tadpoles
☐	☐	Snails
☐	☐	Stonefly larvae (Plecoptera [P])
☐	☐	Tipulid larvae

☐ ☐ Worms/leeches

13. Streamside Area Ground Surface Condition – streamside area metric (skip for Tidal Marsh Streams and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB). Consider storage capacity with regard to both overbank flow and upland runoff.

LB	RB	
☐ A	☐ A	Little or no alteration to water storage capacity over a majority of the streamside area
◉ B	☐ B	Moderate alteration to water storage capacity over a majority of the streamside area
☐ C	◉ C	Severe alteration to water storage capacity over a majority of the streamside area (examples include: ditches, fill, soil, compaction, livestock disturbance, buildings, man-made levees, drainage pipes)

14. Streamside Area Water Storage – streamside area metric (skip for Size 1 streams, Tidal Marsh Streams, and B valley types)
Consider for the Left Bank (LB) and the Right Bank (RB) of the streamside area.

LB	RB	
☐ A	☐ A	Majority of streamside area with depressions able to pond water ≥ 6 inches deep
☐ B	☐ B	Majority of streamside area with depressions able to pond water 3 to 6 inches deep
☐ C	☐ C	Majority of streamside area with depressions able to pond water < 3 inches deep

15. Wetland Presence – streamside area metric (skip for Tidal Marsh Streams)
Consider for the Left Bank (LB) and the Right Bank (RB). Do not consider wetlands outside of the streamside area or within the normal wetted perimeter of assessment reach.

LB	RB	
☐ Y	☐ Y	Are wetlands present in the streamside area?
◉ N	◉ N	

16. Baseflow Contributors – assessment reach metric (skip for size 4 streams and Tidal Marsh Streams)
Check all contributors within the assessment reach or within view of and draining to the assessment reach.

- ☑ A Streams and/or springs (jurisdictional discharges)
- ☐ B Ponds (include wet detention basins; do not include sediment basins or dry detention basins)
- ☐ C Obstruction that passes some flow during low-flow periods within assessment area (beaver dam, bottom-release dam)
- ☐ D Evidence of bank seepage or sweating (iron oxidizing bacteria in water indicates seepage)
- ☐ E Stream bed or bank soil reduced (dig through deposited sediment if present)
- ☐ F None of the above

17. Baseflow Detractors – assessment area metric (skip for Tidal Marsh Streams)
Check all that apply.

- ☐ A Evidence of substantial water withdrawals from the assessment reach (includes areas excavated for pump installation)
- ☐ B Obstruction not passing flow during low flow periods affecting the assessment reach (ex: watertight dam, sediment deposit)
- ☐ C Urban stream (≥ 24% impervious surface for watershed)
- ☐ D Evidence that the stream-side area has been modified resulting in accelerated drainage into the assessment reach
- ☐ E Assessment reach relocated to valley edge
- ☑ F None of the above

18. Shading – assessment reach metric (skip for Tidal Marsh Streams)
Consider aspect. Consider "leaf-on" condition.

- ☐ A Stream shading is appropriate for stream category (may include gaps associated with natural processes)
- ☐ B Degraded (example: scattered trees)
- ◉ C Stream shading is gone or largely absent

19. Buffer Width – streamside area metric (skip for Tidal Marsh Streams)
Consider "vegetated buffer" and "wooded buffer" separately for left bank (LB) and right bank (RB) starting at the top of bank out to the first break.

Vegetated		Wooded		
LB	RB	LB	RB	
☐ A	☐ A	☐ A	☐ A	≥ 100-feet wide or extends to the edge of the watershed
☐ B	☐ B	☐ B	☐ B	From 50 to < 100-feet wide
☐ C	☐ C	☐ C	☐ C	From 30 to < 50-feet wide
◉ D	☐ D	☐ D	☐ D	From 10 to < 30-feet wide
☐ E	◉ E	◉ E	◉ E	< 10-feet wide or no trees

20. Buffer Structure – streamside area metric (skip for Tidal Marsh Streams)
Consider for left bank (LB) and right bank (RB) for Metric 19 ("Vegetated" Buffer Width).

LB	RB	
☐ A	☐ A	Mature forest
☐ B	☐ B	Non-mature woody vegetation or modified vegetation structure
☐ C	☐ C	Herbaceous vegetation with or without a strip of trees < 10 feet wide
☐ D	☐ D	Maintained shrubs
◉ E	◉ E	Little or no vegetation

21. Buffer Stressors – streamside area metric (skip for Tidal Marsh Streams)
Check all appropriate boxes for left bank (LB) and right bank (RB). Indicate if listed stressor abuts stream (Abuts), does not abut but is within 30 feet of stream (< 30 feet), or is between 30 to 50 feet of stream (30-50 feet).
If none of the following stressors occurs on either bank, check here and skip to Metric 22: ☐

Abuts		< 30 feet		30-50 feet		
LB	RB	LB	RB	LB	RB	
☐ A	☐ A	☐ A	☐ A	☐ A	☐ A	Row crops
◉ B	☐ B	☐ B	☐ B	☐ B	☐ B	Maintained turf
☐ C	☐ C	☐ C	☐ C	☐ C	☐ C	Pasture (no livestock)/commercial horticulture
☐ D	☐ D	☐ D	☐ D	☐ D	☐ D	Pasture (active livestock use)

22. Stem Density – streamside area metric (skip for Tidal Marsh Streams)
Consider for left bank (LB) and right bank (RB) for Metric 19 ("Wooded" Buffer Width).

LB	RB	
☐ A	☐ A	Medium to high stem density
☐ B	☐ B	Low stem density
◉ C	◉ C	No wooded riparian buffer or predominantly herbaceous species or bare ground

23. Continuity of Vegetated Buffer – streamside area metric (skip for Tidal Marsh Streams)

Consider whether vegetated buffer is continuous along stream (parallel). Breaks are areas lacking vegetation > 10-feet wide.

LB	RB	
☉ A	☐ A	The total length of buffer breaks is < 25 percent.
☐ B	☐ B	The total length of buffer breaks is between 25 and 50 percent.
☐ C	☉ C	The total length of buffer breaks is > 50 percent.

24. Vegetative Composition – First 100 feet of streamside area metric (skip for Tidal Marsh Streams)

Evaluate the dominant vegetation within 100 feet of each bank or to the edge of the watershed (whichever comes first) as it contributes to assessment reach habitat.

LB	RB	
☐ A	☐ A	Vegetation is close to undisturbed in species present and their proportions. Lower strata composed of native species, with non-native invasive species absent or sparse.
☐ B	☐ B	Vegetation indicates disturbance in terms of species diversity or proportions, but is still largely composed of native species. This may include communities of weedy native species that develop after clear-cutting or clearing or communities with non-native invasive species present, but not dominant, over a large portion of the expected strata or communities missing understory but retaining canopy trees.
☉ C	☉ C	Vegetation is severely disturbed in terms of species diversity or proportions. Mature canopy is absent or communities with non-native invasive species dominant over a large portion of expected strata or communities composed of planted stands of non-characteristic species or communities inappropriately composed of a single species or no vegetation.

25. Conductivity – assessment reach metric (skip for all Coastal Plain streams)

25a. ☐ Yes ☉ No Was a conductivity measurement recorded?
If No, select one of the following reasons. ☐ No Water ☐ Other: _____

25b. Check the box corresponding to the conductivity measurement (units of microsiemens per centimeter).
☐ A <46 ☐ B 46 to < 67 ☐ C 67 to < 79 ☐ D 79 to < 230 ☐ E ≥ 230

Notes/Sketch:
Salvage Yard Property - assessed reach below road with undersized, perched culvert.

NC SAM Stream Rating Sheet
Accompanies User Manual Version 2.1

Stream Site Name: R-2577 Reverification
Date of Evaluation: 05/31/18
Stream Category: Pa1
Assessor Name/Organization: J Grubb, P Butler/CEI

Notes of Field Assessment Form (Y/N)	YES
Presence of regulatory considerations (Y/N)	YES
Additional stream information/supplementary measurements included (Y/N)	NO
NC SAM feature type (perennial, intermittent, Tidal Marsh Stream)	Intermittent

Function Class Rating Summary	USACE/ All Streams	NCDWR Intermittent
(1) Hydrology	**LOW**	**LOW**
(2) Baseflow	**HIGH**	**HIGH**
(2) Flood Flow	**LOW**	**LOW**
(3) Streamside Area Attenuation	**LOW**	**LOW**
(4) Floodplain Access	**MEDIUM**	**MEDIUM**
(4) Wooded Riparian Buffer	**LOW**	**LOW**
(4) Microtopography	**LOW**	**LOW**
(3) Stream Stability	**MEDIUM**	**MEDIUM**
(4) Channel Stability	**HIGH**	**HIGH**
(4) Sediment Transport	**LOW**	**LOW**
(4) Stream Geomorphology	**MEDIUM**	**MEDIUM**
(2) Stream/Intertidal Zone Interaction	NA	NA
(2) Longitudinal Tidal Flow	NA	NA
(2) Tidal Marsh Stream Stability	NA	NA
(3) Tidal Marsh Channel Stability	NA	NA
(3) Tidal Marsh Stream Geomorphology	NA	NA
(1) Water Quality	**HIGH**	**HIGH**
(2) Baseflow	**HIGH**	**HIGH**
(2) Streamside Area Vegetation	**LOW**	**LOW**
(3) Upland Pollutant Filtration	**LOW**	**LOW**
(3) Thermoregulation	**LOW**	**LOW**
(2) Indicators of Stressors	**NO**	**NO**
(2) Aquatic Life Tolerance	**HIGH**	NA
(2) Intertidal Zone Filtration	NA	NA
(1) Habitat	**LOW**	**LOW**
(2) In-stream Habitat	**LOW**	**LOW**
(3) Baseflow	**HIGH**	**HIGH**
(3) Substrate	**LOW**	**LOW**
(3) Stream Stability	**HIGH**	**HIGH**
(3) In-stream Habitat	**LOW**	**LOW**
(2) Stream-side Habitat	**LOW**	**LOW**
(3) Stream-side Habitat	**LOW**	**LOW**
(3) Thermoregulation	**LOW**	**LOW**
(2) Tidal Marsh In-stream Habitat	NA	NA
(3) Flow Restriction	NA	NA
(3) Tidal Marsh Stream Stability	NA	NA
(4) Tidal Marsh Channel Stability	NA	NA
(4) Tidal Marsh Stream Geomorphology	NA	NA
(3) Tidal Marsh In-stream Habitat	NA	NA
(2) Intertidal Zone Habitat	NA	NA
Overall	**LOW**	**LOW**

USFWS IPAC

Accessed on January 25, 2023

R-2577ABC

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

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Location

Forsyth and Guilford counties, North Carolina



Local offices

Raleigh Ecological Services Field Office

(919) 856-4520
(919) 856-4556

MAILING ADDRESS
Post Office Box 33726
Raleigh, NC 27636-3726

PHYSICAL ADDRESS
551 Pylon Drive, Suite F
Raleigh, NC 27606-1487

Asheville Ecological Services Field Office

(828) 258-3939
(828) 258-5330

160 Zillicoa Street
Asheville, NC 28801-1082

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).

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2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

Mammals

NAME	STATUS
Tricolored Bat Perimyotis subflavus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

Reptiles

NAME	STATUS
Bog Turtle Glyptemys muhlenbergii No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/6962	SAT

Fishes

NAME	STATUS
Roanoke Logperch Percina rex Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1134	Endangered

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Flowering Plants

NAME	STATUS

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Schweinitz's Sunflower Helianthus schweinitzii — Endangered
Wherever found
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/3849

Small Whorled Pogonia Isotria medeoloides — Threatened
No critical habitat has been designated for this species.
https://ecos.fws.gov/ecp/species/1890

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how

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this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.	Breeds Sep 1 to Jul 31
Black-billed Cuckoo *Coccyzus erythropthalmus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9399	Breeds May 15 to Oct 10
Cerulean Warbler *Dendroica cerulea* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/2974	Breeds Apr 28 to Jul 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 15 to Aug 25
Eastern Whip-poor-will *Antrostomus vociferus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Aug 20
Prairie Warbler *Dendroica discolor* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 31

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Prothonotary Warbler Protonotaria citrea This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Apr 1 to Jul 31
Red-headed Woodpecker Melanerpes erythrocephalus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Sep 10
Rusty Blackbird Euphagus carolinus This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds elsewhere
Wood Thrush Hylocichla mustelina This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 10 to Aug 31

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence

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at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

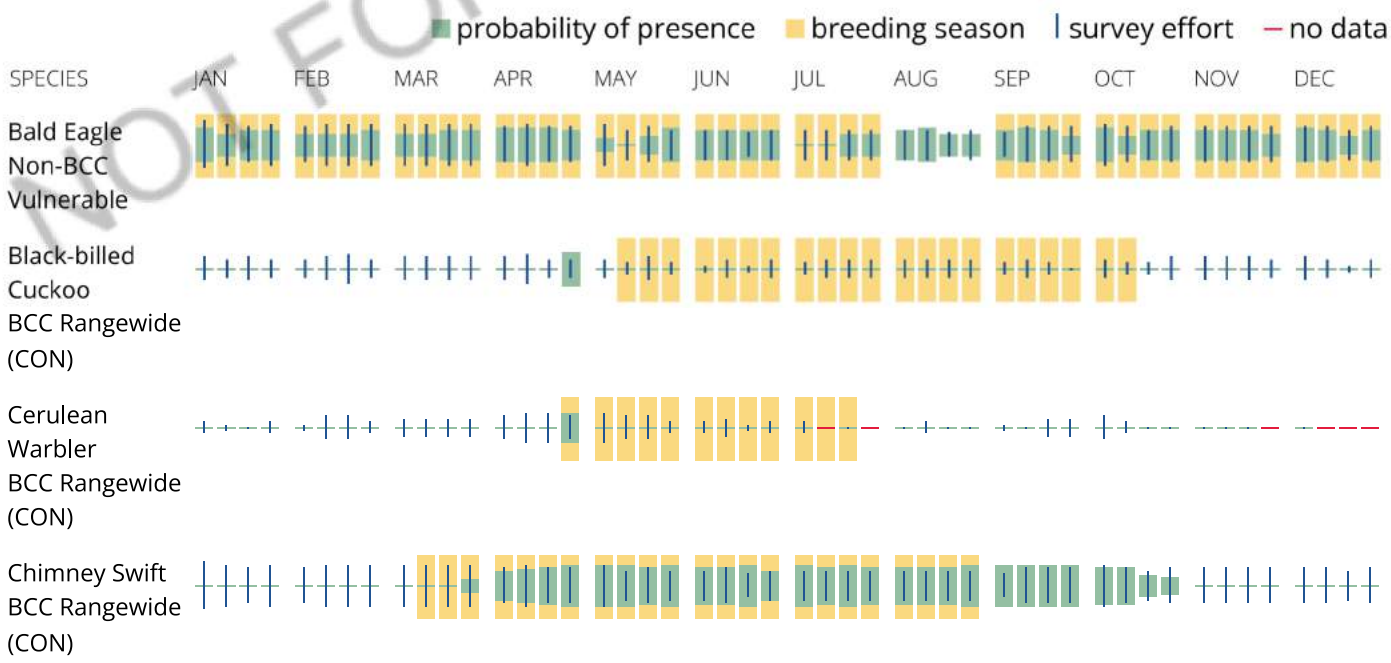
Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

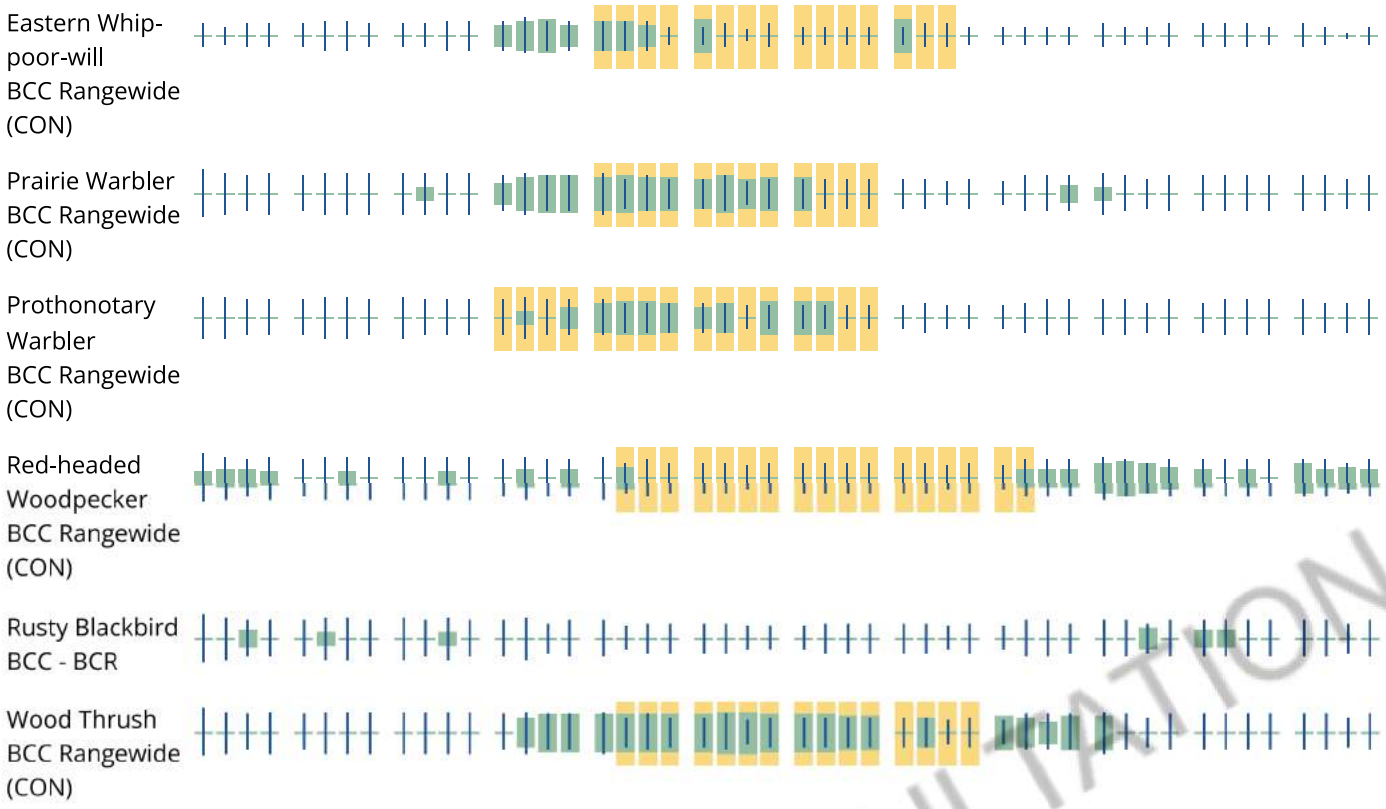
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact

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Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

This location did not intersect any wetlands mapped by NWI.

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

NOT FOR CONSULTATION

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies.

Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

NOT FOR CONSULTATION

US Fish and Wildlife Service Consultation Letter

R-2577ABC

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street Suite B
Asheville, North Carolina 28801

October 11, 2022

Eric Alsmeyer
Project Manager
U.S. Army Corps of Engineers, Wilmington District
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27127

Subject: Informal Consultation Improvements to US 158 (Reidsville Road) from US 421/I-40 Business in Winston-Salem, Forsyth County to US 220 (I-73) in Stokesdale, Guildford County (R-2577ABC, Service Log #07-313)

Dear Eric Alsmeyer:

On September 8, 2022, we received (via e-mail) your request for informal consultation and section 7 concurrence on effects the subject project may have on federally listed species. The action area for the project overlaps the work areas of the Asheville and Raleigh Ecological Services Field Offices (ESFO). The Asheville ESFO coordinated with the Raleigh ESFO and agreed to serve as the lead ESFO for this project. We have reviewed the information you submitted and the following is provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C.§ 4321 et seq.) (NEPA); the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661 -667e); and section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 - 1543)(Act).

On July 5, 2022, the U.S. District Court of the Northern District Court of California vacated the 2019 regulations implementing section 7 of the Endangered Species Act (ESA). On September 21, 2022, the Ninth Circuit Court of Appeals granted a request to stay the U.S. District Court of Northern California's July 5, 2022, order that vacated the 2019 ESA regulations. As a result, the 2019 regulations are again in effect, and the Service has relied upon the 2019 regulations in issuing our written concurrence on the action agency's "may affect, not-likely-to-adversely-affect" determination. However, because the outcome of the legal challenges to the 2019 ESA regulations is still unknown, we considered whether our substantive analyses and conclusions would have been different if the pre-2019 regulations were applied in this informal consultation. Our analysis included the prior definition of "effects of the action." We considered all the "direct and indirect effects" and the "interrelated and interdependent activities" when determining the "effects of the action." We then considered whether any "effects of the action" that overlap with applicable ranges of listed species would be wholly beneficial, insignificant, or discountable to the species. As a result, we determined the substantive analysis and conclusions would have been the same, irrespective of which regulations applied.

Project Description

According to the information provided, the North Carolina Department of Transportation (NCDOT) Division 9 is proposing to improve US 158 (Reidsville Road) from the multi-lanes north of US 421/I-40 Business in Winston-Salem, Forsyth County to US 220 (I-73) in Stokesdale, Guildford County. The project length extends 18.8 miles, 7.7 miles of which are in Guildford County. The project proposes to widen the existing two-lane, two-way roadway to a multi-lane, median-divided facility, including a new

location section to bypass the existing US 158 alignment in Stokesdale. The project is divided into three sections. Section A (R-2577A), extending from Old Greensboro Road in Winston-Salem to Belews Creek Road in Forsyth County, is scheduled to let for construction in December 2023. Sections B (extending from Belews Creek Road to Anthony Road in Guilford County) and C (extending from Anthony Road to the US 158/US 220 junction in Stokesdale) are currently unfunded in the State Transportation Improvement Plan program. The project is state-funded and the U.S. Army Corps of Engineers (USACE) is the federal lead for section 7 purposes, as a phased Individual Clean Water Act 404 Permit is needed for all three sections of the project. The project has been reviewed through the NEPA/Section 404 Merger Process with concurrence points 3 and 4A achieved for all three sections in June 2019. The Merger Team also completed concurrence points 4B and 4C for section A in 2019.

NCDOT has committed to the following conservation measure:

- The sediment and erosion control plan will be designed in accordance with NCDOT's *Design Standards in Sensitive Watersheds* (DSSW) in portions of the project that drain to the Roanoke River Basin.

Federally Listed Species

The correspondence received from USACE includes a recent and complete list of species that may occur within the project area per our Information for Planning and Consultation website. As requested by USACE, this consultation is solely for northern long-eared bat (*Myotis septentrionalis*) and Roanoke logperch (*Percina rex*); however, information is provided for other federally designated species should consultation be requested for those species in the future.

On September 21, 2022, the Service updated the consultation range for northern long-eared bat based on the best available scientific data. The action area for this project is no longer within the consultation range for the species. Therefore, we believe the project will have no effect on the northern long-eared bat.

The provided information states that suitable habitat for Roanoke logperch exists within the action area in Belews Creek, a tributary to the Roanoke River Basin. Permitted consultants did not detect the species during a fish survey on September 29, 2021. Based on negative survey results and the commitment to DSSW sediment and erosion control standards in this portion of the project, we concur with the USACE's "may affect, not likely to adversely affect" (NLAA) determination for Roanoke logperch.

The information provided states that suitable habitat for Schweinitz's sunflower (*Helianthus schweinitzii*) and small whorled pogonia (*Isotria medeoloides*) is present within the action area. NCDOT did not observe these species during surveys on September 2 and October 7, 2021 and on June 1, 6, 14, and 15, 2021 (respectively). Based on negative survey results within the optimal windows for each species, we would concur with a NLAA determination from the USACE for Schweinitz's sunflower and small whorled pogonia.

On September 14, 2022, the U.S. Fish and Wildlife Service (Service) published a proposal in the Federal Register to list the tricolored bat (*Perimyotis subflavus*) as endangered under the Act. The Service has up to 12-months from the date the proposal published to make a final determination, either to list the tricolored bat under the Act or to withdraw the proposal. The Service determined the bat faces extinction primarily due to the range-wide impacts of white-nose syndrome (WNS), a deadly fungal disease affecting cave-dwelling bats across North America. Because tricolored bat populations have been greatly reduced due to WNS, surviving bat populations are now more vulnerable to other stressors such as human disturbance and habitat loss. Species proposed for listing are not afforded protection under the Act;

however, as soon as a listing becomes effective (typically 30 days after publication of the final rule in the Federal Register), the prohibitions against jeopardizing its continued existence and "take" will apply. Therefore, if you suspect your future or existing project may affect tricolored bats after the potential new listing goes into effect, we recommend analyzing possible effects of the project on tricolored bats and their habitat to determine whether consultation under section 7 of the Act is necessary. Conferencing procedures can be followed prior to listing to ensure the project does not jeopardize the existence of a species or adversely modify critical habitat. Contact your section 7 contact in the Asheville Ecological Services Field Office for assistance.

Little brown bat (*Myotis lucifugus*) is an at-risk species (ARS) and monarch butterfly (*Danaus plexippus*) is a candidate species that may occur in the project area. ARS and candidate species are not legally protected under the Act and are not subject to any of its provisions, including section 7, unless they are formally proposed or listed as endangered or threatened. The Service is expected to make listing determinations for these species in the next few years. While lead federal agencies are not prohibited from jeopardizing the continued existence of an ARS or candidate species unless the species becomes listed, the prohibition against jeopardy and taking a listed species under section 9 of the Act applies as soon as a listing becomes effective, regardless of the stage of completion of the proposed action. We include this notification to make you aware of these species' current status and potential occurrence within the action area.

Fish and Wildlife Resource Recommendations

We are concerned about the potential effects the project could have within and surrounding the project area and offer the following general recommendations for the benefit of fish and wildlife resources:

- Remove trees between October 15 and April 1 of any given year, outside the bat active season to reduce impacts to bats. If this is not possible, we encourage avoidance of the maternity season (May 15 – August 15), and/or spring migration period (April 1 to May 15), and/or fall migration period (August 15 – October 15).

For the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, please provide notification of the implementation of any resource recommendations.

Reinitiation Notice

We believe the requirements under section 7 of the Act are fulfilled for the federally listed species discussed above. However, obligations under section 7 must be reconsidered if: (1) new information reveals impacts of this proposed action may affect listed species or critical habitat in a manner not previously considered, (2) this proposed action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed, or critical habitat is determined that may be affected by the proposed action.

We appreciate the opportunity to provide these comments. Please contact Ms. Holland Youngman of our staff at holland_youngman@fws.gov if you have any questions. In any future correspondence concerning this project, please reference our Service Log #07-313.

Sincerely,

- - original signed - -

Janet Mizzi
Field Supervisor

Concurrence Point 4B/4C Meeting Minutes

R-2577ABC

R-2577A 4B Interagency Concurrence Point Meeting Minutes

Date: June 12, 2019
Location: NCDOT Structures Conference Room
Time: 3:00 PM
Minutes Authored By: Jonathan Whittington

Attendees:
John Jamison - NCDOT Env. Policy Unit
Amy Euliss – NCDOT Division 9 DEO
Garrison Seitz – NCDOT Division 9
Claire Ellwanger – USFWS
Marla Chambers – NCWRC
Eric Alsmeyer - USACE
Erik Seiler – NCDOT Hydraulics Unit
Tony Houser – RK&K
Brent Huskey – RK&K
Jonathan Whittington – RK&K

Via Telephone:
Connie James – NCDOT Division 9
Dave Wanucha - DWR
Robert Patterson - DWR

John Jamison opened with discussing an email he sent the previous week regarding Concurrence Points 3 and 4A. There have been some design changes and per his conversations with USACE and DWR in May of 2019 it was decided that the concurrence forms should be re-signed with some slightly amended language. Revised forms will be sent out via Docusign.

Brent Huskey then began to go through the 4B plan set.

Plan Sheets 4-5: There are no surface water or wetland impacts on these sheets.

Plan Sheet 6: There are no surface water or wetland impacts on this sheet.

Amy Euliss stated to add a History Property Boundary around the Church (located on top right side of plan sheet). John Jamison added to make sure this boundary is placed on all versions of Plan Sheet 6.

Plan Sheet 7: There are currently no surface water or wetland impacts on this sheet.

Amy Euliss stated that the proposed 36" pipe outfall near stream SFJ may require Temporary Impacts when we get to 4C.

Plan Sheets 8-9: There are no surface water or wetland impacts on these sheets.

Plan Sheet 10: There are currently no surface water or wetland impacts on this sheet.

There was discussion about the pond located in the lower right side of the plan sheet. Brent Huskey stated the pond is not Jurisdictional per the JD, and Amy Euliss added that the pond is a little amenity pond, that it is not related to stormwater.

Plan Sheet 11: There are no surface water or wetland impacts on this sheet.

Plan Sheet 12: Site #1 UT to Lowery Mill Creek, SFC: Stream SFC runs west to east through the project and is currently conveyed in a 42" RCP under -Y9- and through a 48" RCP under -L- at 100+92. This will be called out as Site 1. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

Brent Huskey stated that the existing 42" and 48" pipes are undersized based on future land use hydrology calculations, and that the recommendation for replacing or supplementing an additional pipe is dependent upon the Division's preference for open-cut or bore and jack. Connie James said the Division's preference at this site is bore and jack.

Brent Huskey stated the stream slope is 2.5% and Amy Euliss said the pipe could be buried with sills. Amy also said that if the pipe will be buried, to have a riprap pad in the bottom of the channel at the inlet and outlet. Use a ditch detail with riprap embedded in the channel bottom backed with a geotextile lining. This is to retain the channel bed elevation near the pipe.

Amy Euliss stated that while the label SFD is shown on the plan sheet, the linework for the stream is not shown. It comes out of the wetland WJA.

Eric Alsmeyer expressed concern about the angle of attack on the inlet side of the crossing. He said losing more stream length would be a negative, but we also want the site to be stable.

Marla Chambers asked about the stream base width, which is 4 ft, and asked to make sure to have adequate pipe size for fish passage.

Amy Euliss stated that another location of impacts will be required on the outlet side due to Bank Stabilization for the proposed ditch tie-in. This could still be part of Site 1, but add A, B, C, etc. to the site label. Erik Seiler also suggested adding bank stabilization to the other side of the stream, opposite of the ditch tie-in.

Site #2 UT to Lowery Mill Creek, SFB: Stream SFB runs northwest to southeast through the project and is currently conveyed in a single barrel 6' x 6' RCBC under -L- at 107+43. This will be called out as Site 2. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The existing single barrel 6' x 6' RCBC is in good condition and will be retained and extended. The existing RCBC is not buried and therefore the proposed culvert extensions will also not be buried.

Amy Euliss stated to add a note to the permit application that the existing culvert is not embedded and that it is not being replaced. Also note on the plan sheet that the culvert extensions will not be buried.

Eric Alsmeyer asked about the proposed ditch linework shown near the channel realignment on the outlet side. He also asked that the proposed ditch on the right side of the stream be angled towards where the proposed realignment ties-in.

Plan Sheets 13-14: There are no surface water or wetland impacts on these sheets.

Plan Sheet 15: Site #3 UT to Lowery Mill Creek, SFA: Stream SFA runs west to east through the project and is currently conveyed in a 30" HDPE under -Y14- at 13+32. This will be called out as Site 3. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The existing 30" HDPE will be replaced by a 60" RCP not buried because of the stream slope of 6.5%.

Amy Euliss said to armor the inlet and outlet channel bed due to the steep stream slope. However, if the stream is already lined with bedrock then riprap would not be needed.

Marla Chambers asked if a cross vane would be possible to prevent head cutting. Amy stated that rock sills or riprap pads are the options available, and that she prefers riprap pads on projects that have no natural channel design. Amy also said she likes to have a token rock sill quantity in case it is needed in the field.

Site #4 Lowery Mill Creek, SEW: Stream SEW runs north to southeast through the project and is currently conveyed in a triple barrel 7' x 10' RCBC under -L- at 140+20. This will be called out as Site 4. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The existing triple barrel 7' x 10' RCBC will be replaced by dual bridges. The bridges will be skewed 120 degrees and have identical span arrangements of 1 @ 105', 1@ 60', for an overall length of 165'. The spill through abutments will have slopes of 1.5:1 normal to the abutment cap and will be lined with Class II riprap.

The left side of the stream will have a setback of approximately 20' from the top of bank to abutment toe to maintain the floodplain width found up and downstream of the crossing. This setback area will not be lined with riprap to provide an area for animal crossing. The right side of the stream will have a setback of approximately 5' from the top of bank to abutment toe for slope stability and to match the overbank width up and downstream of the crossing.

Erik Seiler stated to add bank stabilization at all ditch tie-ins around the bridge crossing.

Eric Alsmeyer asked to make sure that the proposed interior bent is at the top of bank and not in the stream. He also stated to continue the bank stabilization up the stream for any area underneath the proposed bridge. His area of concern was the upstream side of the crossing.

Dave Wanucha asked how we would approach the construction of this crossing. Tony Houser stated we would build the upstream bridge first since there is no existing traffic there. Then we would remove the existing culvert and then build the downstream bridge.

Plan Sheet 16: There are no surface water or wetland impacts on this sheet. This sheet shows the U-2579B project which has been recently constructed.

Plan Sheet 17: There are no surface water or wetland impacts on this sheet. This sheet shows the U-2579B project which has been recently constructed.

Amy Euliss stated to add shading or hatching and note there are impacts from U-2579B. Amy also stated that the detour crossing for U-2579B now incorporates natural channel design. Brent clarified that the existing two barrel 7' x 6' RCBC is recent construction.

Plan sheets 18-20: There are no surface water or wetland impacts on these sheets.

Plan Sheet 21: Site #5 UT to Martin Mill Creek, SET: Stream SET runs southwest to northeast through the project and currently runs adjacent to the existing road. This will be called out as Site 5. This area is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this area is in the Yadkin River Basin is does not have to meet the design criteria for buffer filtration. There will be stream impacts as well as total take of wetland WHQ and most of wetland WHP.

Plan Sheet 22: Site #6 Martin Mill Creek, SES: Stream SES runs northwest to southeast through the project and is currently conveyed in a single barrel 5' x 5' RCBC under -L- at 229+10. This will be called out as Site 6. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The existing single barrel 5' x 5' RCBC is in good condition and will be retained and extended. The existing RCBC is not buried and therefore the proposed culvert extensions will also not be buried. The existing outlet is perched approximately 2' above the channel bottom. The proposed extension will not be perched. The existing culvert is undersized based on future land use hydrology calculations so a 48" RCP will be added. This 48" pipe will act as a high flow pipe and will sit on a floodplain bench.

Amy Euliss stated to add a note to the plan sheet that the existing culvert is not embedded and that it is not being replaced. She also asked to line the outlet channel bottom with riprap due to the scour noted at the existing outlet.

Plan Sheet 23: There are currently no surface water or wetland impacts on this sheet. Amy Euliss stated to add a History Property Boundary around the Drive-In (located on top left side of plan sheet).

Plan Sheets 24-26: There are no surface water or wetland impacts on these sheets.

Plan Sheet 27: Site #7 Left Fork Belews Creek, SEL: Stream SEL runs south to north along the left side of the project and currently runs adjacent to the existing road. This will be called out as Site 7. This area is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this area is in the Roanoke River Basin is does not have to meet the design criteria for buffer filtration. There will be stream impacts from the outfall of a 48" pipe.

Amy Euliss said to note the point where stream changes from Intermittent to Perennial, if that location is on the plan sheet. She also asked to add a label where the JS starts. Amy said the 48" RCP would not need to be buried since the JS stream is not flowing through it.

Plan Sheets 28-30: There are no surface water or wetland impacts on these sheets.

Amy Euliss asked when to expect the 4C meeting. Brent Huskey said it would most likely be September. The Let Date for this project has recently pushed back, so we are now requesting a 4C meeting in October 2019.

Amy Euliss said to Eric Alsmeyer that this is a Phased IP, so they will be permitting projects A, B, and C together.

The meeting adjourned.

R-2577A 4C Interagency Concurrence Point Meeting Minutes

Date: November 20, 2019
Location: NCDOT Structures Conference Room
Time: 8:00 AM
Minutes Authored By: Brent Huskey

Attendees:
Bill Barrett - NCDOT EAU
Robert Patterson - DWR
Nicholle Braspennichx – USACE
Marla Chambers – NCWRC
Erik Seiler – NCDOT Hydraulics Unit
Scott Blevins – RK&K
Brent Huskey – RK&K
Jonathan Whittington – RK&K

Via Telephone:
Amy Euliss – NCDOT Division 9 DEO
Connie James – NCDOT Division 9
Dave Wanucha – DWR (Division 9 & 11)
Kevin Mitchell – DWR (Division 13 & 14)
Claire Ellwanger – USFWS

Introductions were made and then Brent Huskey started to go through the 4C plan set.

Permit Drawing Sheet 4 of 23: Site #1 UT to Lowery Mill Creek, SFC: Stream SFC runs west to east through the project and is currently conveyed in a 42" RCP under -Y9- and through a 48" RCP under -L- at 100+92. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The design team is proposing to bore and jack a new 72" welded steel pipe, not buried, under -Y9- and -L- parallel to the existing pipes.

Bill Barrett stated at Site 1A, the impact in the summary sheet needs to be changed from "bank stabilization" to "armoring channel" when there is rip rap placed in the channel bottom. Mr. Barrett also stated to remove "bank stabilization" from Site 1D as well as change "bank stabilization" to "armoring channel" at Site 1E in the summary sheet.

Response: Site 1A has been changed from "bank stabilization" to "armoring channel", "bank stabilization" has been removed from Site 1D and "bank stabilization" has been changed to "armoring channel" for Site 1E.

Amy Euliss stated at Site 1D, to carry the lateral base ditch with rip rap to the outlet of the 72" pipe.

Response: The lateral base ditch with rip rap has been carried out to the outlet of the 72" pipe.

Marla Chambers asked if RK&K would try to hold a constant grade through the 72" pipe crossing to increase the chance of aquatic passage. As of now, the pipe crossing changes slopes at every junction box structure resulting in a steep pipe slope that crosses under the -L- alignment.

Response: RK&K redesigned the 72" pipe crossing to hold a constant grade of 2.5% through the hydraulic crossing. The revised pipe slopes are shown in the pipe profile for the crossing, Permit Drawing Sheet 8 of 23.

Erik Seiler stated to show the existing pipes in the pipe profile for Site 1 on Permit Drawing Sheet 7 of 22.

Response: The existing pipe has been added to the pipe profile for the permit drawings.

Permit Drawing Sheet 6 of 23: Site #2 UT to Lowery Mill Creek, SFB: Stream SFB runs northwest to southeast through the project and is currently conveyed in a single barrel 6' x 6' RCBC under -L- at 107+43. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The design team is proposing to extend the single barrel 6'x6' RCBC on the upstream and downstream end of the crossing.

Bill Barrett stated to break out the upstream impacts to Site 2A – bank stabilization, Site 2B – armoring channel bed and bank and Site 2C – stream impact from the culvert extension. Mr. Barrett also stated to break out the downstream impacts to Site 2D – stream impact from the culvert extension and Site 2E – armoring channel bed and bank.

Response: For the final permit drawing plans, the rip rap in the proposed outlet channel tie-in will be extended so that it is armoring the stream bed for Site 2E. The impacts have been broken out from Site 2A – Site 2E to address Mr. Barrett's comment.

Permit Drawing Sheet 10 of 23: Site #3 UT to Lowery Mill Creek, SFA: Stream SFA runs west to east through the project and is currently conveyed in a 30" HDPE under -Y14- at 13+32. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The design team is proposing to install 2 @ 42" RCPs, not buried and both pipes sitting at the same invert, at this crossing in place of the existing pipe

In the 4B meeting held on June 12, 2019, RK&K was proposing a single 60" RCP at this crossing. During the final drainage design this crossing was changed to 2 @ 42" RCPs as stated above due to headwater control reasons.

Bill Barrett stated at Site 3A, the impact in the summary sheet needs to be changed from "banks stabilization" to "armoring".

Response: Site 3A has been changed from" bank stabilization" to "armoring channel."

Marla Chambers stated that it is not preferred to split the base flow to due to debris clogging the pipes and destabilizing the crossing.

Nicholle Braspennichx asked Amy Euliss what type of permit this project was going to be, which Ms. Euliss stated that this will be an Individual Permit. Ms. Braspennichx stated that due to the regional conditions on these permits that you are not supposed to split the base flow. Ms. Euliss stated that it hasn't been an issue in the past with splitting the base flow at crossings if the reason for doing so can justified in the permit application. Jonathan Whittington made the statement that RK&K will go back try to design one pipe and this crossing. Erik Seiler suggested at looking into putting a pipe arch for this crossing.

Erik Seiler stated to show the existing pipe on the pipe profile for Site 3 on Permit Drawing Sheet 11 of 22.

Response: The proposed 2 @ 42" RCPs has been changed back to a single 60" RCP pipe at this crossing to address the permitting concerns. The existing pipe for this crossing has been added to the pipe profile for Site 3 on Permit Drawing Sheet 12 of 23.

Permit Drawing Sheet 10 of 23: Site #4 Lowery Mill Creek, SEW: Stream SEW runs north to southeast through the project and is currently conveyed in a triple barrel 7' x 10' RCBC under -L- at 140+20. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The design team is proposing to remove the existing triple barrel 7' x 10' RCBC and replace with dual bridges. The bridges will be skewed 120 degrees and have identical span arrangements of 1 @ 105', 1@ 60', for an overall length of 165'. The spill through abutments will have slopes of 1.5:1 normal to the abutment cap and will be lined with Class II riprap.

The left side of the stream will have a setback of approximately 20' from the top of bank to abutment toe to maintain the floodplain width found up and downstream of the crossing. This setback area will not be lined with riprap to provide an area for animal crossing. The right side of the stream will have a setback of approximately 5' from the top of bank to abutment toe for slope stability and to match the overbank width up and downstream of the crossing.

Bill Barrett stated to move "bank stabilization" to the front of the description for Site 4A and Site 4B in the summary sheet of the permit drawings. Mr. Barrett stated that it is hard to see the text for "SEE INSET B", Brent Huskey stated that this will be moved so the label is more visible for the final permit set.

Response: “Bank stabilization” has been added to the front of the description for Site 4A and Site 4B. The text for “SEE INSET B” has been moved to be visible.

Permit Drawing Sheet 14 of 23 & Permit Drawing Sheet 16 of 23: Site #5 UT to Martin Mill Creek, SET: Stream SET runs southwest to northeast through the project and currently runs adjacent to the existing road. This area is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this area is in the Yadkin River Basin is does not have to meet the design criteria for buffer filtration. There will be stream impacts as well as total take of wetland WHQ and most of wetland WHP.

The design team is proposing a channel change that will tie to UT to Martin Mill Creek before intersecting the proposed fill slope of US-158, running parallel with the roadway facility for approximately 386’ and intersecting Martin Mill Creek before it crosses under US-158 in a RCBC.

Amy Euliss stated to remove the small amount of hand clearing and replace it with mechanized clearing.

Response: The hand clearing impact has been removed and replaced with mechanized clearing.

Permit Drawing Sheet 16 of 23: Site #6 Martin Mill Creek, SES: Stream SES runs northwest to southeast through the project and is currently conveyed in a single barrel 5’ x 5’ RCBC under -L- at 229+10. This crossing is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this crossing is in the Yadkin River Basin the proposed ditches entering the stream do not have to meet the design criteria for buffer filtration. There will be stream impacts on the up and downstream sides of the site.

The design team is proposing to retain and extend the existing single barrel 5’ x 5’ RCBC. The existing RCBC is not buried and therefore the proposed culvert extensions will also not be buried. The existing outlet is perched approximately 2’ above the channel bottom. The proposed extension will not be perched. The existing culvert is undersized based on future land use hydrology calculations so a 48” welded steel pipe will be bored and jacked parallel to the existing culvert. This 48” pipe will act as a high flow pipe and will sit on a floodplain bench.

Bill Barrett stated to break out the upstream impacts to Site 6A – armoring channel, Site 6B – stream impact from the culvert extension. Mr. Barrett also stated to break out the downstream impacts to Site 6C – stream impact from the culvert extension, Site 6D – armoring channel and Site 6E – bank stabilization.

Response: Site 6A has been revised to “armoring channel, Site 6B has been revised to “upstream culvert extension”, Site 6C has been revised to “downstream culvert extension” and previous Site 6D and Site 6E has been combined into just Site 6D which has been revised to “armoring channel”. Due to the US 158 alignment shift that took place after the 4C meeting, the proposed lateral ditch now ties into the channel improvement of the culvert extension on the downstream side of the crossing which eliminates the need for bank stabilization.

Amy Euliss stated to add the culvert floodplain bench detail to the plans. Brent Huskey stated that the detail will be added to the ditch detail sheet, Permit Drawing Sheet 2 of 22.

Response: The culvert floodplain bench details has been added to the plans on Permit Drawing Sheet 3 of 23.

Permit Drawing Sheet 21 of 23: Site #7 Left Fork Belews Creek, SEL: Stream SEL runs south to north along the left side of the project and currently runs adjacent to the existing road. This area is identified in USGS and soil survey mapping and is being identified as jurisdictional in the JD. Since this area is in the Roanoke River Basin is does not have to meet the design criteria for buffer filtration. There will be stream impacts due to the road widening in this location.

The design team is proposing a 48” RCP that will outlet into the stream with a drop structure to reduce the velocity of the water that will be coming out of the pipe.

Robert Patterson asked RK&K if it would be possible to break up the drainage network and add an outlet on the left side of the -L- to allow there to be more treatment before it ties into the jurisdictional stream. Brent Huskey stated that yes this could be revised to achieve more treatment. Erik Seiler suggested to add an outlet at point where the pipe increases from an 18” pipe to a 24” pipe on the left side of -L-.

Response: The drainage has been revised in this area to outlet into the lateral ditch on the left of the -L- alignment to provide more treatment before it reaches the jurisdictional stream.

Bill Barrett stated that in the 4B meeting, Amy Euliss asked for RK&K to add a label on the plans identifying where the jurisdictional stream begins as well as a label of where the stream changes from intermittent to perennial. Mr. Barrett noted that the “begin jurisdictional stream” label was added but was wondering if RK&K was able to determine the transition from intermittent to perennial. Brent Huskey stated that there wasn’t anything in the environmental documents that pointed out if that transition took place any where near this project. Mr. Barrett stated that he would look further into this.

Response: With direction from Mr. Barrett and Ms. Euliss, labels have been added to the permit drawings showing the approximate location of where Stream SEL changes from an intermittent stream to a perennial stream.

It was discussed at the end of the meeting to wait for the revisions to be made at the Walkertown Community Park before submitting the 4C meeting minutes and revised plans per the 4C meeting. When the minutes and the plans are sent out, please provide a summary of what changed to the plans as well as a time frame to have final comments back to RK&K.

Response: Here is a summary of what has changed on the project to avoid the Walkertown Community Park:

- To avoid all right of way claims with Walkertown Community Park, that is a 6(f) property, a shift was put in place from -L- 202+25 to 242+09 that shifted US-158 approximately 30 feet to the southeast. The shift affected the alignment of -Y16- (Old Belews Cr. Road) and -Y17- (Darrow Road).
- For the purpose of R-2577A permit drawings, the alignment shift affected Permit Site 5 and Permit Site 6 as follows:
    - Permit Site 5 – Impacts were reduced for stream SET and Wetland WHP
    - Permit Site 6 – There are less impacts on the upstream side and more impacts on the downstream side Stream SES compared to the plans that were provided at the 4C meeting. The overall stream impacts to Stream SES did not change much but the culvert extensions and supplemental pipe had to be revised to line up with the stream again.

Response: A set of updated Permit Drawings have been provided with the final 4C meeting minutes to reflect the changes that have been made to these two permit sites.

Robert Patterson stated to make sure the stormwater management plan is submitted with the final 4C plans and meeting minutes.

Response: The stormwater management plan has been provided as part of the final 4C plans and meeting minutes.

The meeting adjourned.

\\ad.rkk.com\fs\Cloud\Projects\2016\16162_NCCenLSA\H01_R2577A_US158\Design\Hydraulics\DOCUMENTS\Permits\4C\R-2577A 4C Minutes Final.docx

Tribal Coordination Documentation

R-2577ABC

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

March 23, 2020

Dr. Wenonah Haire
Catawba Indian Nation
Tribal Historic Preservation Office
1536 Tom Steven Road
Rock Hill, SC 29730

Dear Dr. Haire,

The North Carolina Department of Transportation is conducting the project development, environmental, and engineering studies for the widening of US 158 (Reidsville Road) in Forsyth and Guilford Counties as projects R-2577ABC I-5880. The US Army Corps of Engineers is the lead federal agency for compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act (NHPA) and permits are anticipated under the Section 404 Process with the USACE. The project vicinity map is attached. The coordinates of this project are from approximately 36.122380, -80.180128 in Forsyth County to 36.246564, -79.920837 in Guilford County.

We would appreciate any information you might have that would be helpful in evaluating potential environmental impacts of the project including recommendation of alternates to be studied. Your comments may be used in the preparation of a NEPA/ State Environmental Policy Act (SEPA) Environmental Document Consultations and/or Section 404 permit.

In accordance with Section 106 of the NHPA, we also request that you inform us of any historic properties of traditional religious or cultural importance that you are aware of that may be affected by the proposed project. Be assured that, in accordance with confidentiality and disclosure stipulations in Section 304 of the NHPA, we will maintain strict confidentiality about certain types of information regarding historic properties.

Please respond by May 15, 2020 so that your comments can be used in the scoping of this project. If you have any questions concerning this project, or would like any additional information, please contact me at aeuliss@ncdot.gov or (336) 747-7800.

Thank you,

Amy Euliss

Amy Euliss
NCDOT Division 9 Environmental Officer

cc: Matt Wilkerson, NCDOT Archaeology Team Leader
Nicholle Braspennickx, USACE Charlotte Regulatory Field Office
Connie James, PE, NCDOT Division Project Manager
Karen Reynolds, PE, NCDOT Project Management Group

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 9
375 SILAS CREEK PARKWAY
WINSTON SALEM, NC 27127

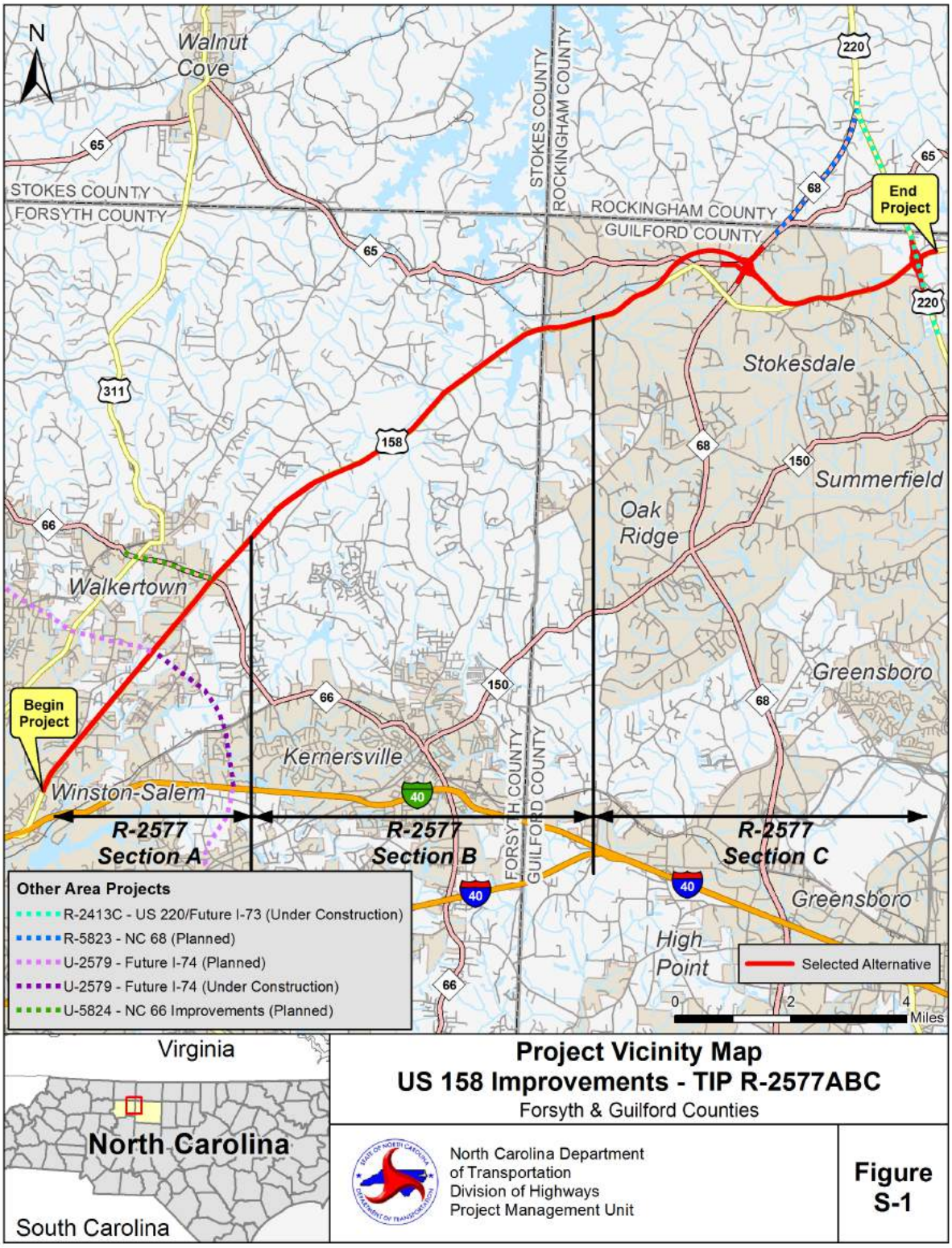
Telephone: (336) 747-7800
Fax: (336) 703-6693
Customer Service: 1-877-368-4968

Website: ncdot.gov

Location:
375 SILAS CREEK PARKWAY
WINSTON-SALEM, NC 27127

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Figure S-1: Project Vicinity Map



Office 803-328-2427
Fax 803-328-5791

April 21, 2020

Attention: Amy Euliss
NC Department of Transportation
375 Silas Creek Parkway
Winston-Salem, NC 27127

Re. THPO #	Project #	Project Description
2020-193-164	R-2577ABC	Widening of US 158 in Forsyth and Guilford Counties

Dear Ms. Euliss,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. **However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.**

If you have questions please contact Caitlin Rogers at 803-328-2427 ext. 226, or e-mail Caitlin.Rogers@catawba.com.

Sincerely,

Caitlin Rogers for

Wenonah G. Haire
Tribal Historic Preservation Officer

November 2022 Effects Form

R-2577ABC

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NCDOT CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

TIP #:	R-2577A	***County:***	Forsyth
WBS #:	37405.1.1	***Federal Aid #::***	-
Federal Permit(s):	X Yes ☐ No	***Funding:***	X State ☐ Federal
Project Description: Improvements to US 158 (Reidsville Road) from multi-lanes north of US 421/I-40 Business to SR 1965 (Belews Creek Road)			

This form supplements those dated June 12, 2018, September 22, 2015, and July 9, 2013. It addresses and updates effects findings for the Edgewood Baptist Church (FY3292). For other NR-eligible properties in project area, see earlier effects assessment forms.

On November 18, 2022 representatives of the

X North Carolina Department of Transportation (NCDOT)
X North Carolina State Historic Preservation Office (NCHPO)
X Federal Agency: United States Army Corps of Engineers (USACE)
X Other: Rummel Klepper & Kahl (RKK)

reviewed the subject project and agreed on the effects findings listed within the table attached to this signature page.

Signed:

Vanessa C. Patrick — 22 November 2022

Representative, NCDOT — Date

DocuSigned by:
Renee Gledhill-Earley — 11/29/2022
2FEA1997AD27403...

Representative, NCHPO — Date

DocuSigned by:
Eric C. Alsmeyer — 11/30/2022
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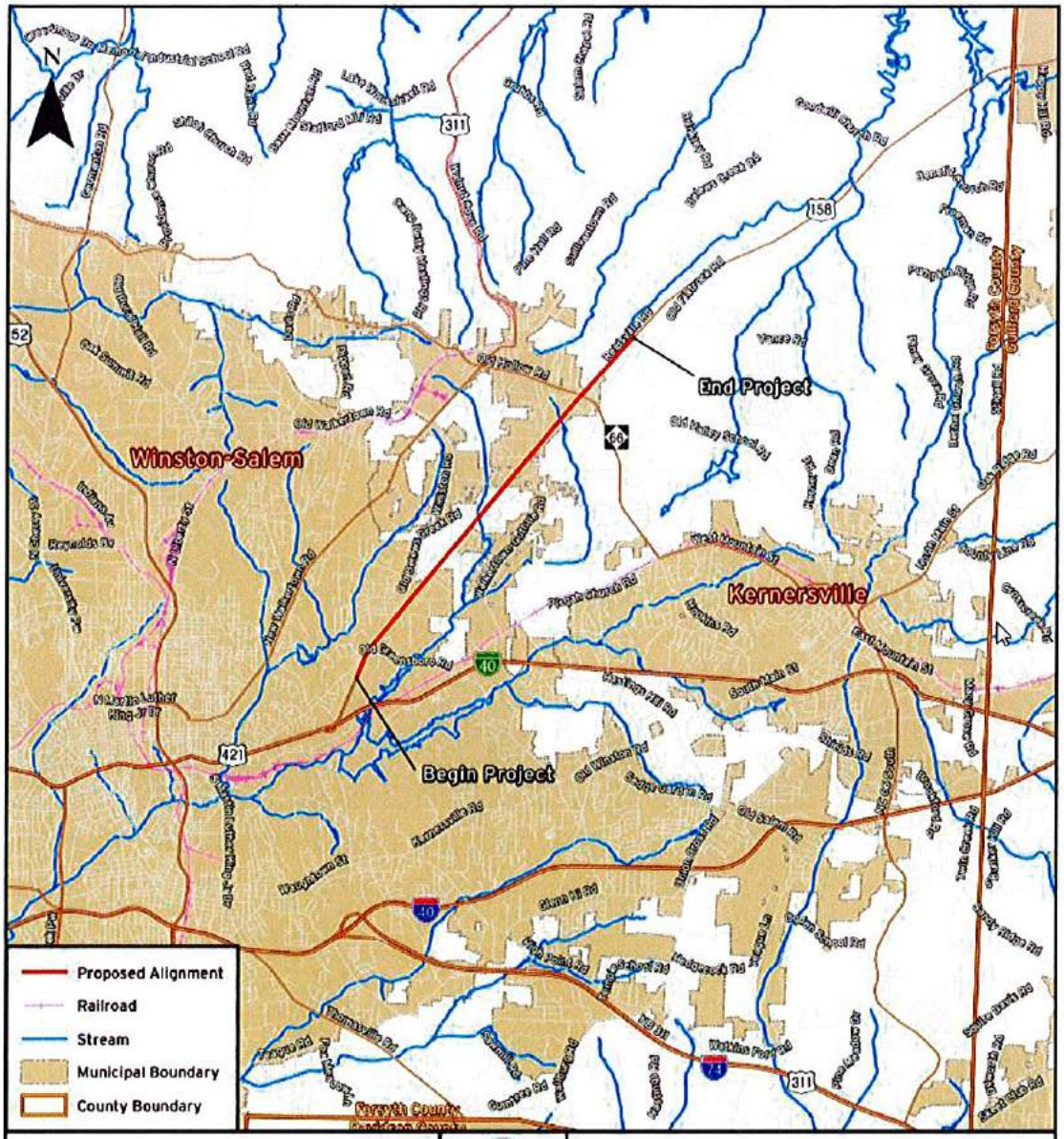
Representative, Federal Agency — Date
United States Army Corps of Engineers

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Property and Status	Alternative	Effect Finding	Reasons
Edgewood Baptist Church (FY3292) -- DE	Chosen (current November 2022)	No Adverse Effect	1. Safety treatments along retaining wall in front (southeast of) church building, developed by RKK and NCDOT in consultation with NCHPO, USACE, and representatives of the church congregation. Church prefers and NCHPO, USACE, and NCDOT concur with choice of a concrete barrier with moment slab topped with an aluminum fence (see attached sectional drawing). The rear (northwest side) of the retaining wall facing the church building will be finished with a brick veneer matching the church façade in bond and color; the barrier with moment slab will receive a warm, neutral stain to complement the brick veneer. The one-foot-tall fence will be black in color and conform to the design illustrated in the attached photograph. A seven-foot-wide grassed planting strip is also included in the design. The structure will not compromise any contributing element of the historic property. 2. The driveway on Churchland Drive will be relocated further from the Reidsville Road intersection per request of the church. New location is at similar grade to existing; temporary construction easement will be shifted northwest and existing driveway removed (see attached aerial). Driveway relocation will not impact any contributing element of the historic property.

Initialed: NCDOT VEP Federal Agency DS ECA USACE NCHPO RGE for VEP

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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

RK&K

STIP Project: R-2577A

US 158 (Reidsville Rd.) From North of
US 421 / I-40 Bus. To SR 1965 (Belews Creek Rd.)

VICINITY MAP

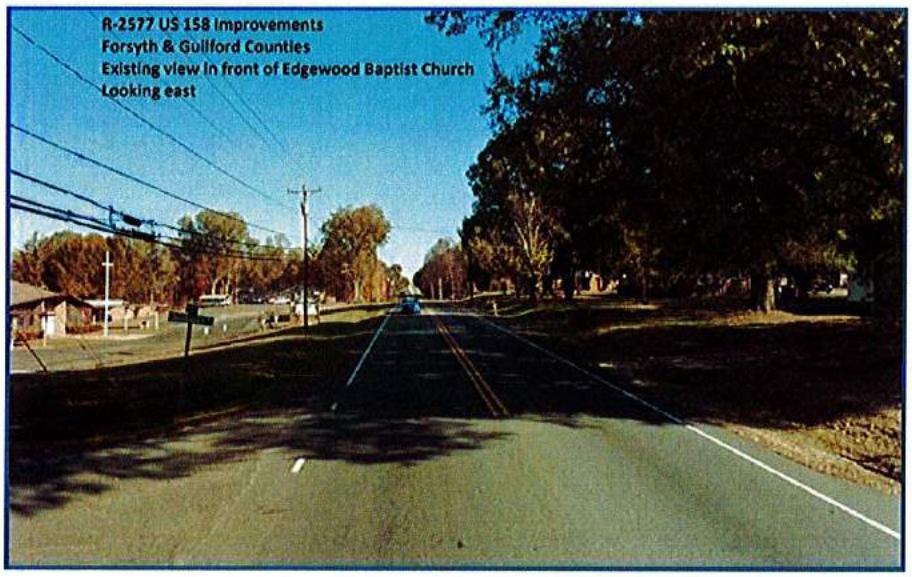
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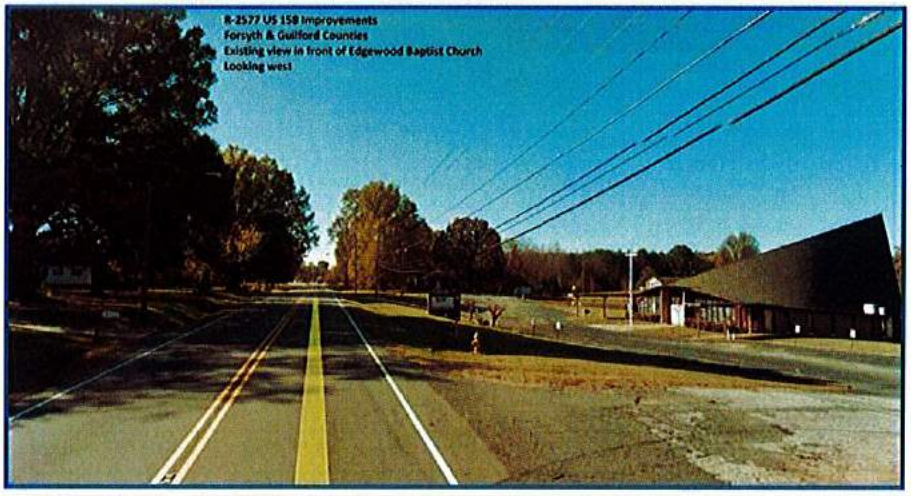
Source: ESRI Resource Data

Proposed National Register Boundary
Edgewood Baptist Church (FY3292-DE)

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Existing conditions along Reidsville Road (US 158)
at the Edgewood Baptist Church

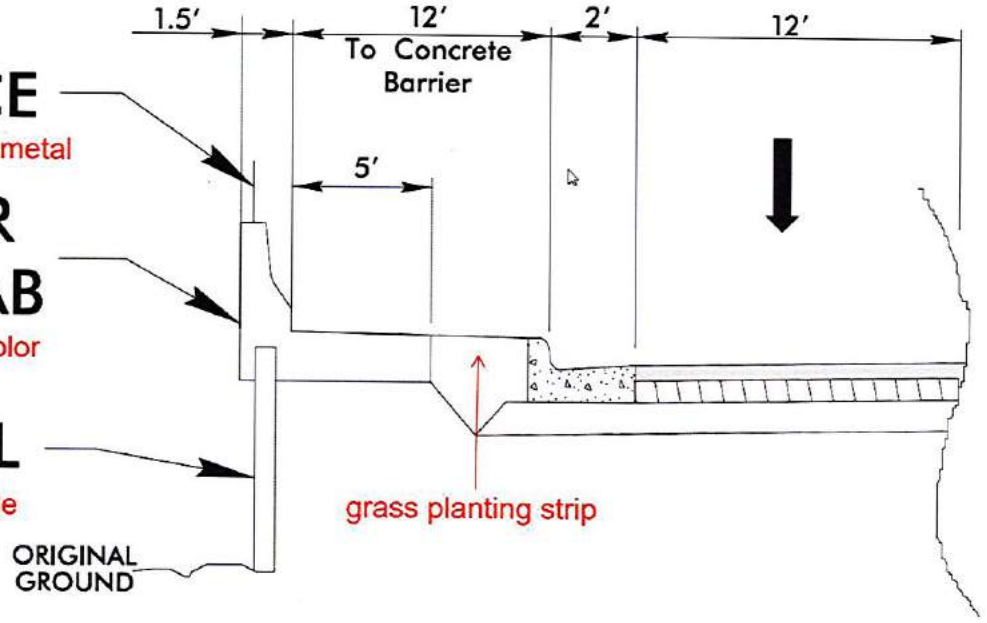


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1′ FENCE
black ornamental metal

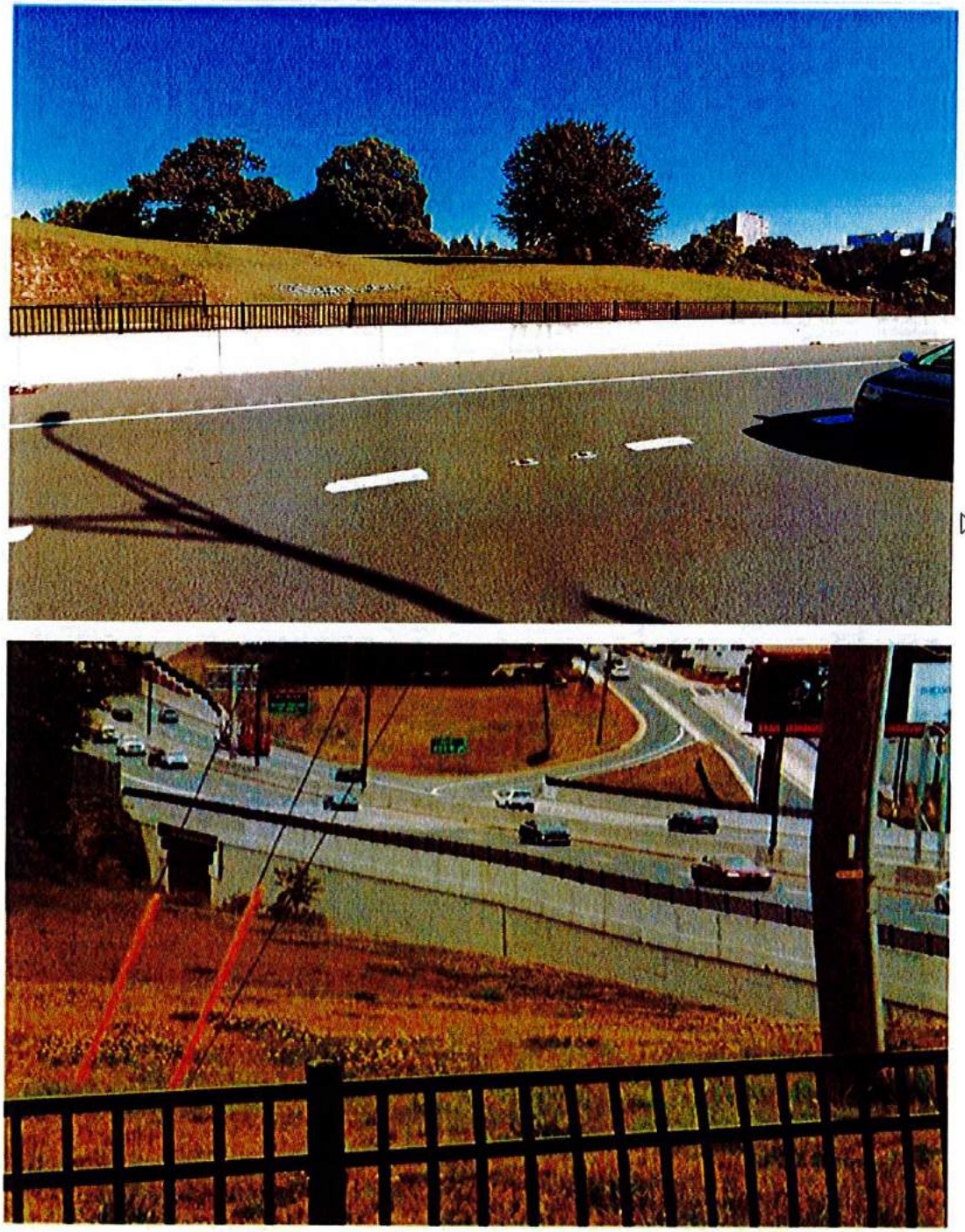
CONCRETE BARRIER WITH MOMENT SLAB
with warm neutral stain to complement brick color

RETAINING WALL
with brick veneer to match church facade



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OPTIONS FOR SAFETY TREATMENT



Barrier on top of retaining wall. Images from the front and back.

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DRIVEWAY RELOCATION



Driveway shown in red to be removed and new drive constructed to create entrance to back portion of parking lot.

SEPA EA/FONSI

R-2577ABC

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROJECT MANAGEMENT UNIT

SUBMITTED PURSUANT TO 42 U.S.C. 4332(2)(C)

US 158 (REIDSVILLE ROAD) IMPROVEMENTS

FROM MULTI-LANES NORTH OF US 421/I-40 BUSINESS IN WINSTON-SALEM
TO US 220 (I-73) IN STOKESDALE
FORSYTH AND GUILFORD COUNTIES, NORTH CAROLINA
WBS 37405.1.1
STIP PROJECT NUMBER R-2577

ADMINISTRATIVE ACTION

STATE ENVIRONMENTAL ASSESSMENT/FINDING OF NO SIGNIFICANT IMPACT

DECEMBER 2018

Documentation Prepared by AECOM Technical Services of North Carolina, Inc.

12/12/2018 — DocuSigned by: Christina Shumate 7C83C29A9ECA405...
Date — **Christina Shumate, AICP, Project Manager**
AECOM Technical Services of North Carolina, Inc.

12/12/2018
Date — **Robert A. Joyner, P.E., Planning Manager**
AECOM Technical Services of North Carolina, Inc.

NORTH CAROLINA PROFESSIONAL SEAL 24925 ENGINEER ROBERT ANDREW JOYNER

For the North Carolina Department of Transportation

12/13/2018 — DocuSigned by: Laura C. Sutton AE35E3E6727640E...
Date — **Laura Sutton, P.E., Team Lead**
Project Management Unit
North Carolina Department of Transportation

12/12/2018 — DocuSigned by: Karen Reynolds 512F0E5DF1024CB...
Date — **Karen Reynolds, Project Manager**
Project Management Unit
North Carolina Department of Transportation

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Acronyms and Abbreviations

Term	Definition
AADT	Average Annual Daily Traffic
AEC	Area of Environmental Concern
APE	Area of Potential Effects
BMP	Best Management Practices
CFR	Code of Federal Regulations
CIA	Community Impact Assessment
CIW	Citizens Informational Workshop
CLOMR	Conditional Letter of Map Revision
CO	Carbon Monoxide
CP	Concurrence Point
CTP	Comprehensive Transportation Plan
CWA	Clean Water Act
dB(A)	decibel
DMS	[NC] Division of Mitigation Services
DPM	Design Public Meeting
DSA	Demographic Study Area
DWR	[NC] Division of Water Resources
EA	Environmental Assessment
EEP	Ecosystem Enhancement Program
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUSA	Future Land Use Study Area
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
GS	[NC] General Statute
HPO	[NC] Historic Preservation Office
HUC	Hydrologic Unit Code
HQW	High Quality Water
LEDPA	Least Environmentally Damaging Practicable Alternative
LOMR	Letter of Map Revision
LOS	Level of Service
LUSA	Land Use Scenario Assessment
LWCF	Land and Water Conservation Fund
MAP-21	Moving Ahead for Progress in the 21st Century
mph	miles per hour
MPO	Metropolitan Planning Organization
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NC	North Carolina

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Term	Definition
NCDCR	North Carolina Department of Cultural Resources
NCDEQ	North Carolina Department of Environmental Quality
NCDPR	North Carolina Division of Parks and Recreation
NCDOT	North Carolina Department of Transportation
NCFMP	North Carolina Floodplain Mapping Program
NCNHP	North Carolina Natural Heritage Program
NEPA	National Environmental Policy Act of 1969
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NHS	National Highway System
NLEB	Northern long-eared bat
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	Noise Study Area
NRTR	Natural Resources Technical Report
NSW	Nutrient Sensitive Waters
OSA	Office of State Archaeology
PART	Piedmont Authority for Regional Transportation
PBO	Programmatic Biological Opinion
PDA	Probable Development Area
PNA	Primary Nursery Area
RCBC	Reinforced Concrete Box Culvert
RCP	Reinforced Concrete Pipe
SEPA	State Environmental Policy Act
SHC	Strategic Highway Corridors
SLOPES	Standard Local Operating Procedure for Endangered Species
SR	State Route
STC	Strategic Transportation Corridors
STIP	State Transportation Improvement Program
TSM	Transportation Systems Management
TTST	Tractor Trailer Trucks
USACE	US Army Corps of Engineers
USC	United States Code
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
UST	Underground Storage Tank
UT	Unnamed Tributary
VAD	Voluntary Agriculture District
VPD	Vehicles Per Day
WQC	Water Quality Certification

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PROJECT COMMITMENTS

US 158 (REIDSVILLE ROAD) IMPROVEMENTS
FROM MULTI-LANES NORTH OF US 421/I-40 BUSINESS IN WINSTON-SALEM TO US 220 (I-73) IN STOKESDALE

FORSYTH AND GUILFORD COUNTIES, NORTH CAROLINA

WBS No. 37405.1.1

STIP No. R-2577

NCDOT – Division 9 – Duke Energy Conveyance Permit

Duke Energy owns all the land within and immediately adjacent to Belews Lake. A conveyance permit from Duke Energy will be obtained prior to the removal of the existing bridge along US 158 over Belews Lake, and the construction of proposed dual replacement bridges. The North Carolina Department of Transportation (NCDOT) Division 9 staff will coordinate with Duke Energy to obtain a conveyance permit for implementation conditions of the conveyance permit for the final design and construction of the project.

NCDOT – Division 9 – FEMA

Forsyth and Guilford counties are participants in the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA). This project will involve construction activities on or adjacent to FEMA regulated streams. Based on the most current information available from the North Carolina Floodplain Mapping Program (NCFMP), the project will cross Lowery Mill Creek, Belews Creek, and Belews Lake, all of which have an associated 100-year floodplain. Additionally, the project will cross a regulatory floodway at Lowery Mill Creek and Belews Creek. The Hydraulics Unit will coordinate with the NCFMP to determine the status of the project with regard to applicability of the NCDOT Memorandum of Agreement with the NCFMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, engineers from NCDOT Divisions 7 and 9 shall submit sealed as-built construction plans to the NCDOT Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankments located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

NCDOT – Division 9 – Northern long-eared bat

Since this project is state-funded, the U.S. Army Corps of Engineers (USACE) will act as the lead agency for issues related to the northern long-eared bat (NLEB). The USACE has developed a Standard Local Operating Procedure for Endangered Species (SLOPES) to address NLEB when they are the lead agency, which NCDOT will follow for the portions of the project within Forsyth County. The requirements of the SLOPES for NLEB will be completed prior to Let and will be submitted to USACE.

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NCDOT – Divisions 7 and 9 – Water Quality

The NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable during the final design phase of this project. Design standards for sensitive watersheds will be implemented for portions of the project occurring in the Jordan Lake watershed.

NCDOT – Division 7 – Northern long-eared bat

After project completion, the contract administrator for construction must submit the actual amount of tree clearing reported in tenths of acres. This information should be submitted to the NCDOT Biological Surveys group.

NCDOT – Right-of-Way Branch – Voluntary Agricultural Districts

The project will impact three VAD properties. If right-of-way will be acquired from VAD properties through eminent domain, the Forsyth County VAD Ordinance requires the Forsyth County Agricultural Advisory Board hold a public hearing concerning the proposed condemnation, before condemnation may be initiated. Any VAD lands converted to non-agricultural use as part of a temporary construction easement must be returned to farmable condition by the project completion. If any VAD property holders refuse settlement, the NCDOT Right-of-Way Branch must contact the Project Management Unit and Division Project Development in order to pursue a public hearing, before pursuing condemnation.

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S. PROJECT SUMMARY

S.1 Type of Action

The proposed action is listed in the North Carolina Department of Transportation (NCDOT) 2018-2027 State Transportation Improvement Program (STIP) as Project Number R-2577 and is state funded. This combined State Environmental Assessment / Finding of No Significant Impact (EA/FONSI) is being conducted for the project in accordance with the North Carolina Environmental Policy Act (SEPA), which was established to ensure that state agencies review the environmental effects of all activities that involve an action by a state agency and expenditure of public monies, or involve the private use of public land, and have a potential negative environmental effect upon natural resources, public health and safety, or natural beauty, or negatively impact historic or cultural elements of the state.

S.2 Project Description

The NCDOT proposes to improve US 158 (Reidsville Road) from the multi-lanes north of US 421/I-40 Business in Winston-Salem (Forsyth County) to US 220 (I-73) in Stokesdale (Guilford County) for a total length of approximately 18.8 miles. The project proposes to widen the existing two-lane, two-way roadway to a multi-lane, median-divided facility, including a new-location section to bypass the existing US 158 alignment in Stokesdale (see Figure S-1). R-2577 is divided into three sections:

- Section A begins at Old Greensboro Road in Winston-Salem and extends to Belews Creek Road (SR 1965) in Forsyth County;
- Section B begins at Belews Creek Road (SR 1965) in Forsyth County and extends to Anthony Road (SR 2034) in Guilford County; and,
- Section C begins at Anthony Road (SR 2034) in Guilford County and extends to the junction of US 158 and US 220 (I-73) in Stokesdale, including a new location bypass section of existing US 158 through Stokesdale.

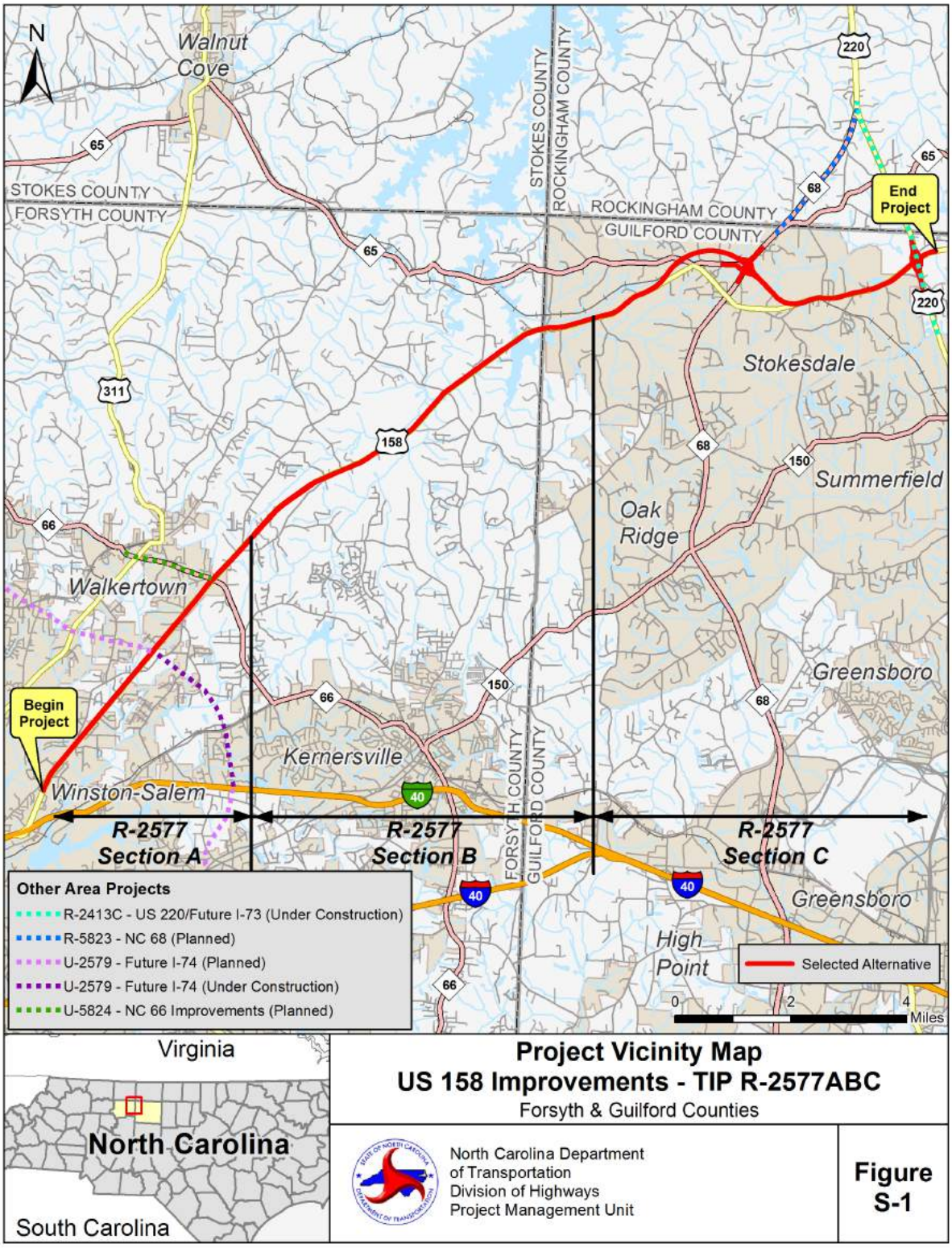
Right-of-way acquisition and construction for each of the three sections will occur independently. This environmental document, as well as permitting for the project, will encompass all sections. Section A and Section B are programmed in the current 2018-2027 STIP for right-of-way acquisition to begin in 2020 and 2024 and construction in 2022 and 2026, respectively. Section C is currently unfunded for both right-of-way and construction.

S.3 Summary of Purpose and Need

The purpose of the project is to improve the traffic carrying capacity and level of service (LOS) along US 158, within the project limits. The project is needed to correct existing transportation deficiencies along this section of US 158 that cause additional travel delays, increase the potential for accidents, and contribute to the inefficient operation of motor vehicles.

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Figure S-1: Project Vicinity Map



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S.4 Alternatives Considered

Sections A and B were divided into a total of seven widening option segments. Three widening options were considered for each segment: northern widening, southern widening, and transitional "best-fit" widening. The Merger Team, consisting of federal, state, and local resource and permitting agency representatives, narrowed these options down to a single, preferred widening option for each of the seven segments (See Table S-1).

In Section C, six new-location alternatives and one improve-existing alternative were originally considered in the vicinity of Stokesdale. Two of the new-location alternatives were carried forward for detailed study. These bypass alternatives were Alternative 2, a southern bypass of the Stokesdale town center, and Alternative 3, a northern bypass of the Stokesdale town center (see Figure S-2).

S.5 NCDOT LEDPA/Selected Alternative

S.5.1 Sections A and B

NCDOT and the Merger Team concurred on the Least Environmentally Damaging Practicable Alternative (LEDPA) as a combination of northern and transitional widening options in Sections A and B, as shown in Table S-1.

Table S-1: Widening Options in Sections A & B

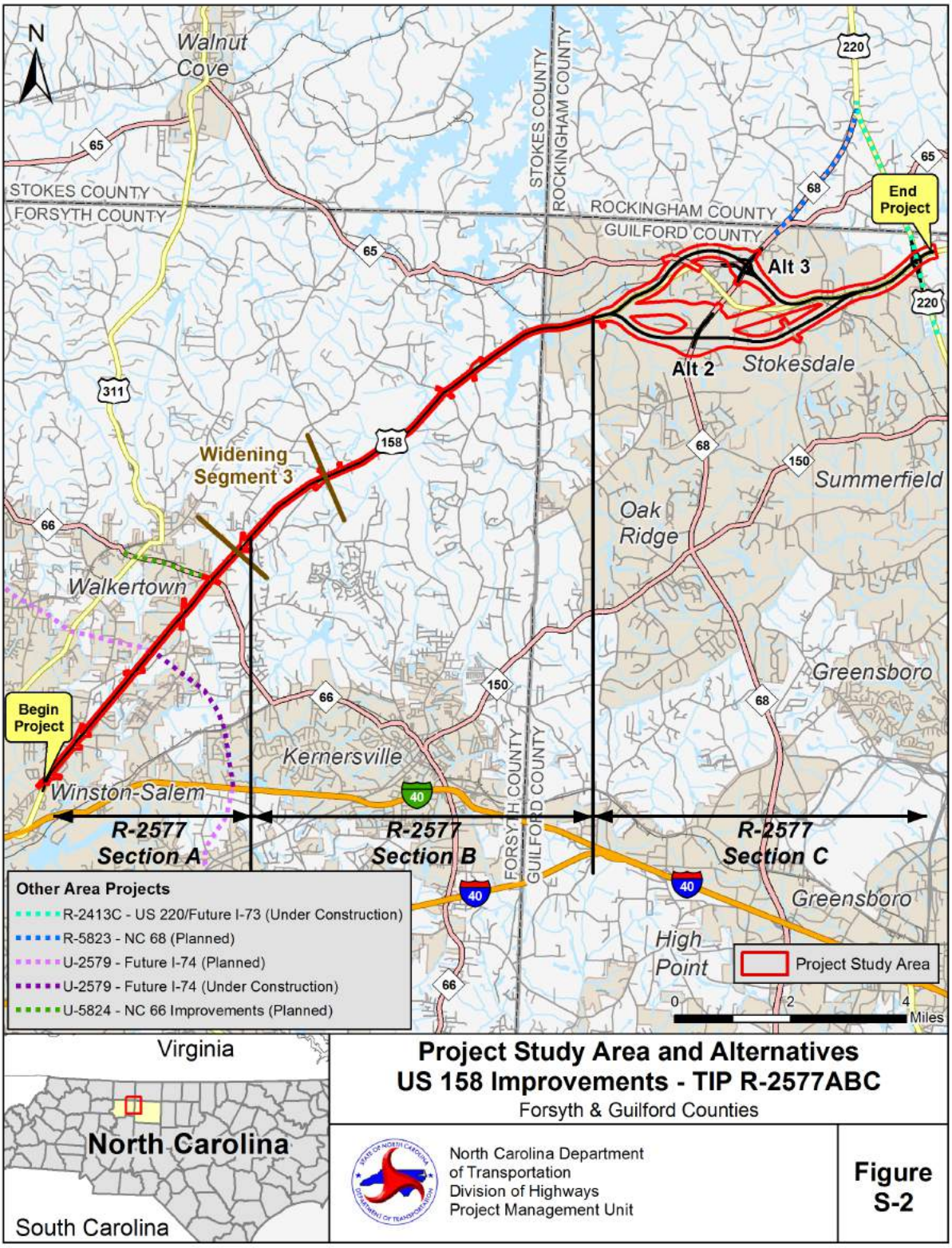
Project Segment	Segment Termini	Design Options for Further Study
Segment 1	West of Old Greensboro Road to Darrow Road	Northern widening
Segment 2	Darrow Road to N.C. 66	Transitional widening
Segment 3	NC 66 to Flat Rock Road	Transitional widening
Segment 4	Flat Rock Road to Goodwill Church Road	Transitional widening
Segment 5	Goodwill Church Road to Peaceful Valley Drive	Transitional widening
Segment 6	Peaceful Valley Drive to Coldwater Road	Transitional widening
Segment 7	Coldwater Road to Anthony Road	Northern widening

S.5.2 Section C

NCDOT and the Merger Team selected Alternative 3, the northern bypass, for Section C.

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Figure S-2: Project Study Area and Alternatives



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S.6 Summary of Environmental Effects

No significant adverse impacts are anticipated as a result of the proposed project. Table S-2 gives a summary of the resources and impacts resulting from the NCDOT recommended alternative.

Table S-2: Impacts Summary

Impact Type		R-2577 Impacts
Project Length (miles)		18.8
Schools		0
Churches		0
Cemeteries		4
Retirement Homes		3
Voluntary Agricultural Districts (No. of Impacts / Total Ac.)		3 / 3.6
Relocations	Residential	144
	Businesses	15
Traffic Noise Impacts	Residential	257
	Businesses	0
	Other	2
	Total Impacts	259
Historic Properties (Listed on or Eligible for the National Register)		2
Section 6(f) Properties		0
Federally Listed Species		3
Forested Areas (acres)		134
Wetlands (acres)		1.4
Streams	Crossings	34
	Linear Feet	6,690
Ponds / Lake (acres)		4.4
Jordan Lake Stream Buffers	Zone 1 Buffer (Ac)	4.9
	Zone 2 Buffer (Ac)	3.5
100-year Floodplain & Floodway (Ac)		11.2
Hazardous Material Sites	USTs	8
	Inactive Hazardous Sites	1
Adverse/Disproportionate Impacts to Minority/Low Income Populations		No
Right-of-way Cost ($Million)		98.3
Utility Relocation Cost ($Million)		1.6
Construction Cost ($Million)		124.7
Total Cost ($Million)		224.6*

Note: Impacts were calculated using the preliminary design slope stakes plus 25 feet.
*Total cost does not include mitigation costs.

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S.7 Permits Required

The proposed construction of the US 158 Improvements project will result in several activities requiring environmental regulatory permits from state and federal agencies. A list of these permits, organized by issuing agency, is provided below. NCDOT will obtain all necessary permits prior to construction.

United States Army Corps of Engineers - Section 404 Permit: any action that proposes to place fill into "Waters of the United States" falls under the jurisdiction of the United States Army Corps of Engineers (USACE), under Section 404 of the Clean Water Act (CWA) [33 USC 134]. The CWA provides for public notice and review of pending Section 404 permit applications. Encroachments into areas determined as subject under the CWA must be reviewed and approved by the USACE through the Section 404 program.

A Section 404 Individual Permit will likely be applicable for this project, due to the quantity of stream and wetland impacts anticipated. The USACE holds the final discretion as to what permit will be required to authorize project construction.

North Carolina Department of Environmental Quality, Division of Water Resources - Section 401 Water Quality Certification: any activity that may result in discharge to navigable waters and requires a federal permit must obtain a 401 Certification through the North Carolina Department of Environmental Quality (NCDEQ) Division of Water Resources (DWR) that such discharge would be in compliance with applicable state water quality standards. This permit is required in association with the Section 404 permitting process and is required prior to Section 404 authorization.

Jordan Lake Riparian Buffer Rules Authorization Certificate: any non-exempt activity within the 50-foot (15.2-meter) wide riparian buffer along all perennial and intermittent streams in the Jordan Lake watershed requires an authorization certificate, which would be applied for in combination with the 401 Certification. A list of allowable uses in buffers is provided in the rules.

Duke Energy Conveyance Permit: NCDOT will need to obtain a conveyance permit from Duke Energy prior to the removal of the existing bridge on US 158 over Belews Lake and the construction of dual bridges at the same location of the existing bridge. NCDOT Division 9 staff will coordinate with Duke Energy to obtain the conveyance permit prior to construction and to implement conditions of the conveyance permit into the final design and construction of the project.

S.8 Coordination

The following federal, state, and local agencies were consulted during the preparation of this document. The project was also reviewed through the NEPA / Section 404 Merger Process, commonly referred to as the Merger Process, in coordination with these agencies:

- US Army Corps of Engineers (USACE)
- US Fish and Wildlife Service (USFWS)
- US Environmental Protection Agency (USEPA)
- NC Department of Natural and Cultural Resources – Historic Preservation Office (HPO)
- NC Department of Environmental Quality - Division of Water Resources (NCDWR)
- NC Wildlife Resources Commission (NCWRC)

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- Winston-Salem Urban Area Metropolitan Planning Organization (MPO)
- Greensboro Urban Area MPO

See Appendix A for comments received from federal, state, and local agencies regarding this project.

S.9 Contact Information

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

Karen Reynolds, Project Manager
NCDOT Project Management Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Telephone: 919-707-6038
Email: kreynolds@ncdot.gov

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1. DESCRIPTION OF PROPOSED ACTION

1.1 General Description

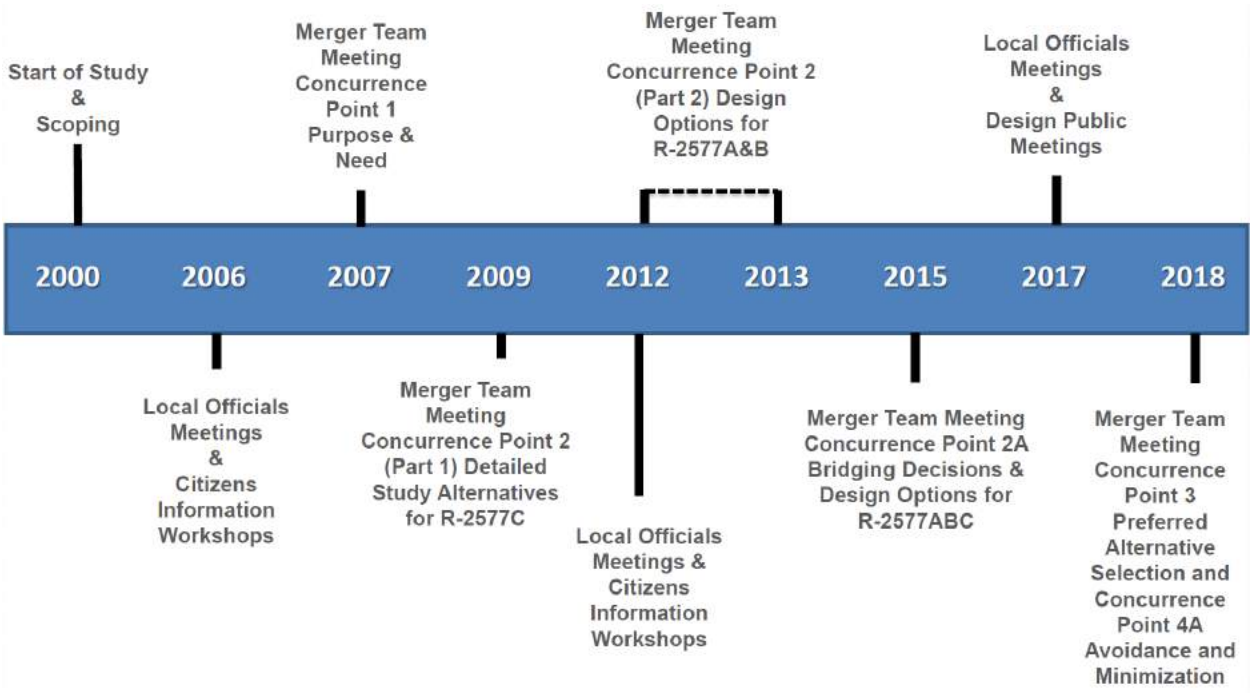
The North Carolina Department of Transportation (NCDOT) proposes to widen approximately 18.8 miles of US 158 (Reidsville Road) to a multi-lane facility, from the existing multi-lane section north of US 421/I-40 Business in Winston-Salem, Forsyth County, to US 220 (I-73) in Stokesdale, Guilford County. The proposed project is included in the 2018-2027 State Transportation Improvement Program (STIP) as project number R-2577. The project is divided into three sections for funding and construction purposes, sections A, B, and C. R-2577A begins at the multi-lanes north of US 421/I-40 Business in Forsyth County and ends at SR 1965 (Belews Creek Road), just north of Vance Road in Forsyth County. R-2577B begins at SR 1965 (Belews Creek Road) in Forsyth County and ends just north of SR 2034 (Anthony Road) in Guilford County. R 2577C begins just north of SR 2034 (Anthony Road) in Guilford County and ends at US 220 (I-73) in Guilford County.

US 158 is currently a mostly two-lane, two-way, undivided facility with no control-of-access within the majority of the project study area. US 158 is designated as a Rural Principal Arterial and provides a link between I-40 in Winston-Salem and US 220 (I-73) north of Greensboro. The proposed project would upgrade US 158 to a four-lane, median-divided facility with a combination of no control-of-access and partial control-of-access. See Figure S-1 for a map of the project vicinity.

1.2 Historical Resume and Project Schedule

Start-of-study and scoping for the project was held in 2000. The project was placed on hold several times between 2006 and 2012, when it lost funding in the STIP. Project milestones and their associated dates are shown below:

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The current project schedule is as follows:

- R-2577A: Right-of-Way Acquisition – 2020; Construction 2022
- R-2577B: Right-of-Way Acquisition – 2024; Construction 2026
- R-2577C: Right-of-Way Acquisition and Construction – not funded

1.3 Cost Estimates

The project is State-funded. Updated project cost estimates are show in Table 3.

Table 3: Project Cost

Project Section	Right-of-Way ($Million)	Utilities ($Million)	Construction ($Million)	Total Project Cost ($Million)*
Part A	36.3	0.53	35.4	72.2
Part B	25.4	0.33	40.9	66.6
Part C	36.6	0.73	48.4	85.7
Total	98.3	1.59	124.7	224.6

*Total cost does not include mitigation costs.

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2. PURPOSE AND NEED FOR PROJECT

2.1 Purpose of Project

The primary purpose of the proposed project is to improve traffic flow and level of service (LOS) along approximately 19 miles of US 158 between Winston-Salem in Forsyth County to US 220 (I-73) in Guilford County.

2.2 Need for Project

The project is needed due to existing and projected transportation deficiencies along this section of US 158 that cause additional travel delays, increase the potential for accidents, and contribute to the inefficient operation of motor vehicles.

What is Level of Service (LOS)?

The traffic carrying ability of a roadway is defined by a LOS letter grade A through F, which indicates the ability for a highway to carry traffic. LOS A indicates free-flow conditions and LOS F indicates extreme delay. The maximum capacity of a roadway is defined by LOS E.

2.2.1 Capacity Deficiencies and Traffic Volumes

Capacity deficiencies exist along US 158 in the project study area and level of service is projected to decline by the Design Year 2040. The current (2017) No-Build annual average daily traffic (AADT) volumes on existing US 158 range from 21,000 at the project beginning in Section A, to 7,000 east of the US 220 (I-73) interchange, the project ending terminus. By the Design Year 2040, the No-Build AADT volumes along US 158 are expected to range from 24,400, at the beginning of the project in Section A, to 8,100 east of the US 220 (I-73) interchange (see Table 4). The truck forecast in 2040 is anticipated to range between four percent and six percent for dual axle trucks (Duals) and four percent to twelve percent for tractor trailer trucks (TTST).

Table 4: Existing and Future No-Build Annual Average Daily Traffic (AADT) Volumes

Project Section	2017/2040 AADT Traffic Segments	
Section A	**Old Greensboro Road to Winston-Salem Northern Beltway**	**Winston-Salem Northern Beltway to Belews Creek Road**
2017	15,300 - 21,000	13,300 – 16,800
2040	16,900 – 21,700	16,300 – 24,400
Section B	**Belews Creek Road to Anthony Road**	
2017	8,500 – 9,600	
2040	9,700 – 11,000	
Section C	**Anthony Road to NC 68**	**NC 68 to east of US 220 (I-73)**
2017	8,500 – 11,700	7,000 – 10,200
2040	9,900 – 14,900	8,100 – 15,600

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In 2040, twenty (20) out of thirty (30) intersections analyzed within the project study area would function at a level of service (LOS) E or F during at least one peak hour (AM Peak or PM Peak). These projected deficiencies would cause substantial travel delay, increase the potential for accidents, and contribute to the inefficient operation of motor vehicles. Traffic forecast figures are located in Appendix B, and show existing and future no-build conditions along US 158, as well as build conditions for the years 2017 and 2040.

2.2.2 Mobility and Connectivity

The proposed project was one of 55 highway corridors across the state defined in the North Carolina Strategic Highway Corridors (SHC) Policy, adopted by the North Carolina Board or Transportation in 2004. The SHC Policy represented a timely initiative to protect the mobility and connectivity functions of critical highway facilities, while promoting environmental stewardship through maximizing the use of existing facilities to the extent possible.

The SHC Policy was replaced by the North Carolina Strategic Transportation Corridors (STC) Network that represents the NCDOT highest priority for long-term preservation and improvement of 25 corridors across the State. US 158, between Winston Salem and US 220 (I-73), is not identified as one of the 25 STC corridors, but it is shown as a "low volume US Route" on the Strategic Corridor Element 2: Freight and Passenger Mobility Map. The objective of these routes is to serve "major inter-regional travel with higher levels of service, moving high volumes of passenger or freight traffic, and providing multiple transportation opportunity in travel or shipping in the corridor."

US 158, between Winston-Salem and US 220 (I-73) north of Greensboro, is also listed in the National Highway System (NHS), which includes roadways that are important to the nation's economy, defense, and mobility. It is identified as a "Moving Ahead for Progress (MAP)-21 Principal Arterial" on the NHS map for Winston Salem, North Carolina.

2.2.3 Other Potential Benefits of Proposed Project

In addition to the project satisfying the stated purpose and need, the following benefits are anticipated to result from the project:

- Reduce the potential for traffic collisions at intersections by restricting turn movements, using the synchronized street/superstreet concept;
- Improve traffic flow by providing partial control-of-access, one driveway access per property, for most of the project length;
- Better accommodate higher volumes of motor vehicles and trucks by providing additional travel lanes; and,
- Reduce congestion and travel times.

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2.3 Description of Existing Conditions

2.3.1 Functional Classification

Functional classification is the process of grouping roadways into classes, according to the character of service they are intended to provide. These are defined by the Federal Highway Administration (FHWA) as arterials, collectors, or local roadways. The Functional Classification System identifies US 158 as a principal arterial in the Winston-Salem and Walkertown areas, and a minor arterial eastward to Stokesdale. Principal arterials provide a high degree of mobility by serving major centers of metropolitan areas, as well as providing mobility through rural areas. Minor arterials serve smaller geographic areas and offer connectivity to the higher arterial system, such as principal arterials, freeways, and expressways.

Based on the NCDOT Functional Classification System, the major roadways within the project study area have the following classifications:

- NC 66 – Minor arterial
- NC 65 – Minor arterial
- NC 68 – Principal arterial
- US 220 (I-73) – Principal arterial

2.3.2 Physical Description of Existing Facilities

The existing roadways in the project study area are shown on Figure S-1 and are described below:

US 158 (Reidsville Road) is a primarily two-lane highway with grass shoulders within the project study area that connects I-40 Business/US 421 in Winston-Salem with US 220 (I-73) north of Greensboro. There is currently no control-of-access along US 158, which limits the level of mobility and travel speeds through the corridor, due to numerous driveways for residences and businesses on both sides of the road. The existing right-of-way of US 158, within the project study area, varies between 60 feet and 300 feet, and the existing speed limit varies between 35 miles per hour (mph) and 55 mph.

NC 66 (Old Hollow Road) is mostly a two-lane highway with grass shoulders that crosses over US 158 in Walkertown, in Forsyth County. The existing speed limit along NC 66 within the project study area is 45 mph. There is currently no control-of-access along NC 66 within the project study area. STIP Project U-5824 proposes to widen NC 66 north of US 158 and would also improve the intersection with US 158. STIP Project U-5824 is programmed in the 2018-2027 STIP and is scheduled for right-of-way acquisition in 2020 and construction in 2022.

NC 65 (Belews Creek Road) is a two-lane highway with grass shoulders that intersects US 158 in Stokesdale, in Guilford County. The existing speed limit along NC 65 within the project study area is 35 mph. There is currently no control-of-access along NC 65 within the project study area.

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NC 68 is mostly a two-lane highway with grass shoulders that crosses over US 158 in Stokesdale, in Guilford County. The existing speed limit along NC 68 within the project study area varies between 35 mph and 50 mph. There is currently no control-of-access along NC 68 within the project study area.

US 220 (I-73) is the eastern terminus of the project and is a four-lane, median-divided facility. US 220 is part of the future I-73 corridor that starts in Myrtle Beach, South Carolina, and runs through North Carolina and further north through Virginia, West Virginia, Ohio, and Michigan. A new interchange has recently been constructed where US 158 connects with US 220 (I-73). Full control-of-access exists along US 158 near the new interchange with US 220 (I-73).

2.4 Transportation Plans

This section describes the consistency of the project with transportation plans.

2.4.1 North Carolina Transportation Improvement Program

The proposed US 158 improvements are included in the NCDOT 2018-2027 STIP as Project No. R-2577. Other major STIP projects in the vicinity of this project are listed in Table 5.

Table 5: Other STIP Projects in the Vicinity of the Study Area

STIP No.	Description	Schedule in Fiscal Years (FY)
R-5823	NC 65 in Stokesdale (southernmost intersection) to US 220 / Future I-73. Widen to multi-lanes.	Right-of-Way and Utilities: FY 2021; Construction: FY 2023
R-2413	NC 68 at SR 2011 (Edgefield Road) in Guilford County to US 220-NC 68 intersection in Rockingham County. Four-lane freeway, on new location, NC 68 to US 220 and four lanes along US 220 to NC 68 in Rockingham County.	Currently under construction
U-2579	Winston-Salem Northern Beltway, Eastern Section, I-74/ US 311 to US 52. Multi-lane freeway on new location.	Currently under construction
U-5824	NC 66 (Old Hollow Road) from Harley Drive to US 158 in Walkertown. Widen to multi-lanes.	Right-of-Way and Utilities: FY 2020; Construction: FY 2022

Source: NCDOT 2018-2027 State Transportation Improvement Program, Divisions 7 and 9.

2.4.2 Local Transportation Plans

The transportation planning process is a comprehensive process that integrates urban area planning practices with local, regional, and statewide transportation planning practices. The transportation planning process identifies needs by evaluating land development and population growth trends in urbanized areas. The process begins through cooperative efforts between the NCDOT Transportation Planning Branch and local planning officials. The following sections describe local transportation plans and the proposed project compatibility with these plans.

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2.4.2.1 Winston-Salem 2040 Metropolitan Transportation Plan

The Winston-Salem Urban Area Metropolitan Planning Organization (MPO) adopted the *2040 Metropolitan Transportation Plan* (MTP) on September 17, 2015, and the plan was approved by FHWA on October 1, 2015. The *2040 MTP* mapping shows R-2577A with a completion date between 2022 and 2030, and R-2577B is shown with a completion date of 2026-2035. Section C does not fall within the boundaries of this plan.

2.4.2.2 Winston-Salem Urban Area Comprehensive Transportation Plan

The Winston-Salem Urban Area MPO, with help from the NCDOT, studied and developed its *Comprehensive Transportation Plan* (CTP), which was adopted May 17, 2012, in order to forecast future transportation needs. The plan identifies Sections A and B of the R-2577 project as being over capacity by the year 2035. The plan recommends roadway improvements in these sections to accommodate the projected increase in traffic and to maintain a LOS D. Section C does not fall within the boundaries of this plan.

2.4.2.3 Winston-Salem Urban Area Collector Street Plan

The purpose of the *Winston-Salem Urban Area Collector Street Plan* (2007) is to inventory the existing collector street network and develop a plan for future collector streets that will promote connectivity by creating an efficient and balanced street system for automobiles, transit, pedestrians, and bicycles. The plan recommends a number of connector street projects in the area of the R-2577 project. Major collector street projects include the extension of Williston Road from Old Belews Creek Road to US 158, the Walkertown Bypass, and an east-west connector from the Walkertown Bypass across US 158 to Old Valley School Road. All of these projects are currently unfunded, with no identified construction dates.

2.4.2.4 Greensboro 2040 Metropolitan Transportation Plan

The *2040 Greensboro MTP* was adopted by the Greensboro Urban Area MPO in September 2015. This plan provides an assessment of future area multi-modal transportation needs, potential issues with project recommendations, air quality analysis, and future transportation funding recommendations. R 2577C is listed in the plan as a 2031-2040 roadway project. Sections A and B do not fall within the boundaries of this plan.

2.4.2.5 Greensboro Urban Area MPO Comprehensive Transportation Plan

The *Greensboro CTP* (2010) is a long-term list of recommended transportation improvements. The plan does not include specific timelines, costs, or funding sources. The CTP components include highways, bicycle and pedestrian facilities, public transportation, and passenger rail. The *Greensboro CTP* recommends the following projects in the R-2577 project study area:

- US 158 corridor, including both the R-2577 project and extending eastward from US 220 (I-73) into Rockingham County, is identified as a boulevard that needs improvement along existing sections. The new-location segment of R-2577C in Stokesdale is also included in the Highway Map recommendations.

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- NC 68, from Greensboro to the Rockingham County line, is identified as an existing boulevard that needs improvement.

2.4.2.6 PART Regional Transit Development Plan

The Piedmont Authority for Regional Transportation (PART) *Regional Transit Development Plan* (2010) was developed to evaluate the existing transportation network of the region, travel patterns, routes, destination centers, infrastructure, and other areas of transportation influence. The plan seeks to identify existing and future transportation needs throughout the region, in an effort to develop a sustainable, effective, and efficient regional system – the *2025 Regional Transit Vision*. The *2025 Regional Transit Vision* includes a range of transit recommendations for the region, including future express bus route service along the Reidsville Road (US 158) corridor between Business 40 in Winston-Salem and Old Hollow Road (NC 66) in Walkertown, where a future Park-and-Ride lot would be located. The PART *2025 Regional Transit Vision* has been adopted by each MPO and RPO in the Triad region, and recommendations of the plan incorporated into the MTPs for each jurisdiction. Since adoption of the *2025 Regional Transit Vision*, PART Board of Trustees and member counties have worked to secure funding for several of the plan's recommendations. As of August 2018, funding had not been secured for implementation of the US 158 express bus route service.

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3. ALTERNATIVES

3.1 Preliminary Study Alternatives

The alternatives considered for the proposed project are described in this section. Each alternative is evaluated with respect to its ability to meet the purpose of and need for the proposed action. A discussion of the alternatives considered, the process of elimination of those alternatives not determined reasonable, and the basis for the selection of the alternatives carried forward for detailed study are provided in this section. The performance measure for evaluating potential alternatives with respect to the stated project purpose and need is the ability to provide improved LOS along US 158 between I-40 in Forsyth County to US 220 (I-73) in Guilford County.

3.1.1 Alternative Modes of Transportation

There are limited transit options currently available in the sections of Forsyth and Guilford counties containing the project. While the introduction of transit options, as well as the implementation of local bicycle and pedestrian accommodations, could aid in reducing congestion in the project area, these options alone would not adequately meet the purpose of the project in improving traffic flow and LOS between Winston-Salem in Forsyth County and US 220 (I-73) in Guilford County. Therefore, NCDOT eliminated alternative transportation modes from further consideration.

3.1.2 Transportation Systems Management

Transportation Systems Management (TSM) measures typically consist of low-cost, minor transportation improvements to an existing facility, in place of large-scale modifications. TSM is designed to maximize the use and energy efficiency of a facility and to enhance traffic operations, while minimizing construction expenditures There are two main types of TSM improvements: operational and physical. Operational changes are largely administrative in nature and include traffic law enforcement, flexible work hours to stagger traffic, turn prohibitions, speed restrictions, and signal phasing or timing changes. Physical changes are usually more financially intensive and include turn-lanes, striping, warning devices, improved warning and information signs, and high occupancy vehicle lanes.

Although it is likely that signal coordination and intersection improvements along portions of US 158 could modestly reduce congestion, this alternative does not adequately meet the purpose of the project, by improving traffic flow and level of service between Winston-Salem in Forsyth County and US 220 (I-73) in Guilford County. Therefore, NCDOT eliminated the TSM Alternative from further consideration.

3.1.3 Improve Existing Facility

NCDOT considered alternatives to improve the existing facility throughout the project. Sections A and B were further divided into seven segments to develop widening option alternatives. Three widening options were considered for each segment: northern widening, southern widening, and transitional

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"best-fit" widening. Through the Merger process, NCDOT refined these options to a single preferred-widening alignment for each project segment.

NCDOT also considered an "improve-existing" alternative for Section C, in Stokesdale. In coordination with the Merger Team, NCDOT eliminated this alternative early in the Merger Process, due to a high number of impacts to historic properties and due to many potential relocations along existing US 158 through Stokesdale.

3.1.4 New Location Alternatives

In addition to the improve-existing alternatives, NCDOT also considered six new-location alternatives for Section C. Alternative 1 was developed from the Stokesdale thoroughfare plan; Alternative 2 was developed from the Greensboro MPO plan; Alternative 3 proposed a northern bypass around the Stokesdale town center; and Alternatives 1A, 1B, and 2A were combinations of Alternatives 1 and 2. A figure showing the location of the six new-location alternatives is located in Appendix F.

3.1.5 No-Build Alternative

The No-Build Alternative offers no improvements to the project area. This alternative assumes that all other projects currently planned or programmed in the STIP will be constructed, as proposed.

This alternative does not satisfy the project purpose of improving traffic flow and LOS on US 158 between Winston-Salem and US 220 (I-73). Although the No-Build Alternative would not meet the purpose and need for the project, it is retained, in accordance with NEPA (40 CFR 1502.14(d)) and FHWA guidance, for further consideration as a baseline for comparing potential impacts of other alternatives.

3.2 Detailed Study Alternatives

As detailed in Section 6 below, NCDOT and the Merger Team concurred that the detailed study alternatives carried forward for R-2577 consisted of:

- In Sections A and B, a single widening alignment for Segments 1, 2, 4, 5, 6, and 7
- Where Sections A and B abut, two widening alternatives for Segment 3 (a southern widening and a transitional widening)
- In Section C, two new-location alternatives, R-2577C Alternative 2 and R-2577C Alternative 3 (see Figure S-2).

In Section C, Alternative 2 diverges on new location to the south of US 158, just east of the SR 2014 (Anthony Road)/US 158 intersection, traverses to the south side of Stokesdale, crosses NC 68 just south of Prince Edward Road, ties back into existing US 158 just east of the existing Ellison Road intersection, and ends at the project eastern terminus, just east of the US 220 (I-73) interchange. Alternative 2 is approximately 6.3 miles long, with 4.6 miles on new location.

R-2577C Alternative 3 follows existing US 158 from just east of the SR 2014 (Anthony Road)/US 158 intersection and diverges on new location at the Branson Road intersection with US 158, traverses to the north side of Stokesdale, has a proposed interchange at the existing NC 65 and NC 68 intersection,

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ties back into existing US 220 (I-73) at the Athens Road intersection with US 158, and ends at the project eastern terminus just east of the US 220 (I-73) interchange. Alternative 3 is approximately 6.6 miles long, with 3.0 miles on new location.

3.3 NCDOT LEDPA/Selected Alternative

NCDOT and the Merger Team concurred on the Least Environmentally-Damaging Practicable Alternative (LEDPA) being an overall "best-fit" widening of US 158 for Sections A and B in Walkertown and Belews Creek, with widening occurring on the north side of US 158 in widening segments 1 and 7, and transitional widening in segments 2 through 6. NCDOT also garnered concurrence on Alternative 3, the northern bypass of the Stokesdale town center, as the LEDPA for Section C, in the Stokesdale vicinity.

Table 6 shows the NCDOT recommendations for widening along Sections A and B, as well as the recommended new-location alternative (Alternative 3) in Section C.

Table 6: NCDOT LEDPA/Selected Alternative

Project Section	Widening Segment	Segment Termini	LEDPA
A	1	West of Old Greensboro Road to Darrow Road	Northern widening
A	2	Darrow Road to NC 66	Transitional widening
A&B	3	NC 66 to Flat Rock Rd.	Transitional widening
B	4	Flat Rock Road to Goodwill Church Road	Transitional widening
B	5	Goodwill Church Road to Peaceful Valley Drive	Transitional widening
B	6	Peaceful Valley Drive to Coldwater Road	Transitional widening
B	7	Coldwater Road to Anthony Road	Northern widening
C	n/a	Anthony Rd. to US 220 (I-73)	Alternative 3 (North of Stokesdale)

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4. PROPOSED IMPROVEMENTS

4.1 Roadway Cross Section and Alignment

The proposed typical section is a four-lane, median-divided facility with two 12-foot lanes in each direction of travel. Some portions of the project would have curb and gutter, and other sections would have 8-foot outside grass shoulders and/or 6-foot grass inside shoulders. The project would include superstreet concepts, including bulb-outs for U-turns. No bicycle or pedestrian facilities are proposed at this time; however, a 10-foot wide berm would be provided for the sections where curb and gutter would be constructed, which would accommodate any future sidewalks.

Figure 4-1 shows a depiction of the proposed typical sections for this project.

4.1 Right-of-Way and Access Control

The existing right-of-way along US 158 within the project study area varies between 60 and 300 feet. The proposed right-of-way widths would vary between 130 and 300 feet.

There is currently no control-of-access along existing US 158, which limits the level of mobility and travel speeds through the corridor. Suburban areas along the corridor, primarily in northeast Winston-Salem, Walkertown, and Stokesdale (Sections A and C), have developed with a large number of residential, institutional, and commercial driveway connections within close proximity of one another. However, most new residential subdivisions along the corridor have been designed with a single shared access point. The more rural portion of the corridor, largely through Section B, has fewer existing driveway connections, which are spaced further apart.

The project would provide partial control-of-access for most of its length, with no control-of-access provided at the beginning and end of the project. Full control-of-access will be provided at the proposed interchange of the future Winston-Salem Northern Beltway (STIP Project U-2579) and at the proposed interchange at NC 68 for the new-location bypass (STIP Project R-2577C).

4.2 Speed Limit and Design Speed

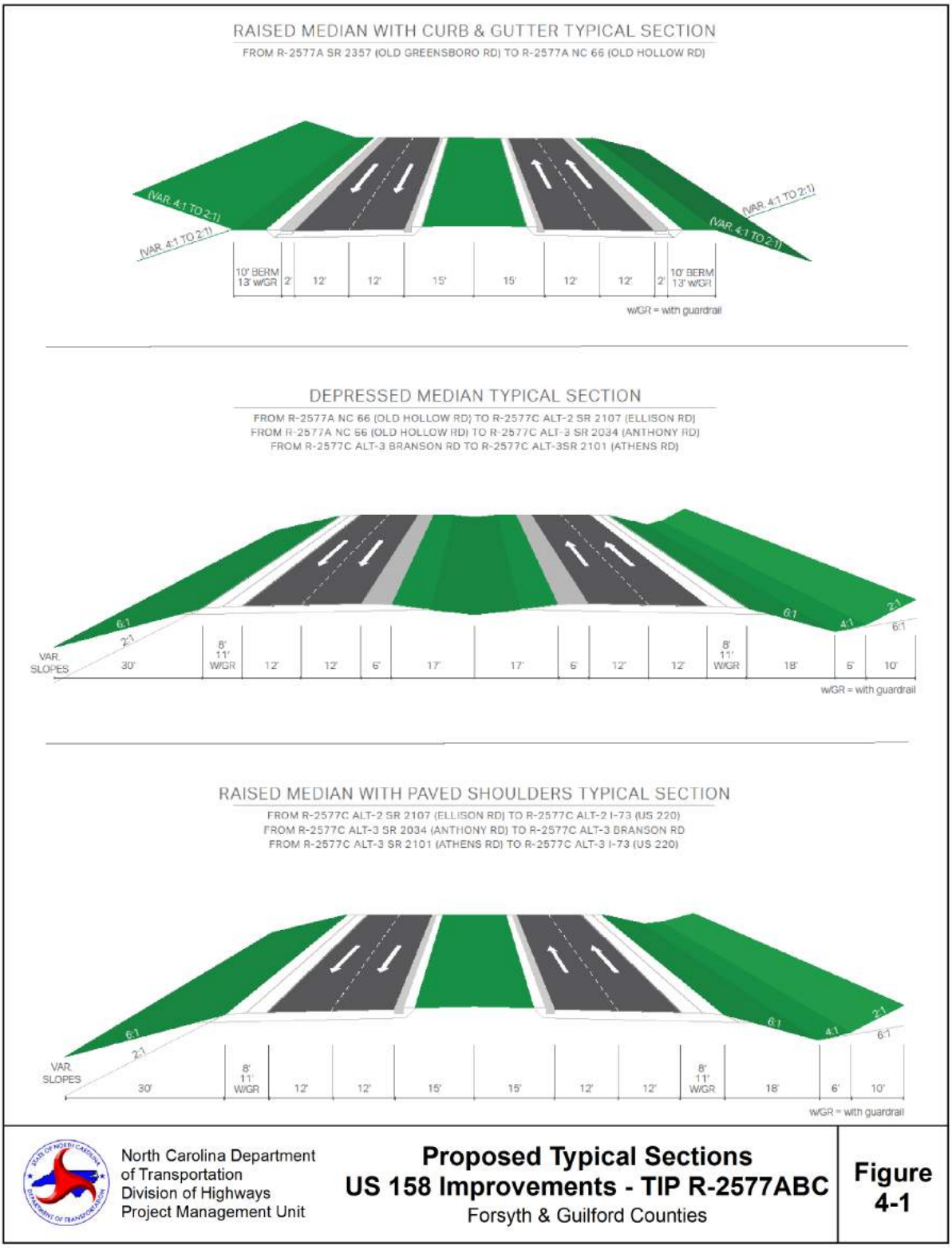
Existing speed limits along the corridor range between 35 and 55 miles per hour (mph). US 158 would have a design speed of 50 mph from Old Greensboro Road to NC 66 (Old Hollow Road), and a design speed of 60 mph from NC 66 to NC 65 (Belews Creek Road) and on the new-location portion of the project in the Stokesdale vicinity.

4.3 Anticipated Design Exceptions

No design exceptions are anticipated for this project.

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Figure 4-1: Proposed Typical Sections



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4.4 Intersections/Interchanges

The project design proposes the use of synchronized streets, also referred to as superstreets, at most of the intersections along US 158, as well as on the proposed bypass. Synchronized streets provide for reduced delay and simultaneous coordination of both main street travel directions. Synchronized streets reduce the number of collisions at intersections by restricting turn movements. Side-street travelers who wish to cross or turn left at a synchronized street intersection must first turn right and then make a U-turn at a designated U-turn location to return to their desired route direction. The project proposes U-turn bulbs at major intersections or between intersections, throughout the project length. Synchronized streets have been shown to alleviate congestion and increase travel capacity.

The project proposes one interchange, at the new location crossing of US 158 with NC 68, north of Stokesdale. In addition, the Winston-Salem Northern Beltway project (U-2579), currently under construction, would include an interchange within the project study area at the beltway crossing with US 158, near Walkertown.

4.5 Service Roads

No service roads would be proposed along this project. The project would provide partial access control and would not require any service roads to be constructed.

4.6 Railroad Crossings

The project does not cross any existing rail lines.

4.7 Hydraulic Structures

A preliminary hydraulic study conducted for the proposed project analyzed the proposed roadway at new-location stream crossings, as well as at existing stream crossings of US 158. The study provides a preliminary structure size for new crossings and evaluates the adequacy of existing drainage structures.

The project crosses ten major streams, requiring pipes or culverts larger than a 72-inch pipe. Eight of these major stream crossings are along existing US 158, and two of the crossings are along the new location portion of Section C. NCDOT proposes new bridge crossings over streams at three locations. Large culverts are currently located under US 158 at the Lowery Mill Creek and the Belews Creek crossings. These culverts would be replaced with dual bridges at both locations. The existing bridge over Belews Lake would also be replaced with dual bridges. These preliminary hydraulic recommendations for major project stream crossings are summarized in Table 7.

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Table 7: Proposed Hydraulic Structures for Major Stream Crossings

Project Section	Stream Name	Existing Structure	Proposed Structure
A	UT to Lowery Mill Creek	1-barrel 6'x6' RCBC	Retain and extend
A	Lowery Mill Creek	3-barrel 7'x10' RCBC	Replace with dual bridges 85' long
A	UT to Lowery Mill Creek	1-barrel 5'x5' RCBC	Retain and extend, supplement with 42" RCP
A	Martin Mill Creek	1-barrel 5'x5' RCBC	Retain and extend, supplement with 42" RCP
B	Belews Creek	6-barrel, 9'x7' RCBC	Replace with dual bridges 110' long
B	UT to Belews Creek	1-barrel 4'x5' RCBC	Retain and extend
B	UT to Belews Creek	1-barrel 5'x5' RCBC	Retain and extend, supplement with 42" RCP
B	Belews Lake	Bridge 164 - 3 span bridge 94'6" long	Replace with dual bridges 100' long
C	UT to Rock Branch	N/A	Construct 1-barrel 6'x6' RCBC
C	Troublesome Creek	N/A	Construct 1-barrel 10'x8' RCBC

Note: UT = unnamed tributary, RCBC = reinforced concrete box culvert, RCP = reinforced concrete pipe.
Major stream crossing means the hydraulic structure required is greater than a 72" pipe.

Duke Energy owns all the land within and immediately adjacent to Belews Lake. NCDOT will obtain a conveyance permit from Duke Energy, prior to the removal of the existing bridge on US 158 over Belews Lake. The construction of the proposed dual bridges will be in the same location of the existing bridge. NCDOT Division 9 staff is coordinating with Duke Energy to obtain the conveyance permit prior to construction of the roadway widening on fill and the proposed new dual bridges. They will implement the conditions of the conveyance permit into the final design and construction.

4.8 Bicycle and Pedestrian Facilities

There are currently no bicycle or pedestrian facilities along the US 158 corridor, with the exception of the downtown core in Stokesdale, which contains sidewalk facilities. No bicycle or pedestrian facilities are currently proposed as part of the project.

4.9 Utilities

Existing utilities within the project study area include gas lines, electric lines, telephone lines, cable television lines, and water lines. The potential relocation of existing utilities along the proposed project due to the widening of US 158 (R-2577AB) has been reviewed and assessed. Proposed utility easements (PUE) for the relocation of the various utilities have been incorporated into the preliminary design plans.

There is a pump station located on the north side of US 158 in Section A, just east of the Grover Street intersection, that will be moved, since widening would occur on the north side in this area. The City of Winston-Salem has constructed a pipe bridge on the south side of the existing bridge over Belews Lake for a 12-inch water main that will be relocated when the new bridges over the lake are constructed (R-2577B). Additional coordination with the City of Winston-Salem for the relocation of the pump station and the water main will be done during the final design phase of that project section.

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4.10 Traffic Operations

NCDOT's traffic capacity analysis considered the 2040 No-Build, 2040 Build Alternative 2, and 2040 Build Alternative 3 traffic operations scenarios. The analysis assumed that the following fiscally-constrained projects are in place in the future year 2040:

- U-2579 – Winston-Salem Northern Beltway (Future I-74)
- R-2413 – NC 68-US 220 Connector
- R-2580A – Widening of US 158 from US 220 to US 29
- U-5824 – NC 66 Widening from Harley Drive to US 158

4.10.1 2040 No-Build

A traffic capacity analysis was performed for the 2040 No-Build conditions AM and PM peak periods, for all of the intersections and freeway segments located within the proposed alignment of the project. In 2040, 20 out of 30 intersections analyzed within the project study area would function at a level of service (LOS) E or F during at least one peak hour (AM Peak or PM Peak).

4.10.2 2040 Build Alternative 2

A traffic capacity analysis was performed for the 2040 Build Alternative 2, which included widening in R-2577 Sections A and B and the southern bypass alternative in Section C. The Build Alternative 2 analysis was based on the preliminary design plans prepared for the design public meetings held in October 2017, and congestion management guidelines from NCDOT. Fifty-six out of the 60 intersections analyzed performed at LOS D or better in both the AM and PM peak hours. Three intersections performed at LOS E, and five intersections performed at LOS F, during at least one peak hour. All five of the LOS F locations and two of the LOS E locations are stop-sign controlled, and failed due to the low minor side-street turning volumes. The third LOS E location is at the existing US 158 at NC 68 signalized intersection in Stokesdale. No improvements are proposed at this location, as the Stokesdale town center will be bypassed.

4.10.3 2040 Build Alternative 3

A traffic capacity analysis was performed for the 2040 Build Alternative 3, which included widening in R-2577 Sections A and B and the northern bypass alternative in Section C. Sixty-three out of the 69 intersections analyzed performed at LOS D or better in both peak hours. Four intersections performed at LOS E, and two intersections performed at LOS F, during at least one peak hour. Both the LOS F locations and three of the LOS E locations are stop-sign controlled, and failed due to the low minor side street turning volumes. The fourth LOS E location is at the existing US 158 and SR 2102 (Angel Pardue Road)/ Purgason Lane, an unsignalized intersection within Stokesdale. No improvements are proposed at this location, as the Stokesdale town center will be bypassed.

4.11 Safety

A crash analysis was completed in 2016, covering the entire project area. A total of 666 crashes were reported for the 18.9-mile section of US 158 during the period of November 1, 2011, to October 31,

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2016. For the purposes of crash rate comparison, this section of US 158 is classified as a two-lane rural US route. Crash rates in the project area were compared to 2013-2015 statewide crash rates for other two-lane rural US routes, and were found to exceed the statewide crash rate and the critical crash rate for comparable routes. The fatal crash rate within the project area also exceeds the statewide fatal crash rate. These crash rates are summarized in Table 8.

Table 8: Project Area Crash Rates

Rate	Crashes per 100 MVM	Statewide Rate*	Critical Rate**
Total	183.35	146.62	157.21
Fatal	1.93	1.67	2.92

*2013-2015 statewide crash rate for 2-Lane Undivided Rural US Routes in North Carolina
**Based on the statewide crash rate (95% level of confidence).

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5. ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

This section describes and assesses potential impacts to the existing economic, social, physical, and natural environments within the project study area. The information presented in this section is a summary of information NCDOT previously analyzed in more detail in technical studies and reports, which are appended by reference.

5.1 Natural Resources

Biologists evaluated the natural systems and conducted field work in the project area from May 16, 2011 through November 17, 2011. Jurisdictional areas identified in the study area were verified by the US Army Corp of Engineers (USACE) and the North Carolina Division of Water Resources (NCDWR) on January 10 and February 1, 2012. Natural resources in the project study area are documented in the Natural Resources Technical Report (NRTR) (NCDOT 2012).

The study area lies in the Piedmont Physiographic Region of North Carolina. Topography in the project vicinity is comprised of gently rolling hills with narrow, level floodplains along streams. Elevations in the study area range from 720 to 990 feet above sea level. Land use consists of agricultural, residential, industrial, and commercial development. Commercial development is centered around Stokesdale, and significant industrial activity takes place east of Stokesdale along the US 158 corridor.

5.1.1 Biotic Resources

Four terrestrial communities were identified in the project study area: maintained/disturbed, floodplain forest, mixed hardwood forest, and pine stand. Terrestrial communities in the study area may be impacted by project construction, as a result of grading and paving of portions of the study area. Anticipated impacts to each terrestrial community type were calculated using the preliminary design slope stakes plus 25 feet for the LEDPA (Table 9). More information on the terrestrial community types and locations in the project study area are provided in the NRTR.

Table 9: Anticipated Impacts to Terrestrial Communities

Community	Coverage (acres)
Maintained/Disturbed	454
Floodplain Forest	1
Mixed Hardwood Forest	131
Pine Stand	2
Total	588

Note: Impacts were calculated using the preliminary design slope stakes plus 25 feet.

Construction, staging, and stockpiling operations will result in the disruption of the resident wildlife population adjacent to the roadway. The clearing of habitats, human activity, and noise from construction operations will result in the displacement of mobile wildlife species. Non-mobile species will be lost as habitat is converted to construction areas.

Maximum disruption of wildlife communities will occur when project construction begins, as displaced animals are forced to compete for space with other nearby resident wildlife and human populations.

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These impacts will be minimized as much as possible by restricting land clearing and construction operations within the project right-of-way. Off-site staging and stockpiling areas will be located to impact the least amount of natural habitat as possible. Stockpiling and staging areas will be revegetated after construction, which could provide replacement habitat for some species. Expected impacts to terrestrial communities due to project construction are expected to be minimal.

5.1.2 Waters of the United States

"Waters of the United States" include surface waters and wetlands (inundated or saturated areas that support vegetation typically adapted to wet conditions) as defined in 33 CFR 328.3. Impacts to Waters of the United States fall under the jurisdiction of the USACE through Section 404 of the Clean Water Act (33 USC 1344) and under the jurisdiction of the NCDEQ DWQ through the Section 401 Water Quality Certification Process (NC General Statutes Chapter 143 Article 21, Part 1).

5.1.2.1 Water Resources

Water resources in the project study area are part of the Cape Fear, Roanoke, and Yadkin river basins [US Geological Survey (USGS) Hydrologic Units 03030002, 03010103, and 03040101, respectively]. One hundred seventy-four (174) streams were identified in this study area.

Thirty-two ponds (including Belews Lake) were located in the study area, totaling approximately 60 acres (see figure in Appendix F). Twenty-six of these ponds have connections to perennial and/or intermittent streams (jurisdictional), while the remaining six ponds (PN, PAB, PAC, PAD, PAP, and PAR) consist of excavated pits sustained by high groundwater and surface run off (non-jurisdictional).

There are no designated anadromous fish waters, Primary Nursery Areas (PNA), or trout waters present in the study area. There are no designated High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. Martin Mill Creek and Troublesome Creek are listed on the North Carolina 2016 Final 303(d) list of impaired waters, due to these streams exceeding criteria for benthos.

5.1.2.2 Jurisdictional Resources

Streams

One hundred seventy-four (174) jurisdictional streams were identified in the study area. All jurisdictional streams in the study area have been designated as warm water streams, for the purposes of stream mitigation.

Wetlands

Two hundred fifty-one (251) jurisdictional wetlands were identified within the study area. All wetlands in the study area are within the Cape Fear River, Roanoke, and Yadkin river basins [US Geological Survey (USGS) Hydrologic Unit 03030002, 03010103, and 03040101].

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5.1.2.3 Avoidance, Minimization, and Mitigation

The NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable during the final design phase of this project. Design standards for sensitive watersheds will be implemented for portions of the project occurring in the Jordan Lake watershed.

The NCDOT will investigate potential on-site stream and wetland mitigation opportunities in this project during the final design phase. If on-site mitigation is not feasible, mitigation will be provided by the North Carolina Department of Environmental Quality, Division of Mitigation Services (DMS).

5.1.2.4 Anticipated Permit Requirements

Clean Water Act Permits

An Individual Permit will likely be applicable for R-2577, due to the quantity of stream and wetland impacts anticipated for this project. The USACE holds the final discretion as to what permit will be required to authorize project construction. If an Individual Section 404 permit is required, then an Individual Section 401 Water Quality Certification (WQC) from the NCDWR will be needed.

Coastal Area Management Act Areas of Environmental Concern

There are no Areas of Environmental Concern (AEC) in the study area that fall under the jurisdiction of the Coastal Area Management Act.

Construction Moratoria

No construction moratoria are anticipated at this time.

NC River Basin Buffer Rules

There are protected streamside riparian zones within the project study area. The portion of the project study area within the Cape Fear River Basin falls under the jurisdiction of the Jordan Lake Buffer Rules administered by NCDWR. The impact tables located in Appendix C indicate which streams are subject to buffer rule protection.

Rivers and Harbors Act Section 10 Navigable Waters

There are no waters subject to Section 10 of the Rivers and Harbors Act located within the project study area.

5.1.3 Rare and Protected Species

5.1.3.1 Federally Protected Species

As of June 27, 2018, the United States Fish and Wildlife Service (USFWS) listed four federally protected species for Forsyth and Guilford Counties (Table 10). A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on survey results in the study area. Habitat requirements for each species are based on the current best available information from

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referenced literature and/or the USFWS. More information regarding rare and protected species can be found in the NRTR.

Table 10: Federally Protected Species Listed for Forsyth and Guilford Counties

Scientific Name	Common Name	County	Federal Status	Habitat Present	Biological Conclusion
Glyptemys muhlenbergii	Bog turtle	Forsyth	T(S/A)	Yes	Not Required
Myotis septentrionalis	Northern long-eared bat	Forsyth	T	Unknown	May Affect, Likely to Adversely Affect
Cardamine micranthera	Small-anthered bittercress*	Forsyth	E	Yes	No Effect
Isotria medeoloides	Small whorled pogonia	Guilford	T	Yes	No Effect

* - Historic record (the species was last observed in the county more than 50 years ago)
T(S/A) – Threatened due to similarity of appearance; T – Threatened; E – Endangered

Bog Turtle

USFWS optimal survey window: April 1 – October 1 (visual surveys); April 1-June 15 (optimal for breeding/nesting); May 1-June 30 (trapping surveys)

Habitat Description: Bog turtle habitat consists of open, groundwater supplied (springfed), graminoid dominated wetlands along riparian corridors or on seepage slopes. These habitats are designated as mountain bogs by the NCNHP, but they are technically poor, moderate, or rich fens that may be associated with wet pastures and old drainage ditches that have saturated muddy substrates with open canopies. Plants found in bog turtle habitat include sedges, rushes, marsh ferns, herbs, shrubs (tag alder, hardhack, blueberry, etc.), and wetland tree species (red maple and silky willow). These habitats often support sphagnum moss and may contain carnivorous plants (sundews and pitcherplants) and rare orchids.

Potential habitats may be found in western Piedmont and Mountain counties from 700 to 4500 feet elevation in North Carolina. Soil types (poorly drained silt loams) from which bog turtle habitats have been found include Arkaqua, Chewacla, Dellwood, Codorus complex, Hatboro, Nikwasi, Potomac – Iotla complex, Reddies, Rosman, Tate – Cullowhee complex, Toxaway, Tuckasegee – Cullasaja complex, Tusquitee, Watauga, and Wehadkee.

Biological Conclusion: Not Required

Species listed as threatened due to similarity of appearance do not require Section 7 consultation with the USFWS. A review of NCNHP records, updated July 2018, indicates a bog turtle element occurrence (EO 7899 last observed May 19, 1984) approximately 400 feet outside of the project study area. This EO is located within a wetland that has previously been clear cut and significantly disturbed.

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Northern long-eared bat

USFWS optimal survey window: May 15 through August 15

Habitat Description: Northern long-eared bat is found across much of the eastern and north central US and all Canadian provinces. Winter hibernating habitat consists of caves and abandoned mines with constant, cooler temperatures with high humidity and no air currents. While in the hibernacula they often form colonies with other bat species. Summer roosting occurs singly or in colonies underneath bark, in cavities and crevices of both live trees and snags, and to a lesser degree in human-made structures such as buildings, barns, behind window shutters, on utility poles, and in bat houses. This species is a medium-sized bat with females tending to be slightly larger than males. Average body length ranges from 3 to 4 inches with a wingspan ranging from 9 to 10 inches. This species is distinguished by its relatively long ears that extend beyond the nose when laid forward.

Biological Conclusion: May Affect, Likely to Adversely Affect

A review of NCNHP records, updated July 2018, indicates no known northern long-eared bat occurrence within 1.0 mile of the study area.

The USFWS has developed a programmatic biological opinion (PBO) in conjunction with the FHWA, the USACE, and NCDOT for the northern long-eared bat (NLEB) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. The programmatic determination for NLEB for the NCDOT program is “May Affect, Likely to Adversely Affect”. The PBO provides incidental take coverage for NLEB and will ensure compliance with Section 7 of the Endangered Species Act for five years for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Guilford County, where a portion of R-2577ABC is located. This level of incidental take is authorized from the effective date of a final listing determination through April 30, 2020.

For the Forsyth County portion of the project, since this project is state-funded, the U.S. Army Corps of Engineers (USACE) will act as the lead agency for issues related to the northern long-eared bat (NLEB). The USACE has developed a Standard Local Operating Procedure for Endangered Species (SLOPES) to address NLEB when they are the lead agency, which NCDOT will follow for the portions of the project within Forsyth County. The requirements of the SLOPES for NLEB will be completed prior to Let and will be submitted to USACE.

Small-anthered bittercress

USFWS Optimal Survey Window: April-May

Habitat Description: Small-anthered bittercress is endemic to the Dan River drainage of the Roanoke River NCDWQ sub-basin 03-02-01. This biennial or perennial herb occurs in moist, wet woods along small to intermittent sized streams, stream bank edges and seepages above the actual stream channel, wet rock crevices, and sand and gravel bars of small streams. This species

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prefers areas that are fully or partially shaded by shrubs and trees, but can occasionally be found in full sun.

Soil series that it occurs on include Rion, Pacolet, and Wateree. Poorly viable occurrences may be found in disturbed areas subject to livestock trampling, silviculture, or encroachment by exotic, invasive species such as Japanese honeysuckle.

Biological Conclusion: No Effect

Suitable stream and gravel bar habitat exists for the small-anthered bittercress in the project study area. A portion of the project falls within the Roanoke River sub basin 03-02-01. Surveys were conducted along streams and suitable riparian habitat within the survey area in April 2012 and in June 2018. No individuals were located and there are no known extant populations within 1.0 mile of the project study area. A review of NCNHP records, updated July 2018, indicates a destroyed element occurrence (EO 4013 last observed May 1955) 0.2 miles north of the project study area near the confluence of Belews Creek and the Left Fork of Belews Creek.

Small-whorled pogonia

USFWS Optimal Survey Window: mid May-early July

Habitat Description: Small whorled pogonia occurs in young as well as maturing (second to third successional growth) mixed-deciduous or mixed-deciduous/coniferous forests. It does not appear to exhibit strong affinities for a particular aspect, soil type, or underlying geologic substrate. In North Carolina, the perennial orchid is typically found in open, dry deciduous woods and is often associated with white pine and rhododendron. The species may also be found on dry, rocky, wooded slopes; moist slopes; ravines lacking stream channels; or slope bases near braided channels of vernal streams. The orchid, often limited by shade, requires small light gaps or canopy breaks, and typically grows under canopies that are relatively open or near features like logging roads or streams that create long-persisting breaks in the forest canopy.

Biological Conclusion: No Effect

Suitable forested habitat for the small whorled pogonia exists in the project study area. Surveys were conducted in conjunction with stream and wetland delineation in areas of suitable habitat in 2011 and again in 2018. No individuals were found during field activities within the survey window. The elevation ranges within the project study area are significantly lower than most occurrences within North Carolina. Therefore, the potential for this species to be present is relatively low. A known population consisting of one individual plant was visited and observed on May 31, 2011 (EO 25083). A review of NCNHP records, updated July 2018, indicates no known small whorled pogonia occurrences within 1.0 mile of the study area.

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5.1.3.2 Bald and Golden Eagle Protection Act

Habitat for the bald eagle primarily consists of mature forest in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within 1.0 mile of open water.

A desktop-GIS assessment of the project study area, as well as the area within a 1.13-mile radius (1.0 mile plus 660 feet) of the project limits, was performed on October 12, 2011, using 2010 statewide color aerials. Two water bodies large enough and sufficiently open to be considered potential feeding sources were identified, Belews Lake and Salem Lake. Surveys for eagles and nests were conducted on November 18, 2011. The survey limits included portions of the project study area that fell within 1.0 mile of Belews Lake, Salem Lake, and 660 feet beyond the project study area. No individual bald eagles or nests were found. Additionally, a review of the NCNHP database updated July 2018 revealed no known occurrences of this species within 1.0 mile of the project study area.

5.2 Cultural Resources

This project is subject to compliance with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and implemented by the Advisory Council on Historic Preservation Regulations for compliance with Section 106, for a licensed or permitted project that has an effect on a property listed on or eligible for listing in the National Register of Historic Places (NRHP).

5.2.1 Historic Resources

Pursuant to the requirements of Section 106 of the NHPA, an intensive architectural field survey conducted in 2011 identified 390 resources of possible significance within the project study area. These findings were presented to the North Carolina State Historic Preservation Office (HPO) on January 24, 2012, and 30 resources were identified as meriting further investigation. Additionally, the potential bypass routes around the Stokesdale town center were surveyed in March 2012, and an additional 90 resources were identified. These resources were reviewed with HPO in May 2012, and it was determined that no further investigation was merited for the additional 90 resources.

Of the 30 resources investigated, six were found eligible for NRHP listing. The Stokesdale Commercial Historic District was also determined eligible. Effects consultations between the HPO and NCDOT were held on July 9, 2013, and September 22, 2015. They determined that the only NRHP-eligible property that would be adversely affected by the project is Edgewood Baptist Church (FY 3292) in Section A (see effects concurrence form, Appendix C). After refinement of the preliminary designs, NCDOT held a meeting with the HPO on January 8, 2018, and confirmed the historic property boundary for Edgewood Baptist Church. NCDOT agreed to investigate further minimization measures to the church and continue coordinating with the HPO and the church.

After completion of the preliminary design plans, NCDOT held additional coordination with the HPO to revisit effects to the properties eligible for NRHP on January 9, 2018, and June 12, 2018. An avoidance alternative for the Edgewood Baptist Church vicinity was presented at the meeting in January 2018, which imposed minimal impacts to the church, but would require the relocation of seven residences across US 158 from the church. At the request of the State Historic Preservation Officer (SHPO), NCDOT

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developed a minimization alternative and presented it to the HPO in June 2018. The minimization alternative incorporated best-fit widening with a reduced median (23 feet instead of 30 feet) and a retaining wall in front of the church to minimize impacts to both the church and the residences located across from the church. The minimization alternative will not require relocations of residences across from the church, but will result in the loss of some parking spaces in front of the church, and will require the church sign to be relocated. NCDOT and HPO agreed that this minimization alternative constitutes no adverse effect if specified commitments are met (see effects concurrence form, Appendix C).

A summary of the resource eligibility criteria and effects determinations is shown in Table 11. The signed effects forms are located in Appendix C.

Table 11: Historic Resource Determinations

Project Section	Historic Resource	National Register Status	Effect
A	Edgewood Baptist Church	Determined Eligible, Criterion C, Criteria Considerations A & G	No Adverse Effect with Commitments
C	D.A. Jones House	Determined Eligible, Criterion C	No Effect
C	Taylor-Edwards House	Determined Eligible, Criterion C	No Effect
C	Bi-Rite Supermarket	Determined Eligible, Criteria A & C	No Effect
C	Wray House	Determined Eligible, Criterion C	No Effect
A	Bel Air Drive-In Theater	Determined Eligible, Criterion A	No Adverse Effect with Commitments
C	Stokesdale Commercial Historic District	Determined Eligible, Criteria A & C	No Effect

5.2.2 Archaeological Resources

NCDOT conducted an intensive archaeological survey and evaluation for the proposed widening and improvement of US 158 in Forsyth and Guilford counties, North Carolina. The survey identified 32 isolated finds and 34 archaeological sites. The 32 isolated finds have no information potential and are recommended not eligible for the NRHP under any of the four criteria. The 34 archaeological sites included one historic burial, 22 historic sites, one prehistoric site, and 10 multicomponent sites. Thirty-four of the sites are recommended not eligible for the NRHP under any of the four criteria.

Site 31GF514** includes two human graves. It is located in Section C, with the two graves outside of the construction footprint, but straddling both alternatives within the overall project study area. Although the site is not eligible for the NRHP, it should be avoided during any construction activities. If the gravesites cannot be avoided, the Office of State Archaeology (OSA) will make the determination as to how the removal and relocation of the gravesites be treated, i.e. by following either NC General Statute (GS) 65 or NC GS 70, Article 3. If treated under GS 65, removal and relocation will be handled by the

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NCDOT Right-of-Way Office. If treated under GS 70, Article 3, removal and relocation will be handled by the NCDOT Archaeology Group in consultation with the Right-of-Way Office, next of kin, and the OSA.

5.3 Farmland

There is a considerable amount of active farmland within the project study area of R-2577, as noted in the *Community Impact Assessment* (CIA) (Calyx 2018) prepared for this project and appended by reference. Many of these areas are included in local farmland preservation initiatives. A number of agricultural properties are included in local farmland preservation programs.

Six farms within the project study area participate in the Forsyth or Guilford County Voluntary Agricultural District (VAD) programs. Three VAD properties may be impacted by the project, based on the current proposed alignment through Sections A and B. Two VAD properties are likely to be impacted by right-of-way acquisition, and one additional VAD property may be impacted with a temporary construction easement. If right-of-way will be acquired from VAD properties through eminent domain, the Forsyth County VAD Ordinance requires that the Forsyth County Agricultural Advisory Board hold a public hearing concerning the proposed condemnation, before condemnation may be initiated. Any VAD lands converted to non-agricultural use as part of a temporary construction easement must be returned to farmable condition by the completion of the project.

Direct property and operational impacts to existing agricultural resources in the project study area are expected as a result of the project construction. Building the project may affect the ability to move farm equipment across the existing corridor, especially in locations where a median is proposed. Construction of the new location segment of the project in Section C may result in fragmentation of some existing farming operations and the creation of remnant properties that are no longer viable for farming. Conversely, creating additional travel lanes will improve safety when farm equipment is using the road. Depending on location, some farming operations may also benefit from improved mobility and connectivity to regional routes, such as the proposed Winston-Salem Northern Beltway and the future I-73/US 220 corridor.

5.4 Social Effects

NCDOT analyzed potential social effects in the R-2577 CIA (Calyx 2018), which is appended by reference.

5.4.1 Demographics

The Demographic Study Area (DSA) is the smallest statistical area of the 2010 Census, at the block group level, that includes and is derived from the project study area. The DSA is used to provide approximate demographic characteristics for the community inside the project study area. A demographic assessment of the nearby communities was prepared to gain a greater understanding of the cultural, economic, and demographic composition of the area, as well as to enhance the field observations.

The total population of the DSA grew notably during the 2000-2010 period, with total growth of just over 20 percent at an annual rate of approximately 1.85 percent reported. In comparison, the total annual growth rate for Forsyth County was 14.5 percent, an annual rate of 1.37 percent for the same period; and the total annual growth rate for Guilford County was 16 percent, an annual rate of 1.5

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percent for the same period. Surrounding municipal growth rates are similarly high across the same period, with the highest growth rates reported in Stokesdale and Winston-Salem.

More recent population estimates from 2015 strongly suggest a reversal of growth trends in the DSA, as well as within more than half of the individual block groups in the DSA. In comparison, similar population estimates for Forsyth and Guilford Counties as well as DCIA municipalities, all indicate growth has slowed considerably since 2010 in areas surrounding the project (see Table 12).

Table 12: Population Trends

Geography	2000 – 2010				2010 – 2015		
	2000 Population	2010 Population	Total Change	Annual Change	2015 Population	Total Change	Annual Change
DSA	17,864	21,466	20.16%	1.85%	20,657	-3.92%	-0.77%
Winston-Salem	185,776	229,617	23.60%	2.14%	236,642	3.06%	0.60%
Walkertown	4,009	4,675	16.61%	1.55%	4,839	3.51%	0.69%
Forsyth Co.	306,067	350,670	14.57%	1.37%	361,684	3.05%	0.62%
Stokesdale	3,267	3,267	54.48%	4.45%	5,221	3.45%	0.68%
Guilford Co.	421,048	421,048	16.00%	1.50%	506,763	3.62%	0.74%

Source: *Community Impact Assessment*, Calyx 2018

5.4.2 Neighborhoods/Communities

The R-2577 project study area contains a number of residential neighborhoods, many of which are accessible only from the US 158 corridor. The proposed project would result in direct right-of-way impacts to some community resources, including the Commons of Forsyth County, several church properties located adjacent to the existing US 158 corridor, and portions of at least two different cemeteries located adjacent to the existing US 158 corridor. Three retirement homes would also be impacted by the proposed project. The proposed construction of medians along sections of R-2577 may impact the accessibility of some community resources by limiting left-turn movements to signalized intersections and median left-over locations only.

5.4.3 Relocation of Residences and Businesses

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

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

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Displaced businesses, farms, and non-profit organizations are eligible for the following relocation assistance:

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

No relocation payment received would be considered as income for the purposes of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under Social Security Act or any federal law. These relocation benefits are only available to persons lawfully present in the United States. Relocation reports are included in Appendix D.

5.4.3.1 Residential Relocations

The proposed project would result in the potential relocation of 144 residences. Residential relocations would occur mostly in areas where single-family houses flank US 158, which could have a negative effect on community cohesion and stability. The potential for negative effects is minimized by the fact that community cohesion is most apparent in subdivisions, many of which are further from the roadway corridor and have a single-point connection to US 158. Negative effects would be more apparent within smaller neighborhoods that consist of a single street connecting to US 158. There are no neighborhoods currently bisected by the proposed roadway corridor. This characteristic minimizes the potential for negative effects to neighborhood cohesion and stability.

5.4.3.2 Business Relocations

The proposed project would result in the potential relocation of 15 businesses. Direct impacts to business and economic resources are expected as a result of the project. Access and accessibility to/from businesses located along the project corridor would also be affected. The new location section of the project, Section C through Stokesdale, would likely remove through-traffic from the existing US 158 corridor and thus may have a negative effect on businesses that are dependent on through-traffic. Industrial operations, which are primarily located in Section C of the project, would benefit from the proposed operational improvements along existing sections of US 158 where the majority of resources are located. Industrial operations would also benefit from the higher levels of mobility and connectivity provided by the project.

5.4.3.3 Church and/or Non-Profit Relocations

The proposed project would not result in the relocation of any churches or other non-profit establishments.

5.4.4 Environmental Justice

Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. In accordance with Executive Order 12898,

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"Federal Actions to Address Environmental Justice in Minority and Low-Income Populations" federal agencies are mandated to identify and address any disproportionately high and adverse effects on minority and/or low-income populations. The Order also directs federal agencies to provide minority and low income communities access to public information and meaningful public participation. The three environmental justice principles are:

1. To ensure the full and fair participation of all potentially affected communities in the transportation decision-making process;
2. To avoid, minimize or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority or low income populations; and
3. To fully evaluate the benefits and burdens of transportation programs, policies, and activities, upon low-income and minority populations.

A disproportionately high and adverse effect on minority and low-income populations means an adverse effect that:

1. Is predominately borne by a minority population and/or a low-income population; or
2. Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low income population.

5.4.4.1 Minority Populations

While the total minority population living in the DSA is relatively low overall, the Block Groups located nearest to Winston-Salem at the western edge of the project corridor contain a notably high concentration of minority populations that meet the criteria for Environmental Justice. These Block Groups (1 and 5 in Census Tract 17) are approximately 97.4 percent and 65.1 percent minority, respectively. In comparison, Forsyth County is approximately 42.1 percent minority.

5.4.4.2 Low-income Populations

The total proportion of the DSA population reported as being low-income is relatively low in comparison to county-wide rates for both Forsyth and Guilford Counties; however, Census data indicates low-income populations are present in three individual Block Groups within the DSA along sections A and C of the proposed project. The Block Group located at the western terminus in Winston-Salem (Block Group 1 of Census Tract 17), which also contains a high percentage of minorities, reports low-income populations that meet the criteria for Environmental Justice as well. Census data indicates this Block Group meets every low-income threshold for Environmental Justice, with notably high rates of poor, very poor and near poor individuals when considered in comparison countywide rates. Census Tract 30.03, Block Group 1, comprising the southern side of the project corridor between Old Greensboro Road and the future Winston-Salem Northern Beltway in Section A, also contains a low-income population that meets the criteria for Environmental Justice. In addition to the Hilda/Granby Street neighborhood located in this Block Group, there are also indicators of a low-income population on

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Rickard Drive based on field review, aerial imagery and recent parcel data. The third Block Group (Census Tract 159.01, Block Group 2) containing a low-income population is in Section C and comprises the western half of the DCIA located between the county line and the NC 68 corridor in Stokesdale, extending across the north and south sides of existing US 158. Field review and other research have not revealed indicators of low-income populations concentrated in any particular area. The development pattern in this Block Group is predominantly agriculture and rural residential.

5.4.4.3 Environmental Justice Impacts

Notably adverse community impacts are anticipated with this project, but appear to affect all populations equivalently; thus, impacts to minority and low-income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community.

5.4.5 Bicycle and Pedestrian Facilities

There are no existing pedestrian facilities on the project corridor, with the exception of the downtown core in Stokesdale, which contains sidewalk facilities. However, both MPOs in the project area have adopted Complete Streets policies and future facilities are proposed in local plans, including bicycle accommodations along much of the existing US 158 corridor through Forsyth and Guilford counties, pedestrian facilities along Old Hollow Road (NC 66) across the project corridor, and the future Atlantic & Yadkin Greenway/NC Mountains-to-Sea Trail route that passes across Section C of the project in Stokesdale.

Due to the concentration of community resources and activity in the Stokesdale town core area in Section C of the project, the proposed new location bypass segment may create a barrier for multi-modal users by limiting connectivity, if multi-modal accommodations are not provided on the new location section.

There are currently no greenways located within the project area. However, the *Winston-Salem Greenway Plan* (2012) proposes two greenways crossing US 158 within the project area, one at Walkertown Community Park along Martin Mill Creek and another just east of Old Belews Creek Road along Lowery Mill Creek. These greenways are listed in the plan as Tier 3 priority, a designation that is used for proposals which need further assessment to obtain a better understanding of the public attitude toward the project or to provide a more comprehensive feasibility analysis of the project and its surrounding area.

In addition to the Winston-Salem greenway recommendations, the *Greensboro Plan* (2015) lists two greenways in the project area in Stokesdale, along abandoned rail corridors. One of these runs east-west through Stokesdale and is an extension of the Atlantic & Yadkin Greenway. The other, referred to in the plan as the Stokesdale Greenway, starts in downtown Stokesdale and runs north to areas outside of Guilford County.

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No bicycle or pedestrian facilities are proposed at this time; however, a 10-foot wide berm would be provided for the sections where curb and gutter would be constructed, which would accommodate any future sidewalks.

5.4.6 Recreational Facilities

Walkertown Community Park is located on the northeast corner of the US 158 and Darrow Road intersection, and is accessed from Darrow Road. The portion of park property adjacent to US 158 is vegetated and does not show signs of active recreational use. Stokesdale Town Park is located south of the existing US 158 corridor. Stokesdale Community Park is located just south of the existing US 158 corridor off of McCrory Road. No direct impacts to recreational resources are expected as a result of the project.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 (16 U.S.C. 4601-4 et seq.) states that parks developed or improved using LWCF grant funds cannot be acquired unless no other reasonable and feasible alternative exists, and requires coordination with the National Park Service (NPS). Section 6(f) is applicable to any federal agency action, including Section 404 permitting by the USACE. Walkertown Community Park on Darrow Road in Section A is a Section 6(f) resource. No direct impacts to this park or any other Section 6(f) resources are expected as a result of the project.

5.4.7 School Bus Usage

The Guilford County Schools transportation representative did not express any notable concerns relative to the project, noting 14 school buses make a total of approximately 34 trips per day through the Guilford County portion of project, and can be temporarily rerouted during construction, assuming adequate notice is provided in advance.

The Forsyth County Schools transportation representative did not respond to the request for input. Given the arterial nature of US 158 through the project area and amount of residential development with access to the corridor, it is reasonable to assume the project corridor through Forsyth County serves a relatively high number school bus routes.

The proposed project would likely benefit local school transportation by improving operational safety along the corridor and increasing the level of mobility. Temporary impacts on school bus routes during the construction period may be substantial, due to the lack of alternative routes serving some residential areas along the corridor, particularly in the Forsyth County portion of the project area.

5.5 Economic Effects

Some businesses and/or community facilities may be relocated due to the widening of the roadway. Housing and suitable business sites are available in the area for relocation of those displaced. There may be some economic benefit during construction of the project, due to increased local construction-related employment and increased revenue for businesses providing services to construction crews. On the other hand, businesses in the vicinity of the corridor could temporarily experience minor decreases in revenue resulting from construction traffic or decreased access caused by construction activities. The new location segment of the proposed project would also likely remove through-traffic from the existing

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US 158 corridor in Stokesdale, and thus may have a negative effect on businesses that are dependent on such through-traffic. However, industrial operations should benefit from the operational improvements along existing sections of US 158 and from the higher levels of mobility and connectivity provided by the project.

5.6 Land Use

5.6.1 Existing Land Use and Zoning

Land use along the US 158 corridor changes as the route leaves Winston-Salem and travels through Walkertown and Stokesdale. Section A of the US 158 corridor through northeast Winston-Salem and Walkertown is predominantly residential, institutional, and forested/agricultural uses. Single-family homes and churches abut US 158 in Winston-Salem, contributing to a large number of driveway connections between old Greensboro Road and Angel Drive. In Forsyth County, the corridor is also flanked by residential subdivisions with single-point connections to US 158. There is a large commercial and mixed-use node within the southeast and northeast quadrants of the US 158/NC 66 intersection. Pedestrian activity is mostly limited to trails and walking paths, with little to no evidence of pedestrian activity along most of the US 158 corridor.

Section B begins just east of Walkertown, where development along the US 158 corridor transitions to predominantly agricultural and rural residential uses, with residential growth radiating out of Kernersville and Oak Ridge south of the corridor. There are fewer residences abutting US 158, as well as fewer driveways and side street connections as the roadway extends eastward. As US 158 continues into Guilford County, there is a higher amount of residential development around Belews Creek, but houses in this area are generally further from the roadway and share access to US 158 via a single point.

Section C starts east of Belews Lake in Guilford County, with single family homes and churches again flanking US 158, similar to those in Section A, in Winston-Salem. Through historic downtown Stokesdale, US 158 is closely flanked by residential and commercial uses, as well as a number of historic buildings and churches. East of downtown Stokesdale to US 220 (I-73), land use along the corridor transitions from rural residential to a mix of agricultural, commercial, and industrial land uses, with a small amount of residential and institutional uses.

5.6.2 Local Area Plans and Development

The following local area plans cover the project study area:

Forsyth County

- **Legacy Plan (2013):** The *2030 Legacy Plan* (2013) is the current adopted comprehensive plan and development guide for the Winston-Salem and Forsyth County planning area, including Sections A and B of the project corridor and DCIA.
- **East-Northeast Area Plan (Update, 2016):** The *East-Northeast Area Plan* (2016) covers a very small portion of the DCIA, extending westward along US 158 from the project terminus at Old Greensboro Road.

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- **Northeast Suburban Area Plan:** The latest revision of the *Northeast Suburban Area Plan* was adopted on September 5, 2017. The area plan covers the portion of the project corridor and DCIA between Old Greensboro Road and just north of Old Belews Creek Road (the southernmost intersection with US 158).
- **Walkertown Area Plan Update:** The *Walkertown Area Plan* (2014) covers the portion of the project corridor and DCIA between the Northeast Suburban Area Plan boundary and Rail Fence Road.

Guilford County

- **Town of Stokesdale Future Land Use Plan:** The *Town of Stokesdale Future Land Use Plan*, adopted by the Stokesdale Town Council in 2007, is the current long-range comprehensive plan, outlining the vision for growth and development throughout the Stokesdale municipal limits.

Direct Effects

Direct effects are caused by the action and occur at the same time and place. (40 CFR 1508.8)

Indirect Effects

Indirect effects are caused by the action but occur later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include induced changes in land use patterns, population density, growth rate, and other growth associated factors. Indirect effects on air, water, ecosystems, and other natural systems are also assessed.

Cumulative Impact

Cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR 1508.7)

5.7 Indirect and Cumulative Effects

The indirect and cumulative effects associated with the proposed project have been identified and assessed in the Land Use Scenario Assessment (LUSA) (NCDOT, 2018). Indirect and cumulative impacts were assessed within the Future Land Use Study Area (FLUSA) by predicting changes in development types within defined probable development areas (PDA) that could result from the proposed project.

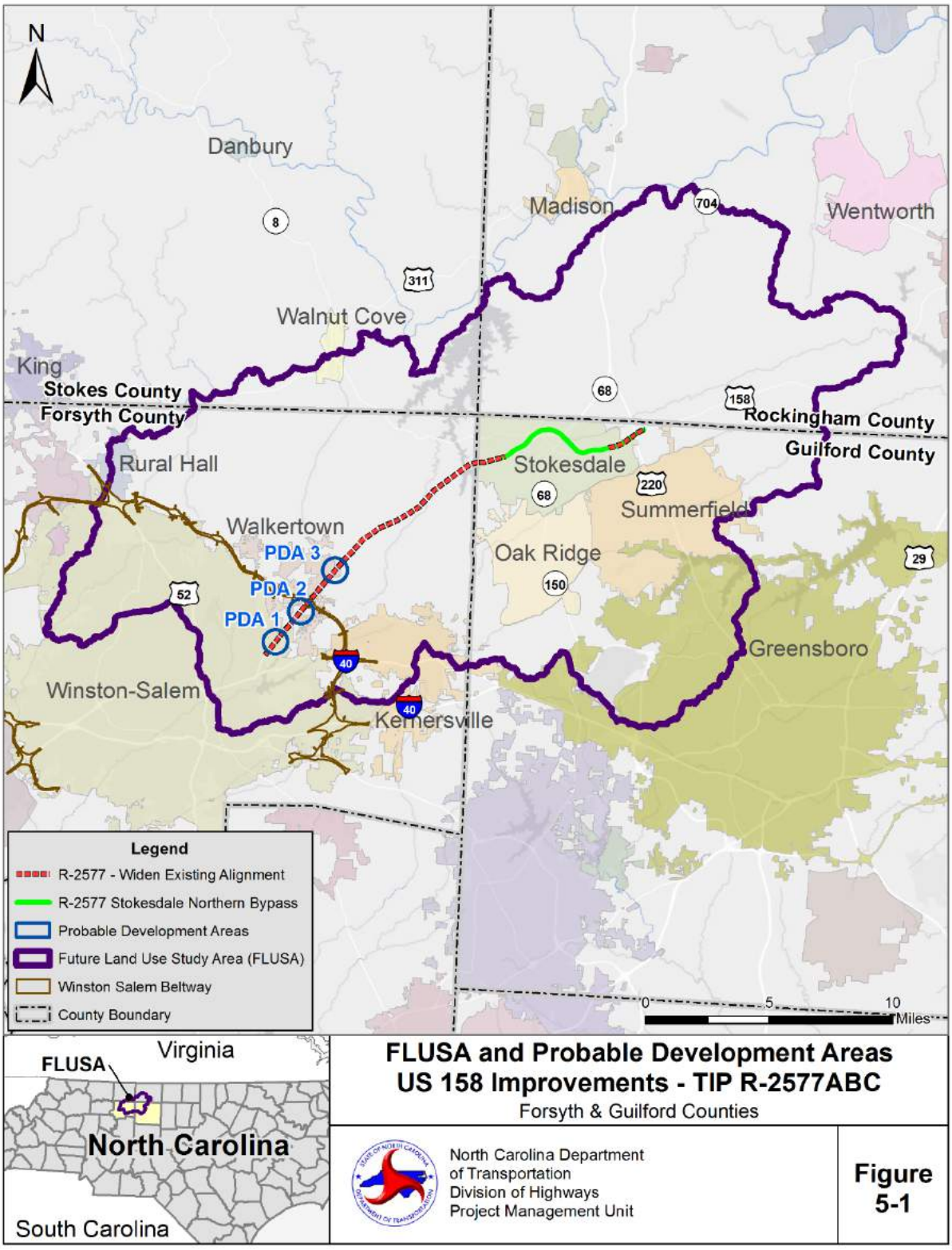
The FLUSA, shown in Figure 5-1, contains areas with the greatest reasonably foreseeable potential for indirect effects from the proposed action. Indirect effects would primarily result from land use changes and conversions from an undeveloped to a developed state. The FLUSA is typically defined by land parcel boundaries, zoning classifications, geopolitical boundaries, preserved lands, watershed boundaries, topography, and other development constraints or influences. The boundaries of the FLUSA for the proposed action conform primarily to watershed boundaries (12-digit hydrological unit code or HUC boundaries). An exception is in the northwestern portion of the FLUSA, which follows Town Fork Creek in Stokes County.

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A time horizon of 2040 was used for this study so as to coincide with the various land use plans and transportation plans in the FLUSA. These land use plans include The Legacy 2030 Update, published by the Winston Salem/Forsyth County City-County Planning Board in 2013 and the 2040 Metropolitan Transportation Plan published by the Greensboro Urban Area MPO, as well as several area plans.

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Figure 5-1: Future Land Use Study Area and Probable Development Areas



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An analytical screening was conducted to assess trends and projections within the FLUSA for the proposed project within the established time horizon. The analytical screening assessed the scope of the project, travel time savings, water and sewer availability, available land, market for development, and public policy. The LUSA identifies and analyzes three PDAs along US 158, shown in Figure 5-1. The PDAs were assessed based on scope of development, development intensity, regional population and employment growth, pressure for land development, and planned/managed uses and impacts for both the No-Build and Build scenarios. According to local planners, the areas around PDAs 1 and 3 are expected to develop with or without the project. PDA 2 will develop faster with the project, but will likely be equally influenced by the completion of the Winston-Salem Beltway.

The findings are summarized in the Land Use Scenario Assessment Matrix (Figure 5-2). The Land Use Scenario Assessment Matrix resulted in "Indirect Land Use Impacts Not Likely". The matrix shows that when compared to the No-Build scenario, the Build scenario would likely not result in increased or more intense development. Although there is a large amount of available land in the FLUSA, and the proposed improvements will result in 10 minutes of travel time savings, low forecasted employment growth, limited water and sewer availability, and robust growth management and local land use policies make indirect impacts on land use less likely.

Qualitative analyses of the probable development patterns in the FLUSA also suggest that cumulative changes in land use resulting from this project, along with subsequent private and public development actions, are not likely to notably increase the area of impervious surfaces over the No-Build scenario.

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Figure 5-2: Land Use Scenario Assessment Matrix

Land Use Scenario Assessment Matrix - R-2577 US 158 Widening

Rating	Scope of Development	Development Intensity	Future Shift of Regional Population Growth	Future Shift of Regional Employment Growth	Pressure for Land Development Outside Regulated Areas	Planned / Managed Land Use and Impacts	Result
More Concern	40% or Greater Change in Developed Land within the PDAs	Higher Development Intensities Anticipated	Strong Attraction of Development in the PDAs	Strong Attraction of Development in this Area	All PDAs are Outside a Regulated Area	Land Development and Stormwater Management Goals Not Set	
High							
Medium-High							
Medium	Build Scenario	No-Build and Build Scenarios	No-Build and Build Scenarios	Build Scenario			
Medium-Low	No-Build Scenario			No-Build Scenario		No-Build and Build Scenarios	**Indirect Land Use Impacts Not Likely**
Low					No-Build and Build Scenarios		
Less Concern	0-9% Change in Developed Land within the PDAs	No Current or Proposed Development Anticipated	No Population Shift Likely	No Employment Shift Likely	All PDAs are Inside a Regulated Area	Land Development, Stormwater Management Goals, and Growth Management Provisions in Place	

*Refer to LUSA Guidance Document for rating descriptions

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5.8 Flood Hazard Evaluation

This section contains information corresponding to the analysis of impacts to floodplains and floodways in the project study area. Executive Order 11988, Floodplain Management (42 CFR 26951), requires the following:

- All federal actions must avoid the occupancy and modifications of floodplains and avoid direct or indirect support of floodplain development wherever that is a practicable alternative.
- If an action must be located on the base floodplain, the agency shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by floodplains.
- Each agency shall also provide opportunity for early public review of any plans or proposals for actions in floodplains.

Forsyth and Guilford Counties are participants in the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA). This project will involve construction activities on or adjacent to FEMA regulated streams. Based on the most current information available from the NC Floodplain Mapping Program (NCFMP), the project will cross Lowery Mill Creek, Belews Creek, and Belews Lake, all of which have associated 100-year floodplains. Additionally, the project will cross a regulatory floodway at Lowery Mill Creek and Belews Creek. The Hydraulics Unit will coordinate with the NCFMP, the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of the NCDOT Memorandum of Agreement with the NCFMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR). This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, NCDOT Divisions 7 and 9 shall submit sealed as-built construction plans to the NCDOT Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plans, both horizontally and vertically.

5.9 Traffic Noise Analysis

5.9.1 Introduction

In accordance with 23 CFR 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise and the NCDOT Traffic Noise Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed State or Federal highway projects for construction of a highway or interchange on new location, improvements of an existing highway which substantially change the horizontal or vertical alignment or add new through lanes, or projects that involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM) approved by the FHWA (TNM 2.5) and following procedures detailed in 23 CFR 772, the NCDOT Traffic Noise Policy and the NCDOT Traffic Noise Manual. When traffic noise impacts are predicted,

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examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Construction noise impacts may occur if noise-sensitive receptors are in close proximity to project construction activities. All reasonable efforts should be made to minimize exposure of noise sensitive areas to construction noise impacts.

The source of this traffic noise information can be found in the STIP R-2577 *Traffic Noise Report, US 158 (Reidsville Road) Improvements, Forsyth and Guilford Counties* (AECOM, 2018).

5.9.2 Traffic Noise Impacts and Noise Contours

The maximum number of receptors in each project section predicted to become impacted by future traffic noise is shown in Table 13. The table includes those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria (NAC) or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Policy. The maximum extent of the 71- and 66- dB(A) noise level contours measured from the proposed edge of traveled way is within the right-of-way and 150 feet, respectively.

Table 13: Predicted Traffic Noise Impacts by Section

Section (Alternative)	Traffic Noise Impacts*			
	Residential (NAC B)	Places of Worship/Schools, Parks, etc. (NAC C & D)	Businesses (NAC E)	Total
Section AB	219	1	-	220
Section C	38	1	-	39

*Per TNM 2.5 and in accordance with 23 CFR 772

5.9.3 Traffic Noise Abatement Measures

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

Substantially changing the highway alignment to minimize noise impacts is not considered to be a viable option for this project due to engineering and/or environmental factors. Traffic system management measures are not considered viable for noise abatement due to the negative impact they would have on the capacity and level of service of the proposed roadway. Costs to acquire buffer zones for impacted receptors will exceed the NCDOT base dollar value of $22,500 per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Manual, causing this abatement measure to be unreasonable.

5.9.4 Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb and reflect highway traffic noise. For this project, earthen berms are not found to be a viable

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abatement measure because the additional right-of-way, materials and construction costs are estimated to exceed the NCDOT maximum allowable base quantity of 4,200 cubic yards per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Policy.

A noise barrier evaluation was conducted for this project utilizing the Traffic Noise Model (TNM 2.5) software developed by the FHWA. A total of three potential noise barrier locations were studied for Section AB, and were found to be preliminarily feasible and reasonable for construction. Table 14 summarizes the results of the evaluation.

Table 14: Preliminary Noise Barrier Evaluation Results

Section/ Noise Study Area (NSA)	Noise Barrier Location	Length / Height[2] (feet)	Square Footage	Number of Benefited Receptors	Square Feet per Benefited Receptor / Allowable Square Feet per Benefited Receptor	Preliminarily Feasible and Reasonable (Likely) for Construction[1]
Section AB/NSA1.15	US 158 eastbound between Stanley Park Road and Old Belews Creek Road	1,495/12	17,940	14	1,281/1,500	Yes
Section AB/NSA1.3	US 158 eastbound between Old Greensboro Road and Churchland Drive	340/12	4,080	3	1,360/1,500	Yes
Section AB/NSA4.7	US 158 westbound between Peaceful Valley Drive and Kernersville Road	300/10	3,000	2	1,500/2,000	Yes

[1] The recommendation for barrier construction is preliminary and subject to change, pending completion of final design and the public involvement process.
[2] Average wall height. Actual wall height at any given location may be higher or lower.

5.9.5 Traffic Noise Summary

A preliminary noise evaluation was performed that identified three noise barriers that preliminarily meet feasibility and reasonableness criteria found in the NCDOT Traffic Noise Policy. A more detailed analysis will be completed during project final design. Noise barriers preliminarily found to be feasible and reasonable during the preliminary noise analysis may not be found to be feasible and reasonable during the final design noise analysis due to changes in proposed project alignment and other design considerations, surrounding land use development, or utility conflicts, among other factors. Conversely, noise barriers that were not considered preliminarily feasible and reasonable may meet the established criteria and be recommended for construction.

In accordance with NCDOT Traffic Noise Policy, the Federal/State governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the

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approval date of the EA/FONSI. NCDOT strongly advocates the planning, design and construction of noise-compatible development and encourages its practice among planners, building officials, developers and others.

5.10 Air Quality Analysis

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 roadway or the improvement of an existing roadway. New roadways or the widening of existing roadways increase localized levels of vehicle emissions, but these increases could be offset due to increases in speeds from reductions in congestion, and because vehicle emissions will decrease in areas where traffic shifts to the new roadway. Significant progress has been made in reducing criteria pollutant emissions from motor vehicles and improving air quality, even as vehicle travel has increased rapidly.

The project is located in Forsyth and Guilford Counties, with Sections A and B lying in Forsyth County, within the Winston-Salem maintenance area for carbon monoxide (CO). A microscale, hot-spot analysis that predicted future CO concentrations resulting from the proposed highway improvements indicated that no violations of the applicable NAAQS CO concentrations are anticipated. Section C lies in Guilford County, within Greensboro attainment the area for CO and within the Greensboro-Winston-Salem-High Point nonattainment area for fine particles PM 2.5, as defined by the USEPA. A Determination of Project Categorization for PM 2.5 Hot-Spot Requirement was completed, and provided the basis for an interagency determination that the project is not an air quality concern. This project would not add substantial new vehicle capacity or create a facility that is likely to meaningfully increase vehicle emissions. Therefore, it is not anticipated to create any adverse effects on the air quality of the above nonattainment areas. This evaluation completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process, and no additional reports are necessary.

5.11 Hazardous Material

Hazardous waste is defined by the USEPA as any waste material or combination of waste materials that pose a hazard to human health, welfare, or the environment. Materials classified as hazardous can be in the form of solids, sludges, liquids, or gases, and are characterized as reactive, toxic, infectious, explosive, flammable, corrosive, or radioactive. Examples of hazardous waste sites include landfills, dumps, pits, lagoons, salvage areas, retail operations, and storage tanks.

In February 2009, a Geotechnical Prescreening Report (Geotechnical Report) was conducted to provide an early identification of geoenvironmental issues that may impact the planning, design, or construction of the project. The results of the Geotechnical Report identified 16 active or closed underground storage tank (UST) facilities within the project limits. Two automotive repair facilities, one dry cleaning operation, and one industrial plant were identified within the project limits. All sites are expected to present low to medium monetary and scheduling impacts to the project. No hazardous waste sites or landfills were identified within the project limits.

5.12 Summary of Environmental Consequences

Table S-2 provides a summary of the expected environmental consequences for each alternative.

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6. COMMENTS AND COORDINATION

6.1 Public Outreach and Meetings

NCDOT conducted the following public outreach and public meetings held throughout the project history, in order to present project information and obtain input from the public:

- Citizens Information Workshops (CIWs) were held in April 2006, one in Walkertown and one in Stokesdale. The purpose of the CIWs was to introduce the project to the public and to solicit any project comments.
- CIWs were held in April 2012 to present the preliminary study alternatives under consideration.
- Design Public Meetings (DPMs) were held in October 2017 to give the public and local officials the opportunity to review maps of the detailed study alternatives. Nearly 700 members of the public attended the meetings, and 168 written comments were received. NCDOT held a post-DPM meeting on November 30, 2017, in order to discuss and address comments received from the public concerning the proposed roadway improvements.
- The USACE posted a Public Notice on April 5, 2018, to allow the public an opportunity to review the proposed detailed study alternatives for 30 days and to provide comments.

6.2 Merger Process

The NEPA / Section 404 Merger Process, commonly referred to as the Merger Process, and agreed to by the USACE, NC Department of Environmental Quality Division of Water Resources (NCDWR), FHWA, and NCDOT, and supported by other stakeholder agencies and local units of government, streamlines the project development and permitting processes. The Merger Process allows federal, state, and local agency representatives to work more efficiently by providing a common forum for them to discuss and craft ways to comply with key elements of their various agency missions. The Merger Process is a shared decision-making process and documents agency mandates during the NEPA/SEPA project planning and design phase of transportation projects. As part of project development, several meetings were held to discuss major milestones at Concurrence Points (CP), which are the defining points in the Merger Process:

- CP1 (Purpose and Need) meeting was held on August 14, 2007, and concurrence was reached.
- CP2 (Design Options for Further Study) meeting for R-2577C was held on February 17, 2009, and concurrence was reached.
- CP2 (Design Options for Further Study) meetings for R-2577A&B were held on December 12, 2012, and on August 22, 2013, and concurrence was reached.
- CP2A (Bridging Decisions and Alignment Review) meeting for R-2577A, B & C was held on September 29, 2015, and concurrence was reached.
- CP3 & CP4A (Least Environmentally Damaging Practicable Alternative/Preferred Alternative Selection & Avoidance and Minimization) meeting was held on May 16, 2018, and concurrence was reached.

Copies of the signed concurrence forms are located in Appendix E.

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6.3 Other Agency Coordination

A scoping letter was mailed to agencies on May 17, 2004, inviting comments on R-2577. Comments were received from the following agencies:

- NC Department of Administration
- NC Department of Environment and Natural Resources
- NC Department of Public Instruction
- NC Historic Preservation Office
- NC Division of Environmental Health
- NC Division of Water Quality
- NC Wildlife Resources Commission
- US Army Corps of Engineers
- US Federal Highway Administration
- US Fish and Wildlife Service

Copies of the agency responses are included in Appendix A.

NCDOT conducted additional local agency coordination during the development of the CIA report in 2018.

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7. BASIS FOR FINDING OF NO SIGNIFICANT IMPACT

Based upon the study of the proposed project documented in this assessment and upon comments received from state agencies, local agencies, and the public, it is the finding of the North Carolina Department of Transportation that this project will not have a significant adverse impact upon the human or natural environment. The proposed project is consistent with local plans and will not disrupt the local communities. Per this evaluation, a Finding of No Significant Impact is applicable for this project. Therefore, no further environmental analysis will be required.

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8. REFERENCES

AECOM. 2016. *Traffic Safety Analysis, R-2577*.

AECOM. 2018. *Traffic Noise Report, R-2577*.

AECOM. 2018. *Traffic Capacity Analysis, R-2577*.

CALYX Engineers and Consultants. 2018. *Community Impact Assessment, R-2577*.

Greensboro Urban Area MPO. 2010. *Comprehensive Transportation Plan*.

Greensboro Urban Area MPO. 2015. *2040 Metropolitan Transportation Plan*.

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HNTB. 2017. *2017/2040 Project-Level Traffic Forecast.*

NCDOT Geotechnical Engineering Unit. 2009. *Hazardous Materials Report, R-2577*.

NCDOT Human Environment Unit. 2016. *Revised Air Quality Analysis, R-2577.*

NCDOT Natural Environmental Section. 2012. *Natural Resources Technical Report*

New South Associates Inc. 2013. *Architectural Survey Report, R-2577*.

New South Associates Inc. 2015. *Management Summary: Intensive Archaeological Survey and Testing for the Proposed Widening and Improvement of US 158*.

Piedmont Authority for Regional Transportation. 2010. *Regional Transit Development Plan*.

Stantec Consulting Services Inc. 2012. *Community Characteristics Report, R-2577*.

Stokesdale Land Use Plan Review Committee. 2007. *Stokesdale Future Land Use Plan*.

Winston-Salem and Forsyth County City-County Planning Board. 2005. *Comprehensive Bicycle Master Plan*.

Winston-Salem and Forsyth County City-County Planning Board. 2012. *Greenway Plan Update*.

Winston-Salem and Forsyth County City-County Planning Board. 2013. *Legacy 2030*.

Winston-Salem and Forsyth County City-County Planning Board. 2014. *Walkertown Area Plan*.

Winston-Salem and Forsyth County City-County Planning Board. 2016. *East-Northeast Area Plan*.

Winston-Salem and Forsyth County City-County Planning Board. 2017. *Northeast Suburban Area Plan*.

Winston-Salem Urban Area MPO. 2012. *Comprehensive Transportation Plan*.

Winston-Salem Urban Area MPO. 2015. *2040 Metropolitan Transportation Plan*.

Appendix A

Agency Coordination

North Carolina
Department of Administration

Michael F. Easley, Governor

Gwynn T. Swinson, Secretary

August 6, 2004

Ms. Bethany Hunt
N.C. Dept. of Transportation
Project Dev. Branch
Transportation Bldg. - 1534 MSC
Raleigh, NC 27699-1534

Dear Ms. Hunt:

Re: SCH File # 04-E-4220-0348; Scoping; Proposed project involves widening US 158 to a multi lane facility north of US 421/I-40 bus. in Forsyth Co. to US 220 in Guilford Co. TIP R-2577

The above referenced environmental impact information has been submitted to the State Clearinghouse under the provisions of the National Environmental Policy Act. According to G.S. 113A-10, when a state agency is required to prepare an environmental document under the provisions of federal law, the environmental document meets the provisions of the State Environmental Policy Act.

No comments were made by any state/local agencies during the course of this review. If any further environmental review documents are prepared for this project, they should be forwarded to this office for intergovernmental review.

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

Sincerely,

Chrys Baggett

Ms. Chrys Baggett
Environmental Policy Act Coordinator

cc: Region G

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

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

Location Address:
116 West Jones Street
Raleigh, North Carolina

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OVER

Lee Spencer

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL HEALTH

Project Number
04-0348
County
Guilford

Inter-Agency Project Review Response

Project Name US 158 → 4-lane roadway N of US 421/I-40 Bus in Forsyth County to US 220 in Guilford Type of Project _____

Comments provided by:

☐ Regional Program Person

☒ Regional Engineer for Public Water Supply Section

☐ Central Office program person

Name: Lee G. Spencer Date: 6/18/04

Telephone number: 336-771-4600

Program within Division of Environmental Health:

☒ Public Water Supply

☐ Other, Name of Program: _____

Response (check all applicable):

☐ No objection to project as proposed

☐ No comment

☐ Insufficient information to complete review

☐ Comments attached

☒ See comments below

The Southwestern Portion of this Proposed Project will be within the water supply watershed of Salem Lake. Salem Lake is one of two principal water supplies for the Winston-Salem/Forsyth County water system. Sediment + Erosion control must be carefully planned, and compliance with plan must be maintained during construction. Storm water retention ponds may need to be considered.

Return to:

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

RECEIVED
N.C. Dept. of ENR
JUN 18 2004
Winston-Salem
Regional Office

Bethany Hunt
(Midkiff)
13x2

PUBLIC SCHOOLS OF NORTH CAROLINA

STATE BOARD OF EDUCATION :: Howard N. Lee, *Chairman* **WWW.NCPUBLICSCHOOLS.ORG**
DEPARTMENT OF PUBLIC INSTRUCTION :: Michael E. Ward, *State Superintendent*

RECEIVED
JUL -- 2004
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

July 15 2004

MEMORANDUM

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

FROM: J. David Edwards, Section Chief, School Planning de

RE: US 158 from the 4-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County, WBS No. 37405, TIP Project No. R-2577

Enclosed is a reply from Winston-Salem/Forsyth Schools regarding the above referenced project.

DE/ed
Enclosures

SCHOOL PLANNING - DIVISION OF SCHOOL SUPPORT :: www.schoolclearinghouse.org
6319 Mail Service Center :: Raleigh, North Carolina 27699-6319 :: 919.807.3554 :: Fax 919.807.3558
An Equal Opportunity/Affirmative Action Employer

Winston-Salem/Forsyth County Schools
4150 Carver School Road, Winston-Salem, NC 27105 • 336/661-4986 • Fax 336/661-6560
Assistant Operations Manager for Transportation

MEMO

To: J. David Edwards, Ed.D.
Section Chief, School Planning
NC Department of Public Instruction

From: Don Carter DE

Date: July 8th, 2004

Re: Impact of TIP # R-2577

Our input was solicited on the impact on the above project, the widening of U.S. 158 through Walkertown and Belews Creek, NC. We have two high schools, a middle school, and four elementary schools in the area of the corridor that is to be widened. The additional lanes would likely improve our situation in that the additional capacity would cause less delay for our buses. We currently have around 30 buses using parts of the project area at some point each school day. The construction period would likely cause us additional delays, but if we are aware of the timeframe for the project we may be able to build our runs accordingly. The additional lanes would cause us to make our passenger stops on the same side of the road as the student's residence, but due to the nature of that particular highway, we were already doing so. If we can provide any additional information to you, please let us know.

CC:
Rhonda Fleming
Gene Miller

Bethany Hunt
(MidTIP)
Bx 2

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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



August 10, 2004

MEMORANDUM

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

FROM: Peter B. Sandbeck for Peter Sandbeck
Deputy State Historic Preservation Officer

SUBJECT: US 158 from the 4-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County, WBS No. 37405, TIP Project No. R-2577, ER 04-1615, Forsyth & Guilford Counties

Thank you for your memorandum of May 17, 2004, concerning the above project.

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

(GF 554) Flat Rock Methodist Church, north side US 158 0.1 mile east of junction with SR 2105

(GF 1710) T. A. Wilson House, 6900 US 158

(GF205) Stokesdale Commercial District, north side US 158 between SR 2053 and SR 2054

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

There are no National Register eligible recorded archaeological sites adjacent to existing US 158. However, most of the area has never been surveyed to locate and evaluate archaeological resources. Some portions of the project area are likely to affect as yet unrecorded archaeological sites. We recommend that you forward project alternates for our review when they are available.

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

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

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

DB:lk

cc: Matt Wilkerson
Mary Pope Furr

Bethany Hunt

RECEIVED
BY MSP | DATE 7/11/05
R-2577

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

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

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

February 4, 2005

MEMORANDUM

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

FROM: Peter Sandbeck RBS for Peter Sandbeck

SUBJECT: US 158 from the 4-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County, WBS No. 37405, TIP No. R-2577, Forsyth & Guilford Counties, ER 04-1615

Thank you for your memorandum of October 5, 2004, concerning the above project. We apologize for the delay in our response.

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

- (GF681) Salem Street House, 1006 Salem Street
- (GF574) Fryar Homeplace, N side SR 2819 .6 miles E of junction with SR 3045
- (GF554) Flat Rock Methodist Church, N Side US 158, 0.1 mile E of Junction with SR 2105

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

As we noted in our earlier response to your request for comments, there are no National Register eligible recorded archaeological sites adjacent to existing US 158. However, most of the area has never been surveyed to locate and evaluate archaeological resources. Some portions of the project area are likely to affect as yet unrecorded archaeological sites. We recommend that you forward project alternates for our review when they are available.

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

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RESTORATION	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
SURVEY & PLANNING	515 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801

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

cc: Matt Wilkerson, NCDOT
Mary Pope Furr, NCDOT

NCDENR
North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary



MEMORANDUM

TO: Chrys Baggett
State Clearinghouse

FROM: Melba McGee
Environmental Review Coordinator

SUBJECT: 04-0348 Scoping for Widening US 158 in Forsyth and Guilford Counties

DATE: August 2, 2004

The Department of Environment and Natural Resources has reviewed the proposed information. The attached comments are for the applicant's information. The Division of Water Quality was unable to provide comments during the comment response time. Should comments be provided they will be forwarded to you for your file.

Thank you for the opportunity to review.

Attachments

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-733-4984 \ FAX: 919-715-3060 \ Internet: www.enr.state.nc.us/ENR

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State of North Carolina
NCDENR Department of Environment and Natural Resources

Reviewing Office: WSRO

Project Number: 04-0348 Due Date: 7/2/04

INTERGOVERNMENTAL REVIEW - PROJECT COMMENTS

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

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (Statutory Time Limit)
☐	Permit to construct & operate wastewater treatment facilities, sewer system extensions & sewer systems not discharging into state surface waters.	Application 90 days before begin construction or award of construction contracts. On-site inspection. Post-application technical conference usual.	30 days (90 days)
(4) ☑	NPDES-permit to discharge into surface water and/or permit to operate and construct wastewater facilities discharging into state surface waters.	Application 180 days before begin activity. On-site inspection preapplication. conference usual. Additionally, obtain permit to construct wastewater treatment facility-granted after NPDES. Reply time, 30 days after receipt of plans or issue of NPDES permit-whichever is later.	90 - 120 days (N/A)
☐	Water Use Permit	Preapplication technical conference usually necessary	30 days (N/A)
☐	Well Construction Permit	Complete application must be received and permit issued prior to the installation of a well.	7 days (15 days)
☐	Dredge and Fill Permit	Application copy must be served on each adjacent riparian property owner. On-site inspection. Preapplication conference usual. Filling may require Easement to Fill from N.C. Department of Administration and Federal Dredge and Fill Permit.	55 days (90 days)
☐	Permit to construct & operate Air Pollution Abatement facilities and/or Emission Sources as per 15 A NCAC (2Q.0100, 2Q.0300, 2H.0600)	N/A	60 days
☑	Any open burning associated with subject proposal must be in compliance with 15 A NCAC 2D.1900	N/A	60 days (90 days)
☑	Demolition or renovations of structures containing asbestos material must be in compliance with 15 A NCAC 2D.1110 (a) (1) which requires notification and removal prior to demolition. Contact Asbestos Control Group 919-733-0820.		
☐	Complex Source Permit required under 15 A NCAC 2D.0800		
(5) ☑	The Sedimentation Pollution Control Act of 1973 must be properly addressed for any land disturbing activity. An erosion & sedimentation control plan will be required if one or more acres to be disturbed. Plan filed with proper Regional Office (Land Quality Section) at least 30 days before beginning activity. A fee of $50 for the first acre or any part of an acre.		20 days (30 days)
☐	The Sedimentation Pollution Control Act of 1973 must be addressed with respect to the referenced Local Ordinance.		30 days
☐	Sedimentation and erosion control must be addressed in accordance with NCDOT's approved program. Particular attention should be given to design and installation of appropriate perimeter sediment trapping devices as well as stable stormwater conveyances and outlets.		
☐	Mining Permit	On-site inspection usual. Surety bond filed with DENR. Bond amount varies with type mine and number of acres of affected land. Any are mined greater than one acre must be permitted. The appropriate bond must be received before the permit can be issued.	30 days (60 days)
☐	North Carolina Burning permit	On-site inspection by N.C. Division of Forest Resources if permit exceeds 4 days	1 day (N/A)
☐	Special Ground Clearance Burning Permit-22 counties in coastal N.C. with organic soils.	On-site inspection by N.C. Division of Forest Resources required "if more than five acres of ground clearing activities are involved. Inspections should be requested at least ten days before actual burn is planned."	1 day (N/A)
☐	Oil Refining Facilities	N/A	90 - 120 days (N/A)

	PERMITS	SPECIAL APPLICATION PROCEDURES or REQUIREMENTS	Normal Process Time (Statutory Time Limit)
☐	Dam Safety Permit	If permit required, application 60 days before begin construction. Applicant must hire N.C. qualified engineer to: prepare plans, inspect construction, certify construction is according to DENR approved plans. May also require permit under mosquito control program, and a 404 permit from Corps of Engineers. An inspection of site is necessary to verify Hazard Classification. A minimum fee of $200.00 must accompany the application. An additional processing fee based on a percentage or the total project cost will be required upon completion.	30 days (60 days)
☐	Permit to drill exploratory oil or gas well	File surety bond of $5,000 with DENR running to State of N.C. conditional that any well opened by drill operator shall, upon abandonment, be plugged according to DENR rules and regulations.	10 days (N/A)
☐	Geophysical Exploration Permit	Application filed with DENR at least 10 days prior to issue of permit. Application by letter. No standard application form.	10 days (N/A)
☐	State Lakes Construction Permit	Application fees based on structure size is charged. Must include descriptions & drawings of structure & proof of ownership of riparian property.	15 - 20 days (N/A)
☑	401 Water Quality Certification	N/A	55 days (130 days)
☐	CAMA Permit for MAJOR development	$250.00 fee must accompany application	60 days (130 days)
☐	CAMA Permit for MINOR development	$50.00 fee must accompany application	22 days (25 days)
☐	Several geodetic monuments are located in or near the project area. If any monument needs to be moved or destroyed, please notify: N.C. Geodetic Survey, Box 27687 Raleigh, N.C. 27611		
☑	Abandonment of any wells, if required must be in accordance with Title 15A. Subchapter 2C.0100.		
☑	Notification of the proper regional office is requested if "orphan" underground storage tanks (USTS) are discovered during any excavation operation.		
☐	Compliance with 15A NCAC 2H 1000 (Coastal Stormwater Rules) is required.		45 days (N/A)
*	Other comments (attach additional pages as necessary, being certain to cite comment authority)		

(1) Shevi Knight, DW Section, 6/14/04
(2) Cindy Gaskins, UST Section 6/14/04
(4) STEVE MAUNEY, DWQ 6-15-04, SEE ATTACHED GUIDANCE ON 401 & STORMWATER (NPDES) REQUIREMENTS
(5) NCDOT has a delegated sediment control program. Matthew Datt-LO-6-16-04

REGIONAL OFFICES

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

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

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

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

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

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

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

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

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401 WATER QUALITY CERTIFICATION PROGRAM COMMENTS

The Winston-Salem Regional Office (WSRO) recommends that the applicant coordinate a Pre-Application Meeting and Site Visit with the Division of Water Quality (DWQ) and the US Army Corps of Engineers (USACE) to determine if a Section 404 Permit (USACE) and a Section 401 Water Quality Certification (DWQ) will be required. Even though a Section 401 Water Quality Certification cannot be issued until the EA/EIS procedure is complete, proceeding with the pre-application and application process will enable the applicant to address water quality concerns and regulations early in the project's development. Such issues include, but are not limited to, the following:

1. Avoidance and minimization of surface water and riparian buffer impacts,
2. Stormwater Management requirements (as related to the 401 Program),
3. Compensatory Mitigation for streams, wetlands, and/or buffers (where applicable).
4. Water Supply, Nutrient Sensitive, Trout, Outstanding Resource, and/or High Quality Watershed concerns and requirements (where applicable).
5. Compliance with and protection of appropriate Water Quality Standards, on-site as well as off-site, both during construction and after.

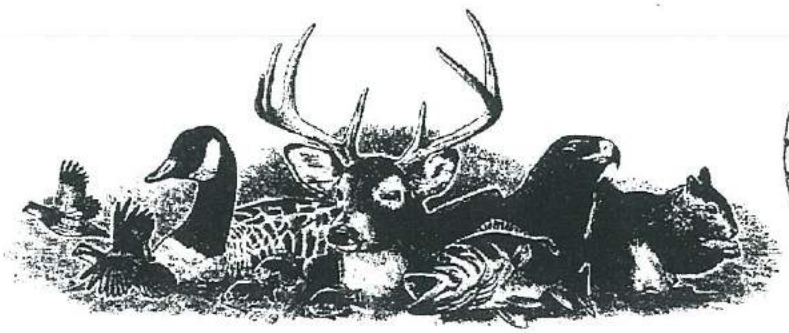
NPDES STORMWATER PERMITS COMMENTS

Any construction activity, including clearing, grading, and excavation activities resulting in the disturbance of one (1) or more acres of total land are required to obtain a NPDES Stormwater Permit NCG010000, prior to beginning these activities.

Any facility that is defined as having stormwater discharges associated with industrial activity is required to obtain a NPDES Stormwater Permit (varies) prior to beginning operation.

STATE STORMWATER PERMIT COMMENTS

State Stormwater Permits may be required for development activities draining to Outstanding Resources Waters or activities within one mile and draining to High Quality Waters. These must also be obtained prior to development activities.



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North Carolina Wildlife Resources Commission

Charles R. Fullwood, Executive Director

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

FROM: Marla Chambers, Western NCDOT Permit Coordinator
Habitat Conservation Program, NCWRC

DATE: July 9, 2004

SUBJECT: Scoping review of NCDOT's proposed widening of US 158 from the 4-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County. TIP No. R-2577.

North Carolina Department of Transportation (NCDOT) is requesting comments from the North Carolina Wildlife Resources Commission (NCWRC) regarding impacts to fish and wildlife resources resulting from the subject project. Staff biologists have reviewed the information provided and have the following preliminary comments. These comments are provided in accordance with the provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The NCDOT proposes to widen US 158 to a multi-lane facility from the 4-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County for a project length of 18.8 miles. Streams in the project area have several classifications including B, C, WS-III, WS-IV, and WS-III NSW. Sediment and erosion control measures should adhere to the design standards for sensitive watersheds. We also suggest that an in-water work moratorium from May 1 to July 15 be included for Belews Lake; Belews Creek, a tributary to Belews Lake; and Lowery Mills Creek, a tributary to Salem Lake, to protect spawning warmwater fishes. The bog turtle (*Glyptemys muhlenbergii*), state Threatened (T) and federal T (S/A), has been observed near Belews Creek in the project vicinity. Impacts to this species should be avoided, if possible.

In addition, to help facilitate document preparation and the review process, our general information needs are outlined below:

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 733-3633 ext. 281 • Fax: (919) 715-7643

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

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

   and,

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

2. Description of any streams or wetlands affected by the project. If applicable, include the linear feet of stream that will be channelized or relocated.

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

4. Cover type maps showing acreage of upland wildlife habitat impacted by the proposed project. Potential borrow sites and waste areas should be included.

5. Show the extent to which the project will result in loss, degradation, or fragmentation of wildlife habitat (wetlands or uplands).

6. Include the mitigation plan for avoiding, minimizing or compensating for direct and indirect degradation in habitat quality as well as quantitative losses.

7. Address the overall environmental effects of the project construction and quantify the contribution of this individual project to environmental degradation.

8. Provide a discussion of the probable impacts on natural resources, which will result from secondary development, facilitated by the improved road access.

9. If construction of this facility is to be coordinated with other state, municipal, or private development projects, a description of these projects should be included in the environmental document, and all project sponsors should be identified.

Beth Hunt (Midkiff) Bx 2

United States Department of the Interior

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

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JUN 22 2004
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS BRANCH

June 17, 2004

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

Dear Dr. Thorpe:

This letter is in response to your request for comments from the U.S. Fish and Wildlife Service (Service) on the potential environmental impacts of the proposed widening of US 158 to a multi-lane facility from the four-lane roadway north of US 421/I-40 Business in Forsyth County to US 220 in Guilford County (TIP No. R-2577). These comments provide scoping information in accordance with provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661-667d) and section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543). The following comments only apply to the Guilford County portion of the project. Forsyth County is within the purview of the Asheville, North Carolina Ecological Services Office.

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

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

2. Crossings of streams and associated wetland systems should use existing crossings and/or occur on a bridge structure wherever feasible. Bridges should be long enough to allow for sufficient wildlife passage along stream corridors. Where bridging is not feasible, culvert structures that maintain natural water flow and hydraulic regimes without scouring or impeding fish and wildlife passage should be employed;

3. Bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or flood plain. To the extent possible, piers and bents should be placed outside the bank-full width of the stream. If spanning the flood plain is not feasible, culverts should be installed in the flood plain portion of the approach to restore some of the hydrological functions of the flood plain and reduce high velocities of flood waters within the affected area;

4. Bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from run-off of storm water and pollutants;

5. Off-site detours should be used rather than construction of temporary, on-site bridges. For projects requiring an on-site detour in wetlands or open water, such detours should be aligned along the side of the existing structure which has the least and/or least quality of fish and wildlife habitat. At the completion of construction, the detour area should be entirely removed and the impacted areas be planted with appropriate vegetation, including trees if necessary;

6. If unavoidable wetland impacts are proposed, every effort should be made to identify compensatory mitigation sites in advance. Project planning should include a detailed compensatory mitigation plan for offsetting unavoidable wetland impacts. Opportunities to protect mitigation areas in perpetuity via conservation easements, land trusts or by other means should be explored at the outset;

7. Wherever appropriate, construction in sensitive areas should occur outside fish spawning and migratory bird nesting seasons. In waterways that may serve as travel corridors for fish, in-water work should be avoided during moratorium periods associated with migration, spawning and sensitive pre-adult life stages. The general moratorium period for anadromous fish is February 15 - June 30;

8. Best Management Practices (BMP) for Protection of Surface Waters should be implemented; and

9. Activities within designated riparian buffers should be avoided or minimized.

There is only one federally protected species listed for Guilford County: the federally threatened bald eagle *(Haliaeetus leucocephalus)*. Although the North Carolina Natural Heritage Program (NCNHP) database does not indicate any known occurrences of this species near the project vicinity, use of the NCNHP data should not be substituted for actual field surveys if suitable habitat occurs near the project site. The NCNHP database only indicates the presence of known occurrences of federally protected species and does not necessarily mean that such species are not present. It may simply mean that the area has not been surveyed. Information about the habitats in which these species are often found is provided on our web site, http://endangered.fws.gov/ . If suitable habitat occurs within the project vicinity for this species, a survey should be conducted to determine presence or absence of the species. All survey documentation must include survey methodologies and results. The area around the upper end of Belews Lake may possibly provide some habitat for the bald eagle.

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

1. A clearly defined and detailed purpose and need for the proposed project, supported by tabular data, if available, and including a discussion of the project's independent utility;

2. A description of the proposed action with an analysis of all alternatives being considered, including the upgrading of existing roads and a "no action" alternative;

3. A description of the fish and wildlife resources, and their habitats, within the project impact area that may be directly or indirectly affected;

4. The extent and acreage of waters of the U.S., including wetlands, that are to be impacted by filling, dredging, clearing, ditching, or draining. Acres of wetland impact should be differentiated by habitat type based on the wetland classification scheme of the National Wetlands Inventory (NWI). Wetland boundaries should be determined by using the 1987 Corps of Engineers Wetlands Delineation Manual and verified by the U.S. Army Corps of Engineers;

5. The anticipated environmental impacts, both temporary and permanent, that would be likely to occur as a direct result of the proposed project. The assessment should also include the extent to which the proposed project would result in secondary impacts to natural resources, and how this and similar projects contribute to cumulative adverse effects;

6. Design features and construction techniques which would be employed to avoid or minimize impacts to fish and wildlife resources, both direct and indirect, and including fragmentation and direct loss of habitat;

7. Design features, construction techniques, or any other mitigation measures which would be employed at wetland crossings and stream channel relocations to avoid or minimize impacts to waters of the US; and,

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

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

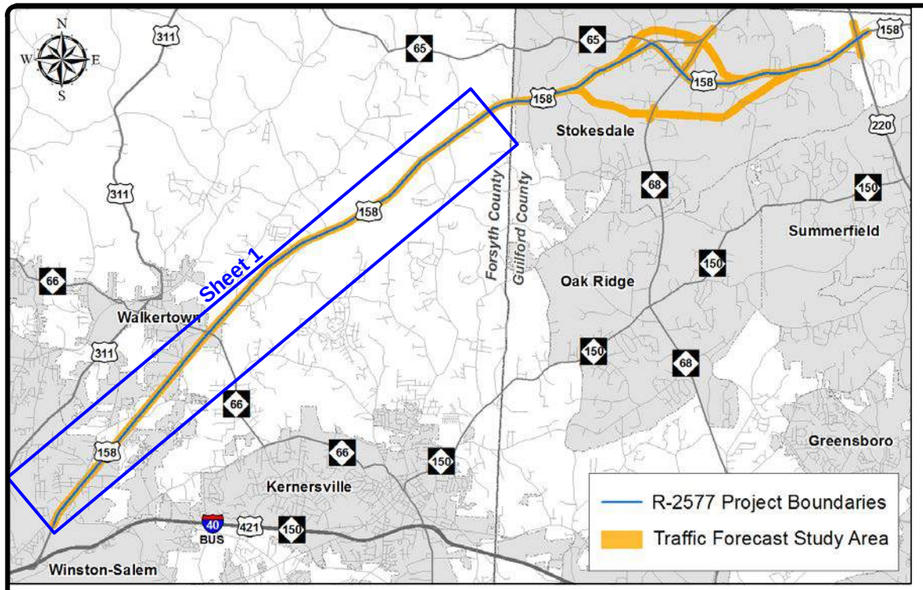
Sincerely,

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

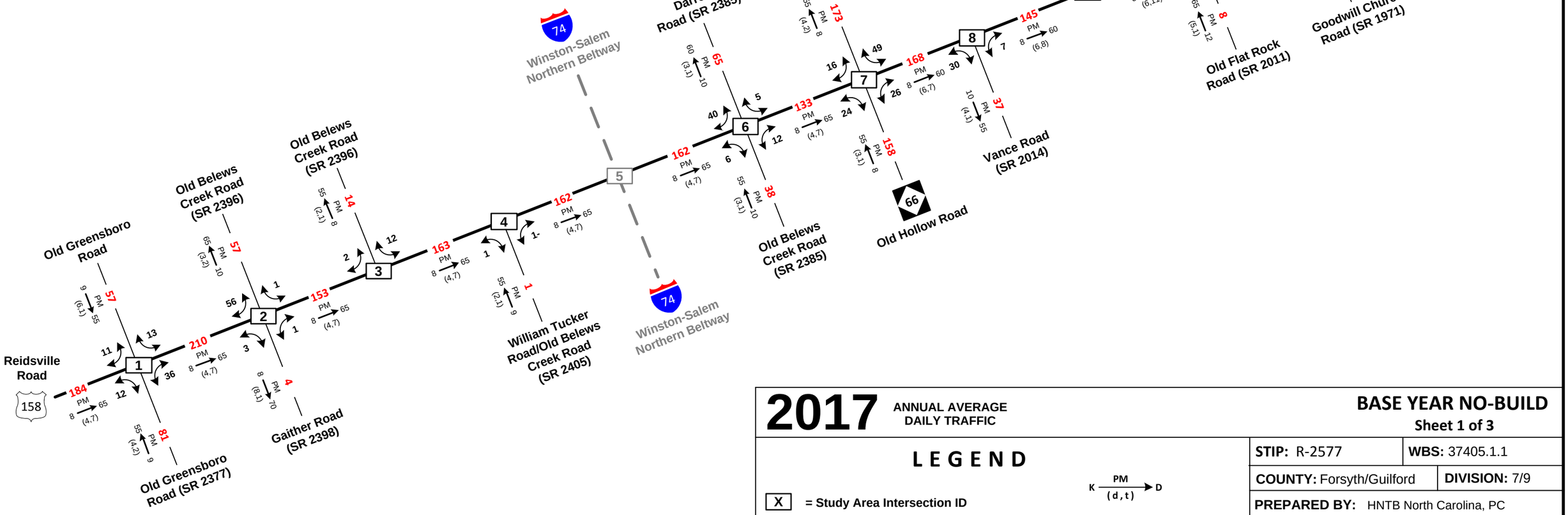
cc: John Thomas, USACE, Raleigh, NC
Beth Barnes, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

Appendix B

Traffic Volumes



NOT TO SCALE



2017 ANNUAL AVERAGE DAILY TRAFFIC

LEGEND

X	= Study Area Intersection ID
###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
------	Proposed Roadway

K PM (d,t) D

K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

BASE YEAR NO-BUILD

Sheet 1 of 3

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
PREPARED BY: HNTB North Carolina, PC	
PROJECT: US 158 (Reidsville Road) Widening	
LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)	
DATE: July 2017	

NOT TO SCALE

Ellisboro Road (SR 2046)

Lester Road (SR 2048)

Belews Creek Road

Oak Level Church Road (SR 2045)

Newberry Street (SR 2053)

Shilling Street (SR 2054)

Fidelity Bank Driveway

Purgason Lane

Matchline B

Bypass

Vaughn Street (SR 2051)

Newberry Street (SR 2053)

Shilling Street/ Stokesdale Street (SR 2054)

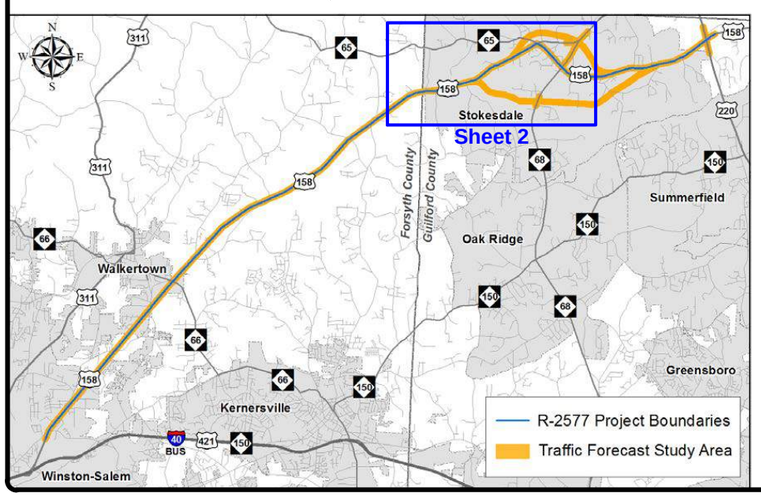
Clintwood Drive (SR 2056)

Angel-Pardue Road (SR 2102)

Matchline A

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR NO-BUILD

Sheet 2 of 3

LEGEND

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

K PM (d,t) D

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
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DATE: July 2017	

NOT TO SCALE

158 Bypass — Matchline B — 158

Countryside Village Retirement Community

Southard Road (SR 2103)

Athens Road (SR 2101)

Ellison Road (SR 2107)

Flatrock Road (SR 2105)

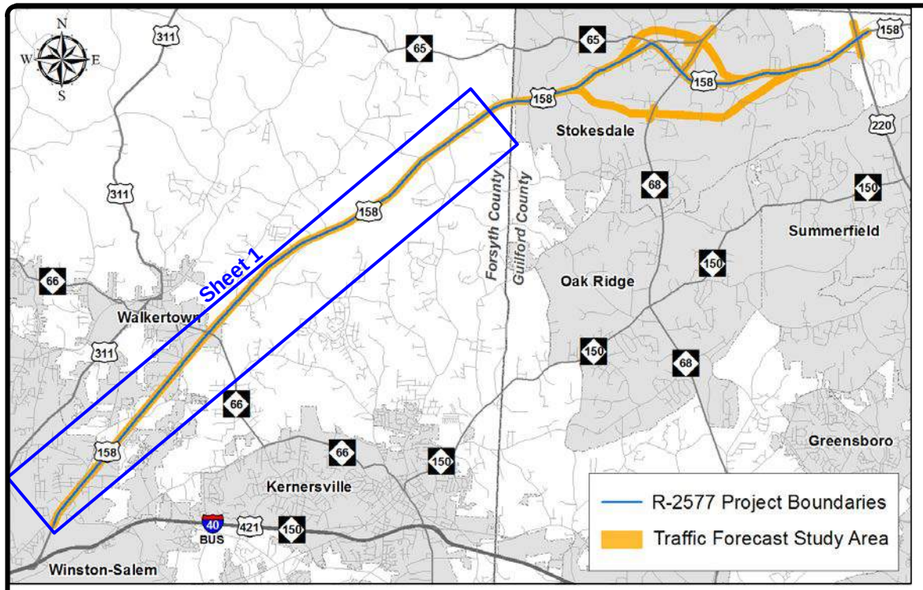
Spotswood Road (SR 2104)

Eversfield Road (SR 2109)

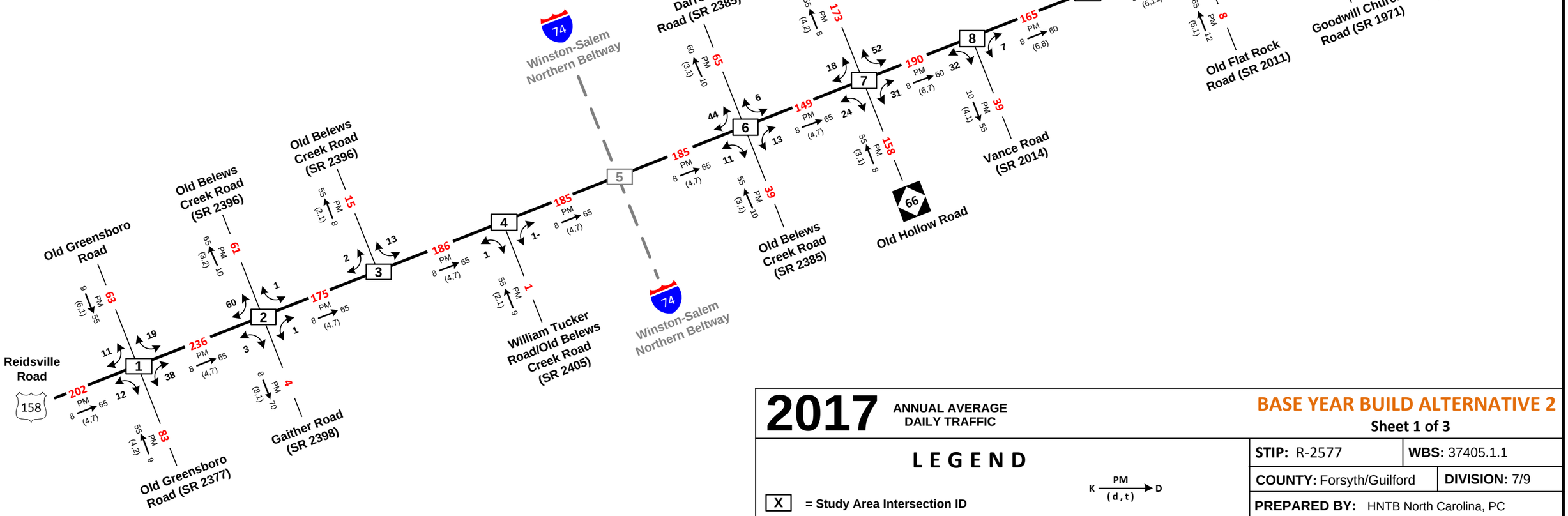
220

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| | | |



NOT TO SCALE



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 2

Sheet 1 of 3

LEGEND

X	= Study Area Intersection ID
###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
------	Proposed Roadway

K PM (d,t) D

K	Design Hour Factor (%)
PM	PM Peak Period
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(d,t)	Duals, TT-STs (%)

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
PREPARED BY: HNTB North Carolina, PC	
PROJECT: US 158 (Reidsville Road) Widening	
LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)	
DATE: July 2017	

NOT TO SCALE

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Belews Creek Road

Belews Creek Road

Newberry Street (SR 2053)

Shilling Street (SR 2054)

Fidelity Bank Driveway

Purgason Lane

Matchline B

Matchline A

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Newberry Street (SR 2053)

Shilling Street/ Stokesdale Street (SR 2054)

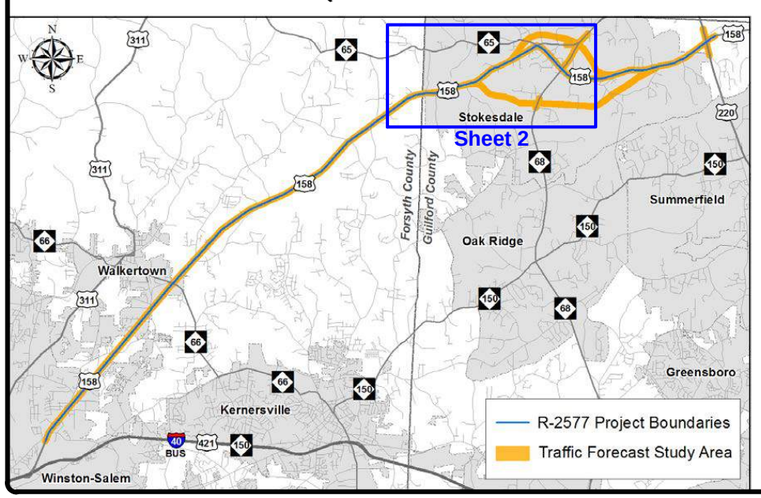
Clintwood Drive (SR 2056)

Angel-Pardue Road (SR 2102)

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)

Matchline B Bypass



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 2

Sheet 2 of 3

LEGEND

X	= Study Area Intersection ID
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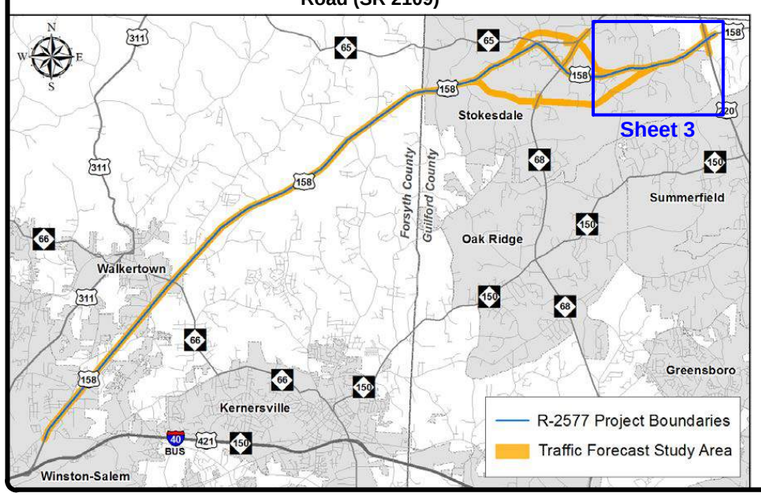
Flatrock Road (SR 2105)

Spotswood Road (SR 2104)

Eversfield Road (SR 2109)

158 Bypass

Matchline B



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 2

Sheet 3 of 3

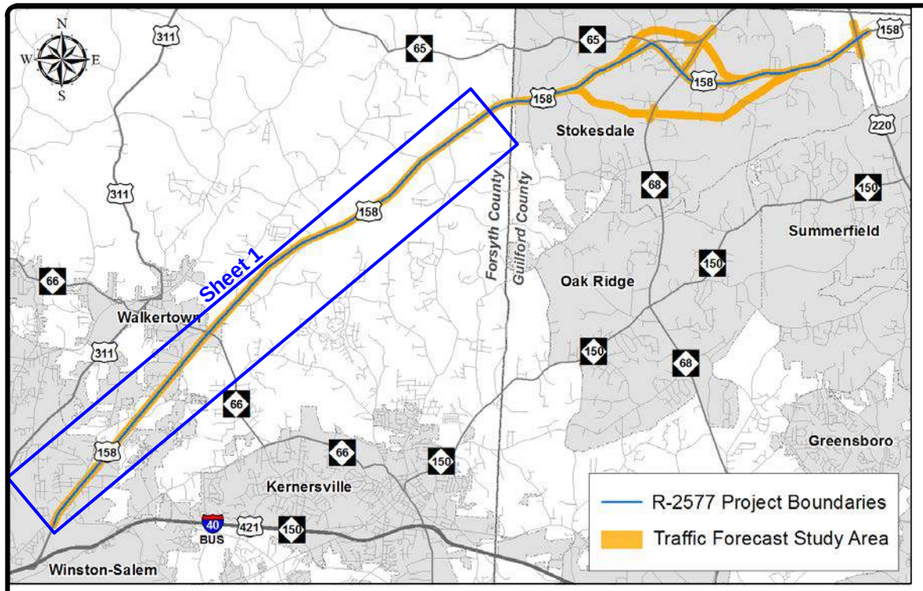
LEGEND

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1-	Less than 50 VPD
------	Proposed Roadway

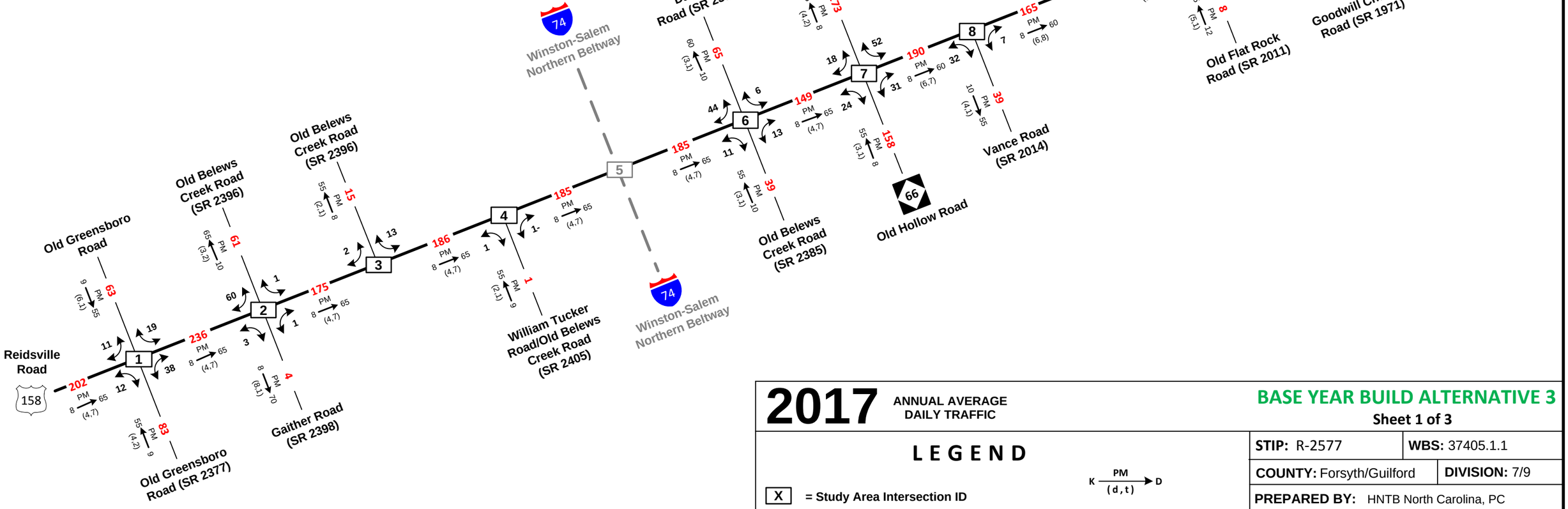
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K	Design Hour Factor (%)
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(d,t)	Duals, TT-STs (%)

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
PREPARED BY: HNTB North Carolina, PC	
PROJECT: US 158 (Reidsville Road) Widening	
LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)	
DATE: July 2017	



NOT TO SCALE



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 3

Sheet 1 of 3

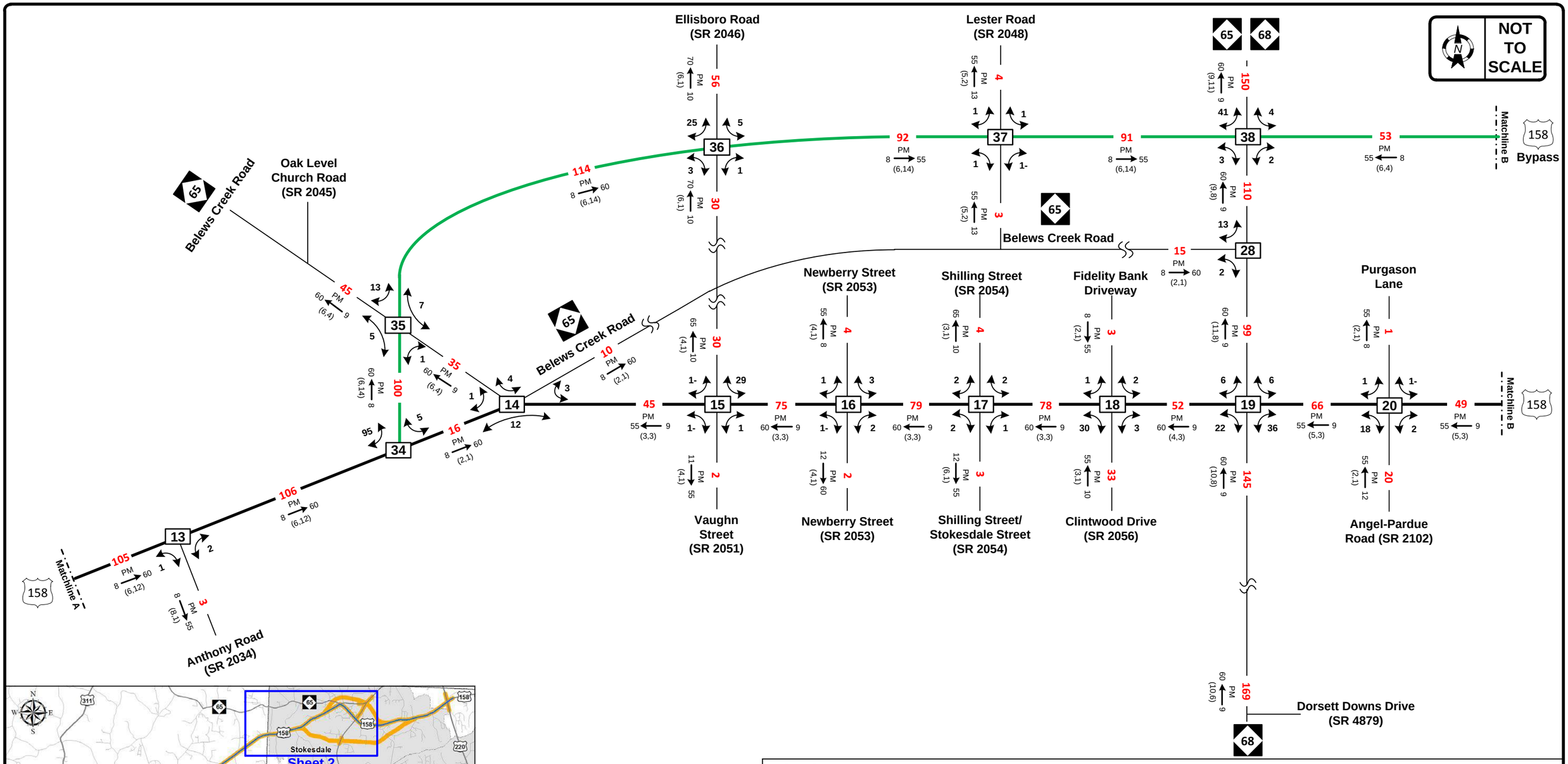
LEGEND

X	= Study Area Intersection ID
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1-	Less than 50 VPD
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2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 3

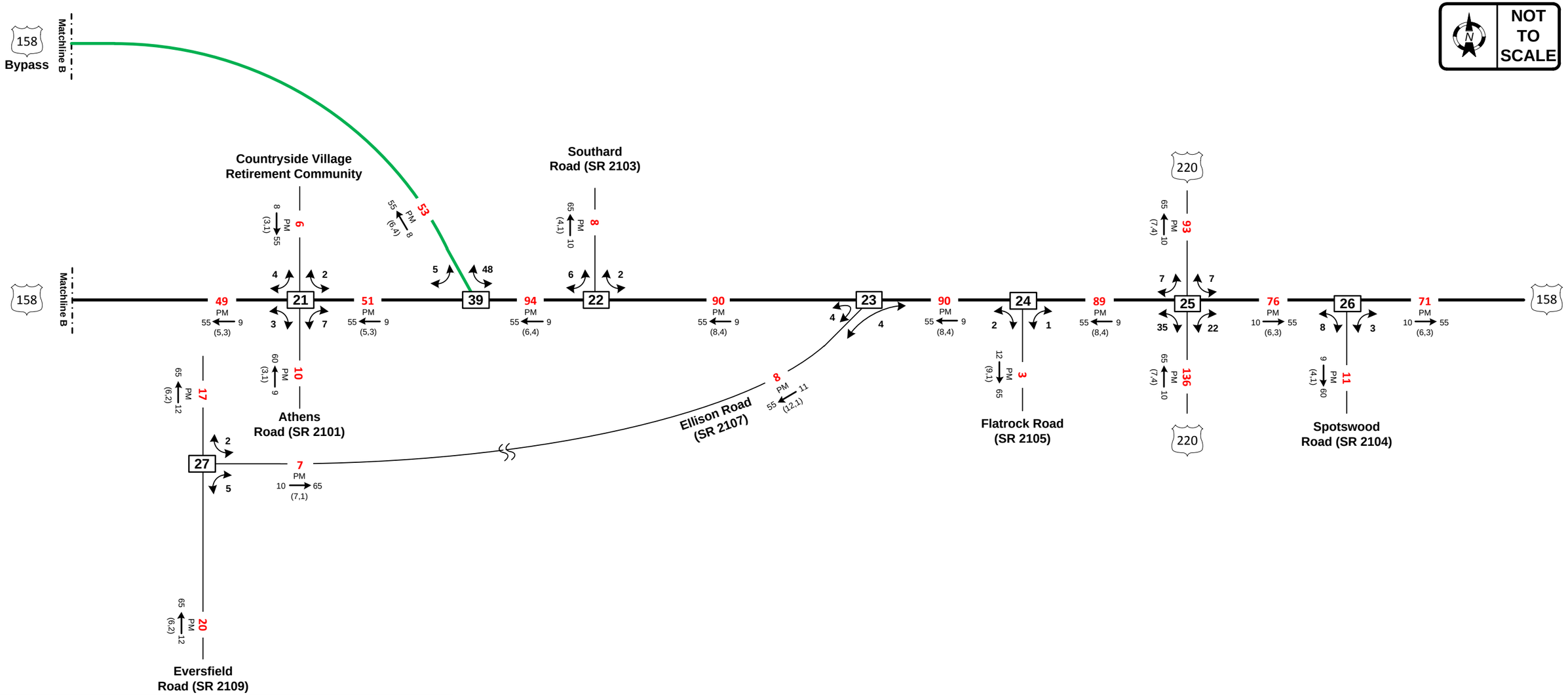
Sheet 2 of 3

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2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR BUILD ALTERNATIVE 3

Sheet 3 of 3

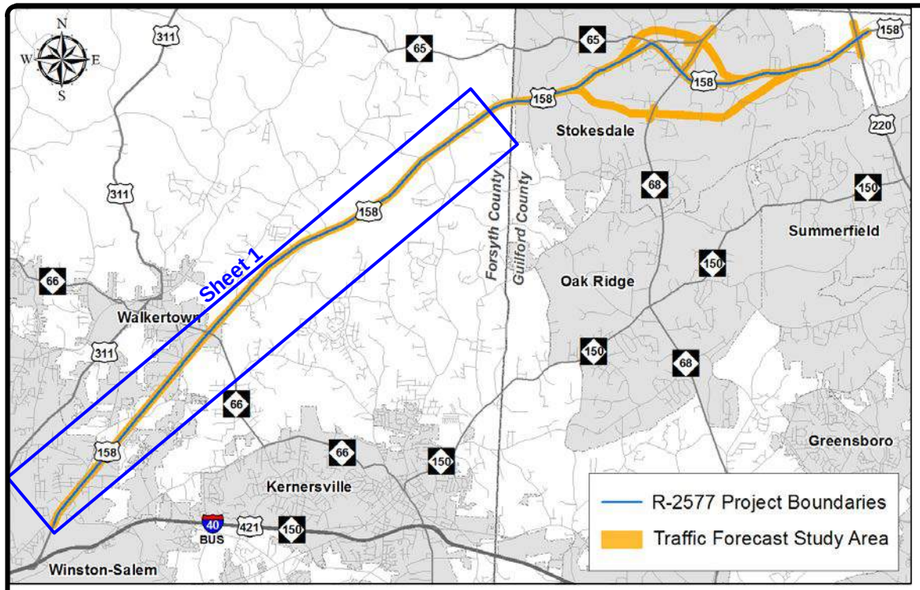
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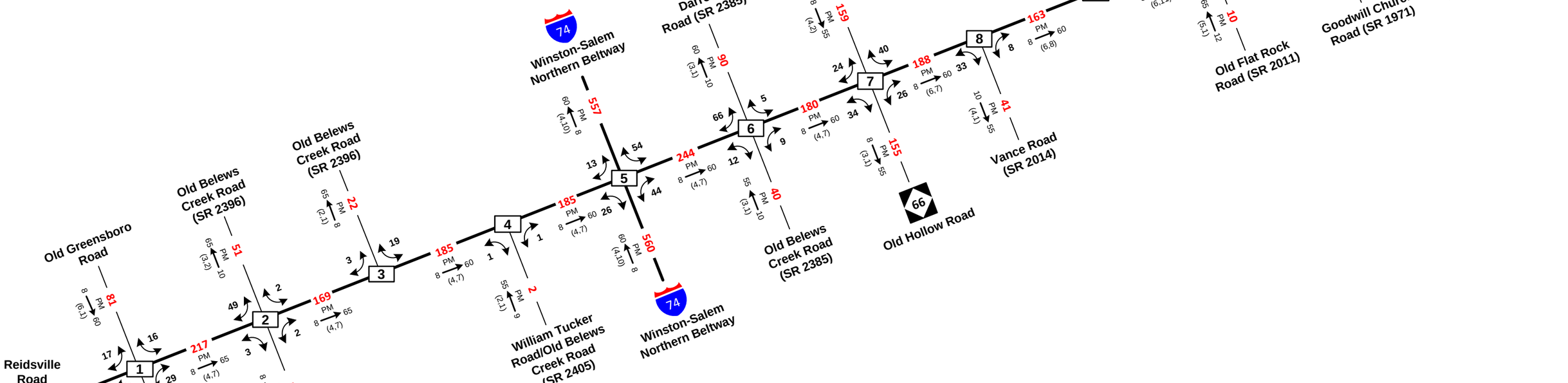
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2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR NO-BUILD

Sheet 1 of 3

LEGEND

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NOT TO SCALE

Ellisboro Road (SR 2046)

Lester Road (SR 2048)

Oak Level Church Road (SR 2045)

Belews Creek Road

Belews Creek Road

Newberry Street (SR 2053)

Shilling Street (SR 2054)

Fidelity Bank Driveway

Purgason Lane

Matchline B

Bypass

Vaughn Street (SR 2051)

Newberry Street (SR 2053)

Shilling Street/ Stokesdale Street (SR 2054)

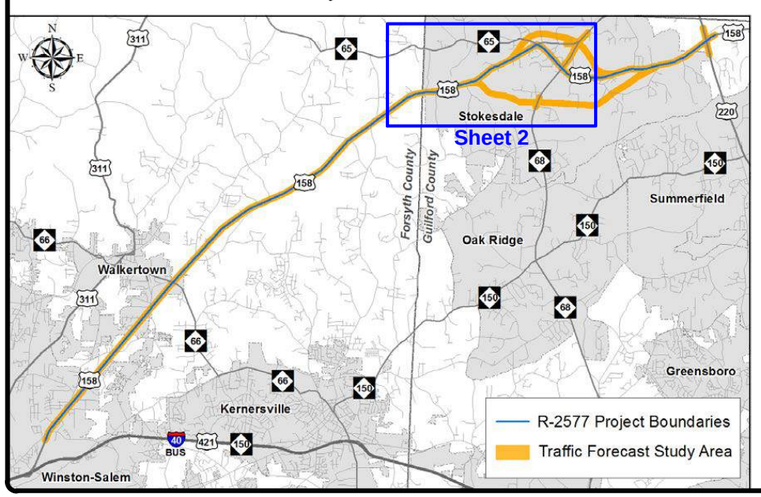
Clintwood Drive (SR 2056)

Angel-Pardue Road (SR 2102)

Matchline A

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)



2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR NO-BUILD

Sheet 2 of 3

LEGEND

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NOT TO SCALE

158 Bypass — Matchline B — 31 — 158 Bypass

Countryside Village Retirement Community

Southard Road (SR 2103)

Athens Road (SR 2101)

Ellison Road (SR 2107)

Flatrock Road (SR 2105)

Spotswood Road (SR 2104)

Eversfield Road (SR 2109)

39 — 33 — 32

158 — Matchline B — 158

130 PM 55 9 (6,4) — 21 — 133 PM 55 9 (6,4) — 133 PM 55 9 (6,4) — 22 — 128 PM 55 9 (8,4) — 128 PM 55 9 (8,4) — 23 — 128 PM 55 9 (8,4) — 24 — 127 PM 55 9 (8,4) — 25 — 86 PM 10 55 (6,3) — 26 — 81 PM 10 55 (6,3)

21: 4, 2, 2, 7

6: 8 PM 55 (3,1)

9: 60 PM 9 (3,1)

22: 8, 3

11: 65 PM 10 (4.1)

23: 9, 9

24: 4, 3

7: 12 PM 65 (9.1)

25: 25, 10, 58, 32

178: 65 PM 10 (7.4)

233: 65 PM 10 (7.4)

26: 9, 4

13: 9 PM 60 (4.1)

27: 4, 10

14: 10 PM 65 (7,1)

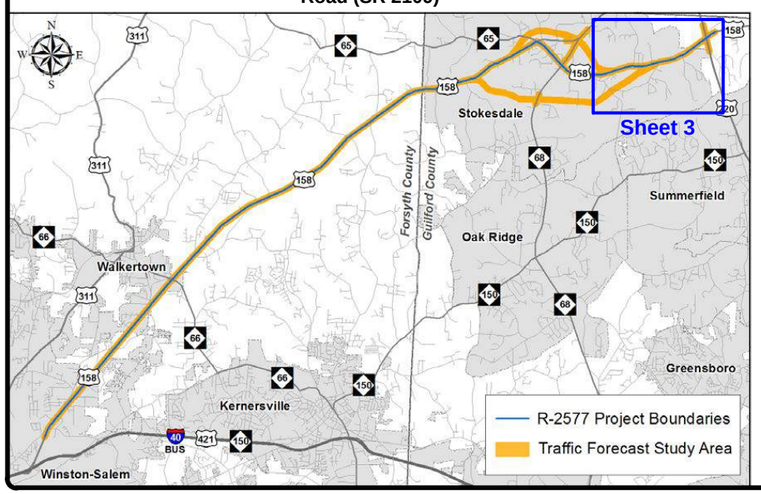
18: 55 PM 11 (12.1)

32: 65 PM 12 (6.2)

38: 65 PM 12 (6.2)

38: 65 PM 12 (6.2)

73 — 220 — 73 — 220



2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR NO-BUILD
Sheet 3 of 3

LEGEND

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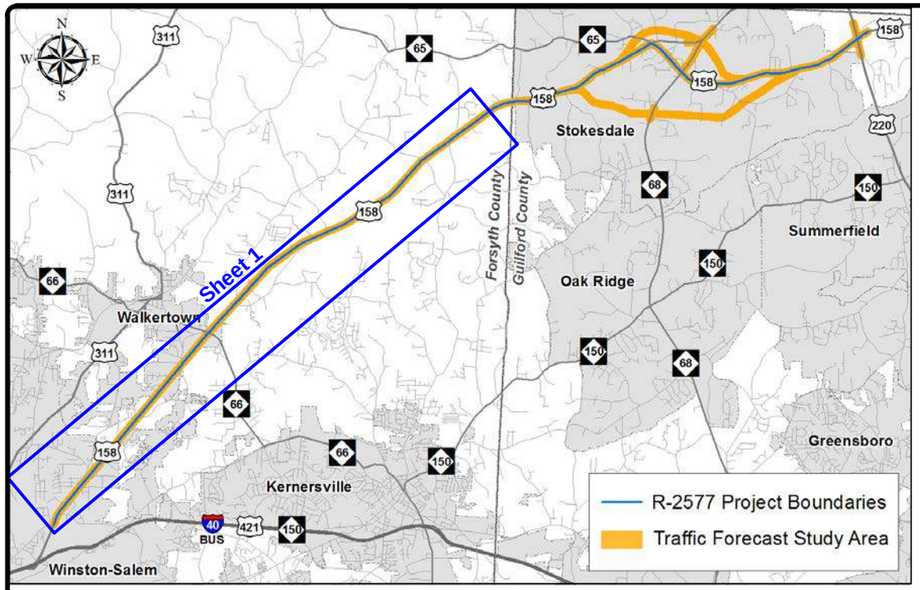
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PREPARED BY: HNTB North Carolina, PC

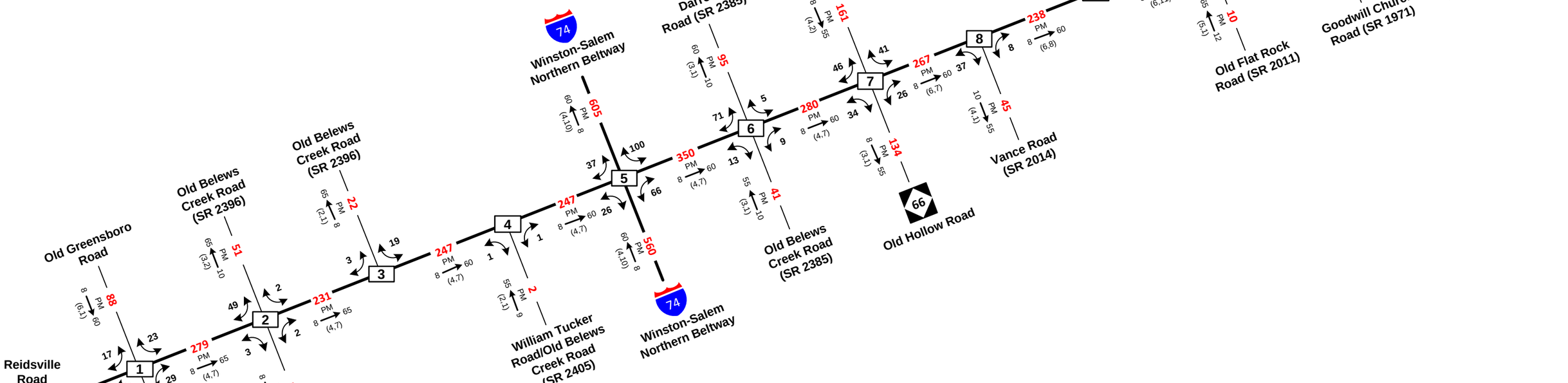
PROJECT: US 158 (Reidsville Road) Widening

LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)

DATE: July 2017



NOT TO SCALE



2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 2

Sheet 1 of 3

LEGEND

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NOT TO SCALE

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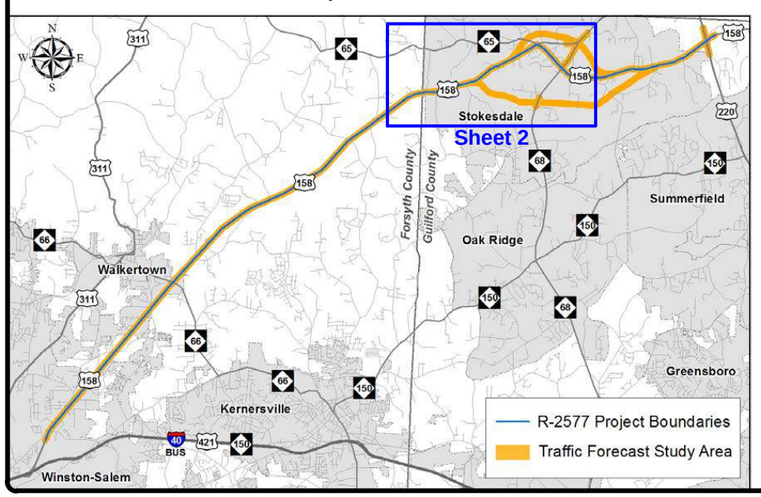
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Angel-Pardue Road (SR 2102)

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)

Bypass



2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 2

Sheet 2 of 3

LEGEND

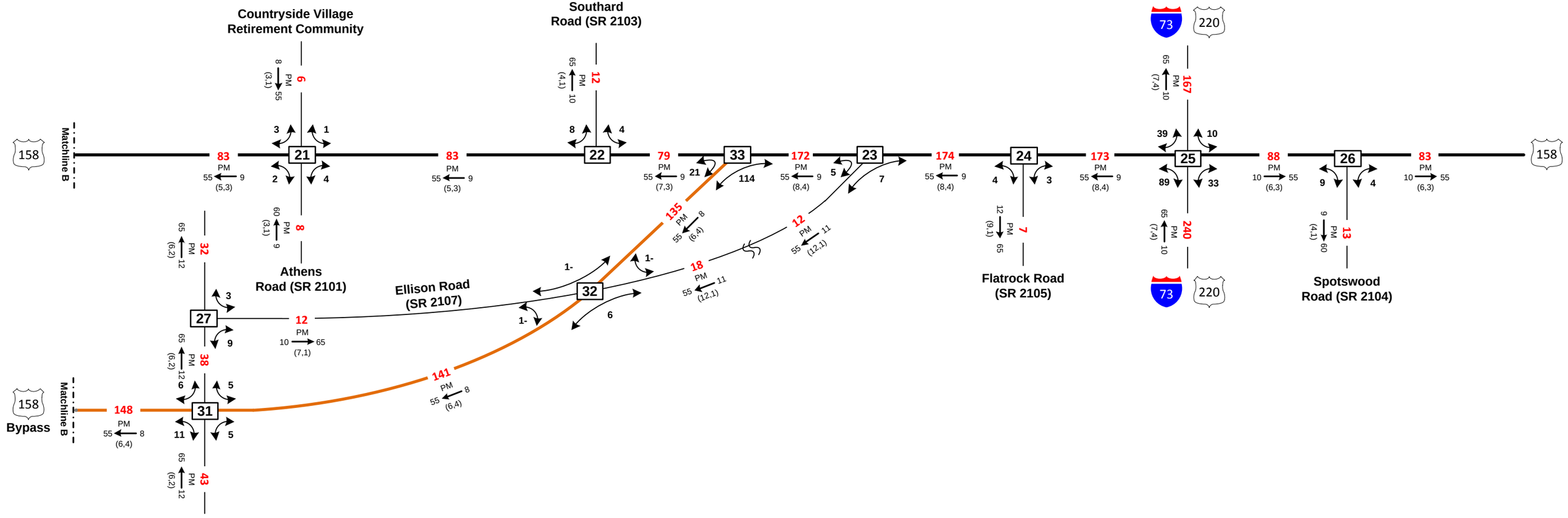
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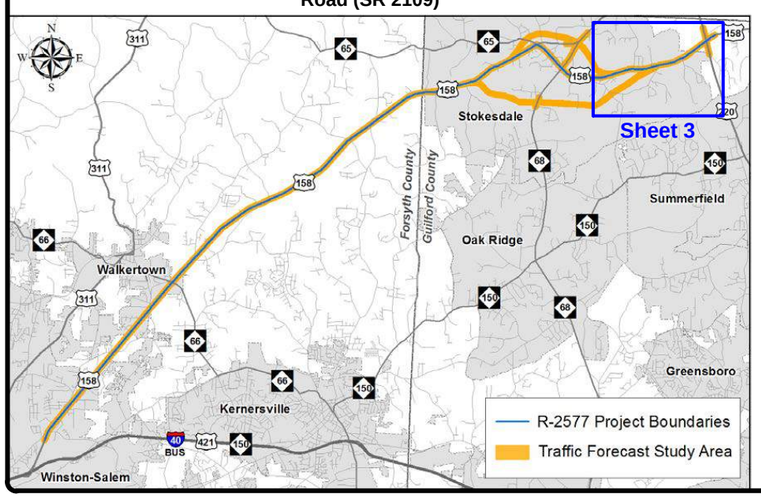
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2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 2

Sheet 3 of 3

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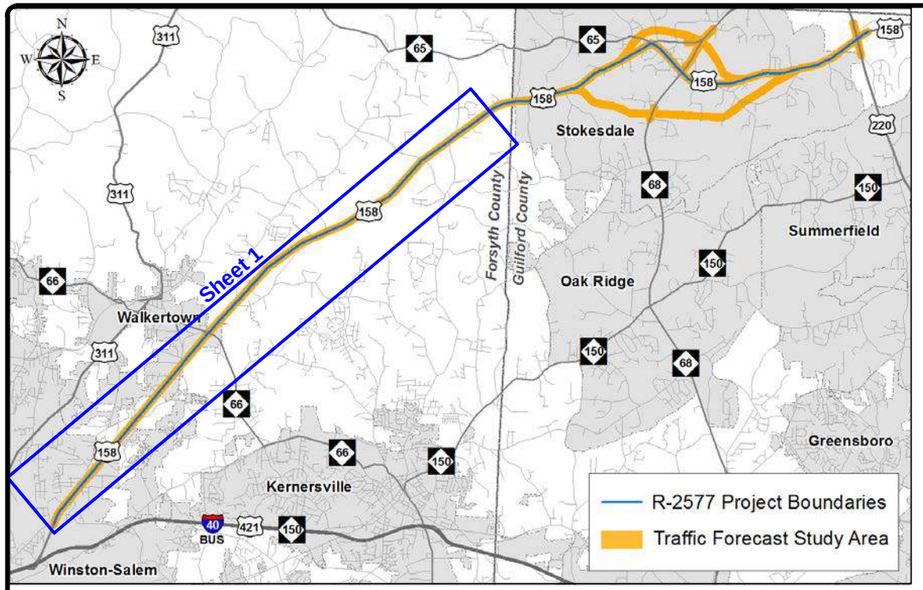
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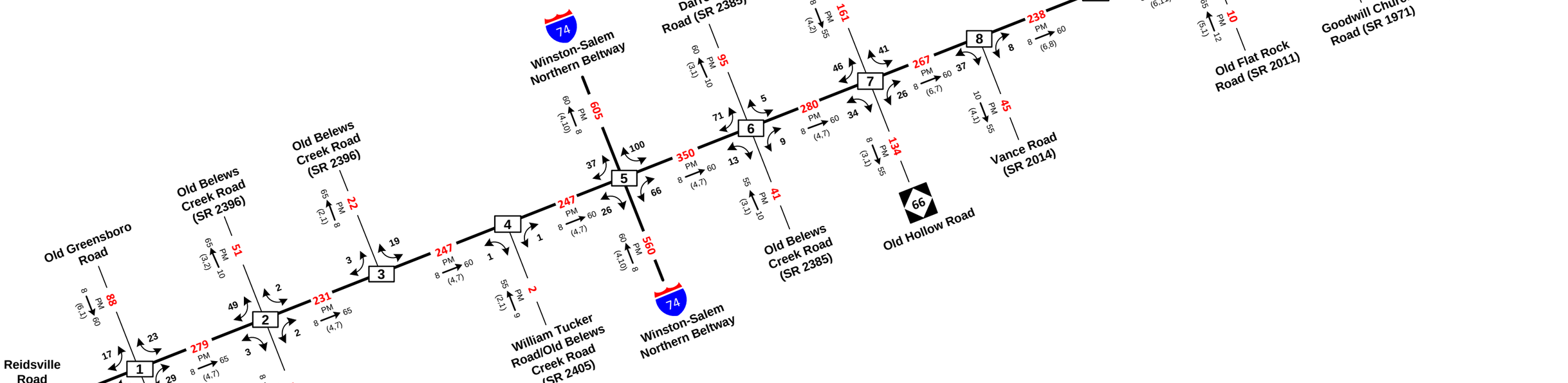
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2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 3

Sheet 1 of 3

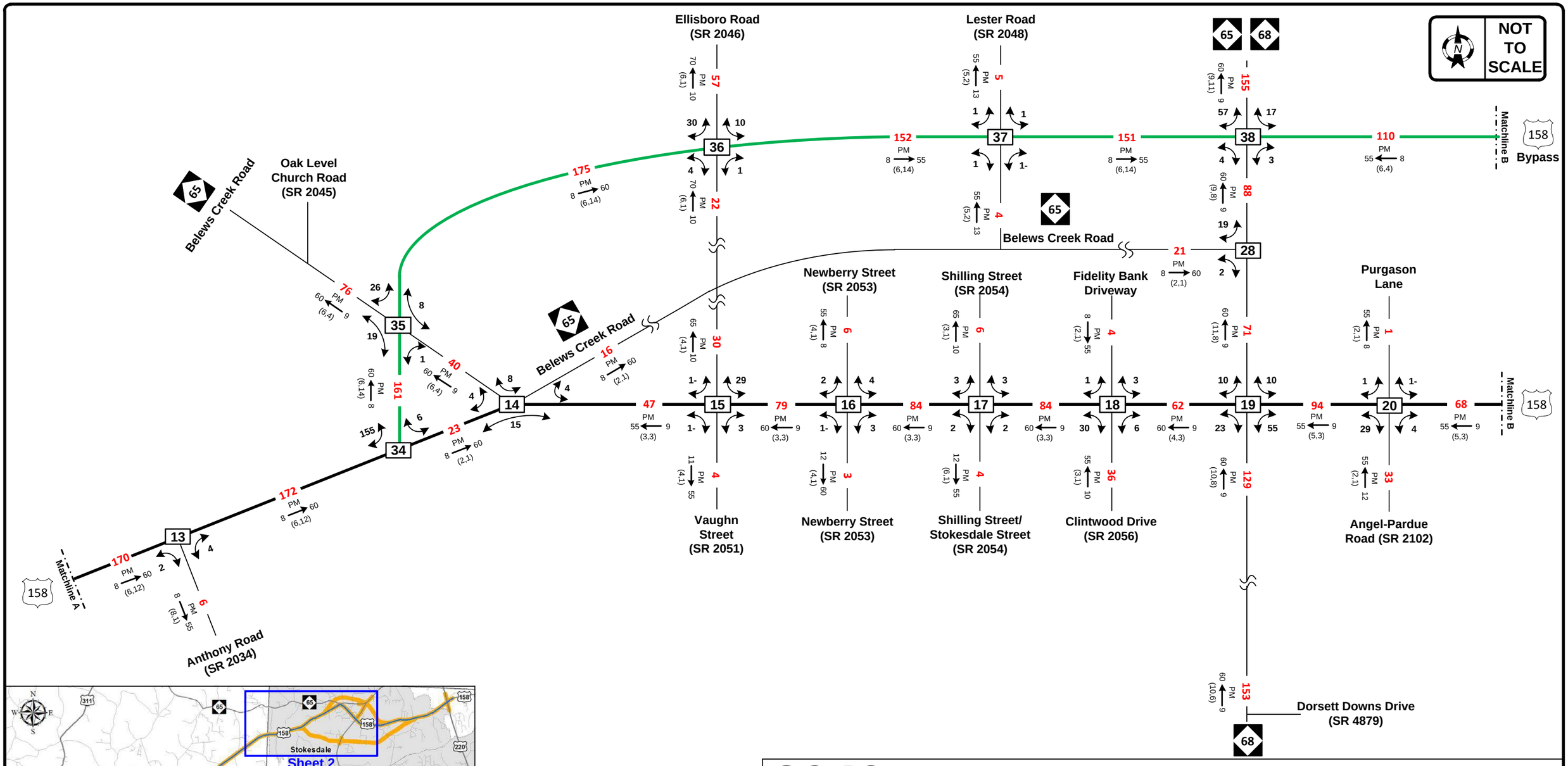
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2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 3

Sheet 2 of 3

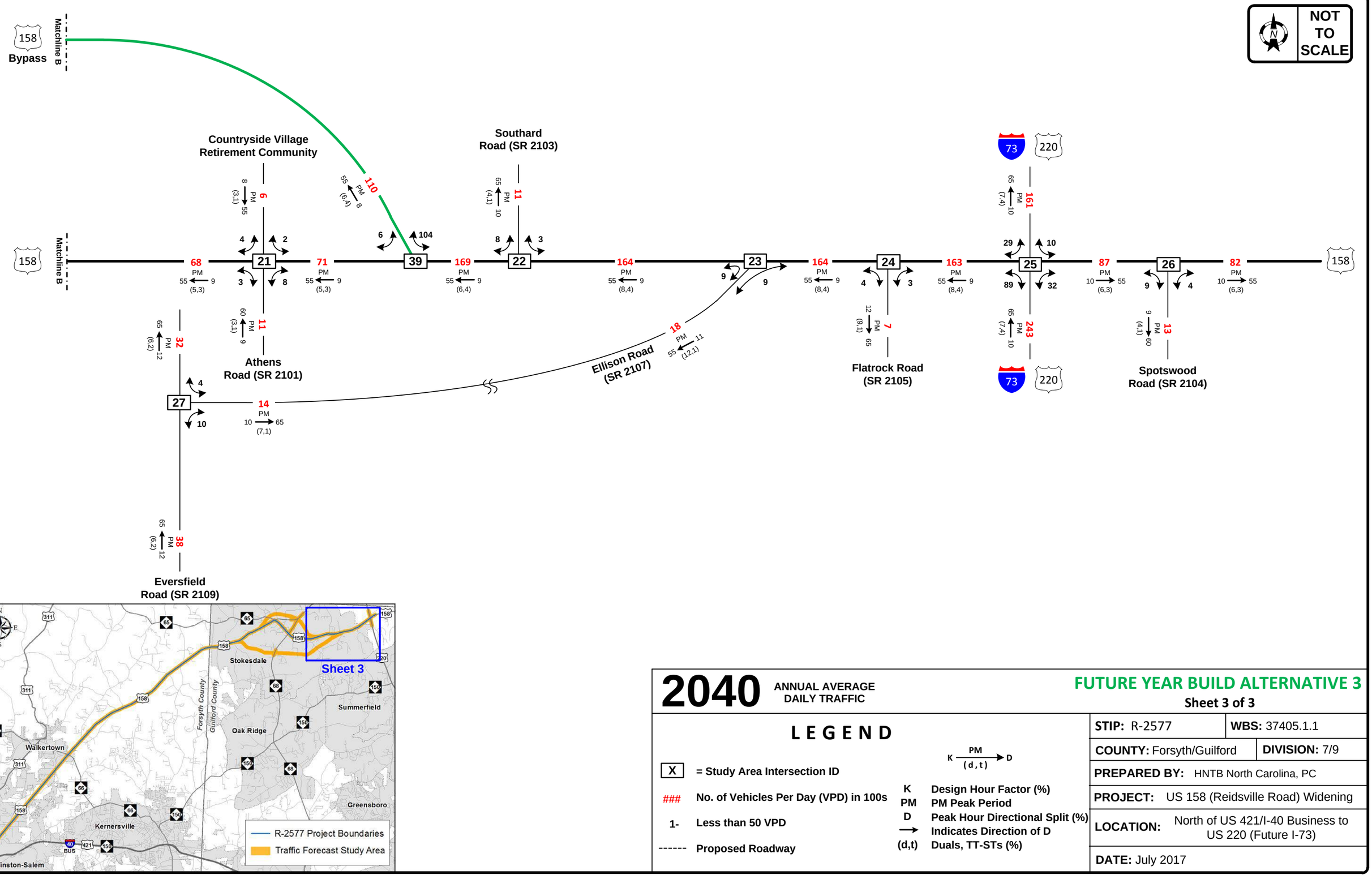
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2040 ANNUAL AVERAGE DAILY TRAFFIC

FUTURE YEAR BUILD ALTERNATIVE 3

Sheet 3 of 3

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Appendix C

Cultural Resource Coordination

North Carolina Department of Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Pat McCrory
Secretary Susan Kluttz

Office of Archives and History
Deputy Secretary Kevin Cherry

May 9, 2013

MEMORANDUM

TO: Vanessa Patrick
Human Environment Unit
NC Department of Transportation

FROM: Ramona M. Bartos RMB for Ramona M. Bartos

SUBJECT: Architectural Survey Report, Improvements to US 158 from North of US 421/I-40B to US 220, R-2577ABC, Forsyth and Guilford Counties, ER 04-1615

Thank you for your letter of April 22, 2013, transmitting the above report.

For the purpose of compliance with Section 106 of the National Historic Preservation Act, we concur that the **Edgewood Baptist Church** (FY 3292) is eligible for listing in the National Register of Historic Places under Criterion C for architecture, that it meets Criteria Consideration A for religious properties and Criteria Consideration G for properties less than fifty years old, and that the proposed boundaries appear appropriate.

We believe that the Stokesdale Residential and Commercial Historic District as proposed in the report is too large given the modern development between the commercial core and US 158, and using the former railroad corridor as the spine of the district is not appropriate. We concur that a smaller **Stokesdale Commercial Historic District** (GF 2050), focused on the commercial properties on the northeast side of Main Street, is eligible for listing in the National Register under Criterion A for commerce and community planning/development and Criterion C for architecture. A map of our proposed National Register boundaries is attached.

We consider three properties that the report includes in the larger proposed district individually eligible for listing in the National Register:

- **D.A. Jones House** (GF 1702), Criterion C for architecture;
- **Taylor-Edwards House** (GF 1703), Criterion C for architecture; and,
- **Bi-Rite Supermarket** (GF 8327), Criterion A for commerce and Criterion C for architecture.

A map showing the proposed boundaries of these three properties is also attached. We believe that the remaining properties proposed for inclusion in the larger district lack the historic significance and/or integrity required to be individually eligible.

We concur that the **Wray House** (GF 1709) is eligible for listing in the National Register under Criterion C for architecture. However, we do not believe that the report has demonstrated the property's historic agricultural *significance*. Under Criterion C only, the National Register boundary should include only the property on the west side of Purgason Lane to provide an adequate setting for the house.

We believe that the **Bel Air Drive-In Theater** (FY 3269) is historically significant under Criterion A for recreation/entertainment and that it retains sufficient integrity, including the screen, layout, concession building, and ticket booth, such that it is eligible for listing in the National Register. A map of our proposed National Register boundaries is attached.

We concur that, barring additional information to the contrary, the following properties are *not* eligible for listing in the National Register:

- **Crews United Methodist Church and Cemetery** (FY 3959);
- **Lowery-Martin House** (FY 0687);
- **Elm Grove Baptist Church Cemetery** (GF 8388);
- **Flat Rock United Methodist Church and Cemetery** (GF 0554); and,
- The remaining properties listed in the **Appendix**.

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

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

Attachment

cc: Mary Pope Furr, NC DOT, mfurr@ncdot.gov

Stokesdale Commercial Historic District (GF 2050)

SHPO Proposed National Register Boundary



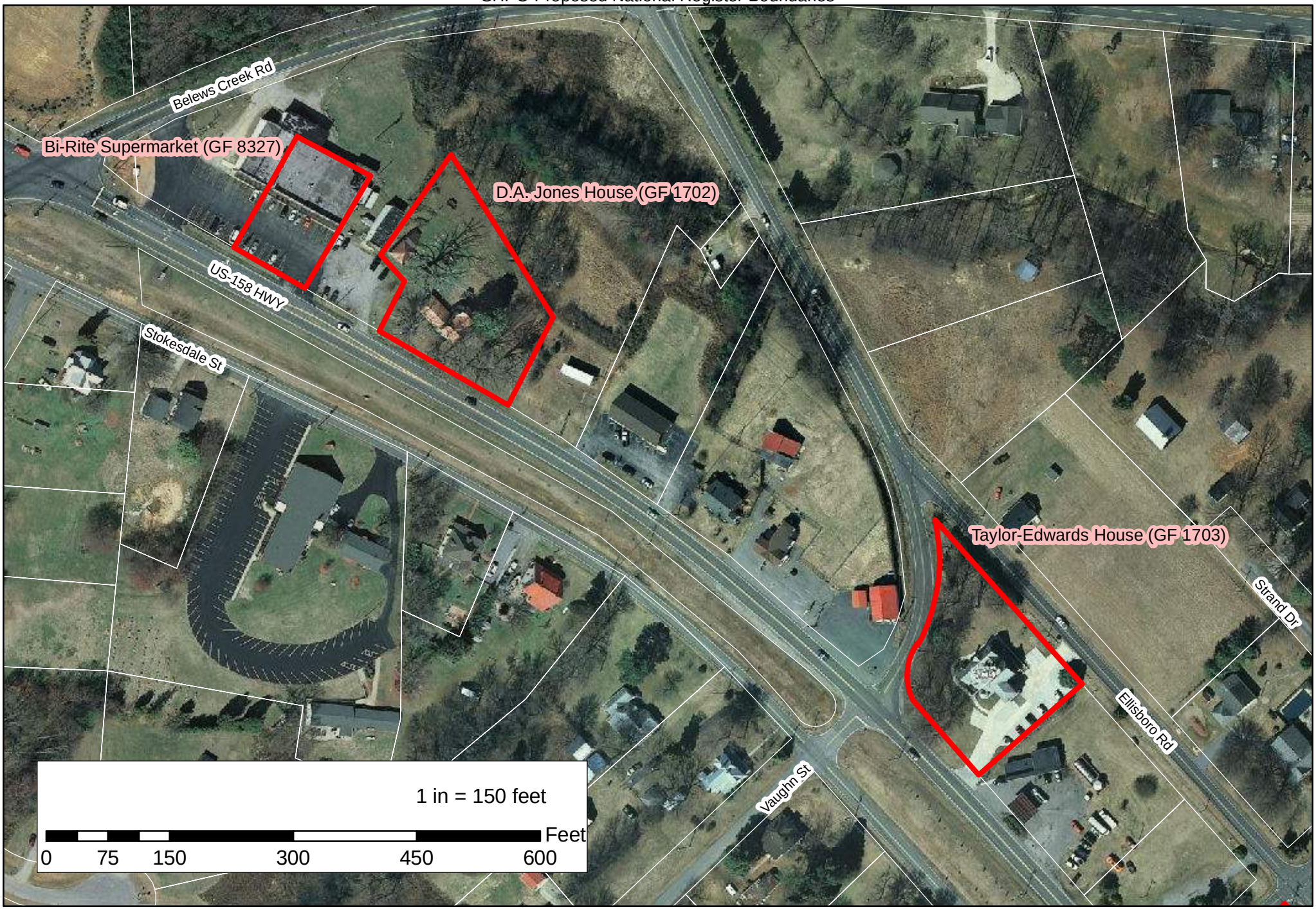
Bel Air Drive-In Theater (FY 3269)

SHPO Proposed National Register Boundaries



Bi-Rite Supermarket (GF 8327), D.A. Jones House (GF 1702), and Taylor-Edwards House (GF 1703)

SHPO Proposed National Register Boundaries



WBS #: **37405.1.1** *TIP#:* **R-2577A** *County:* **Forsyth**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: **Improvements to US 158 (Reidsville Road) from existing multi-lane section north of US 421/I-40 Business in Winston Salem to SR 1965 (Belews Creek Road).**

On **June 12, 2018** representatives of the

X	North Carolina Department of Transporation (NCDOT)
	Federal Highway Administration (FHWA)
X	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.

The findings documented herein supersede those established on July 9, 2013 and amended on September 22, 2015 by effects consultations for the R-2577ABC project as then defined. This form applies only to the A section of the R-2577 project.

Signed:

Vanessa C. Patrick — 12 June 2018

Representative, — Date

RODEN REYNOLDS.BRYAN.KENNETH.1263385574

Digitally signed by RODEN REYNOLDS.BRYAN.KENNETH.1263385574
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=RODEN REYNOLDS.BRYAN.KENNETH.1263385574
Date: 2018.06.25 12:55:43 -04'00'

25 June 18

FHWA, for the Division Administrator, or other Federal Agency — Date

Renee Gledhill-Earley — 6-12-18

Representative, HPO — Date

WBS #: **37405.1.1** *TIP#:* **R-2577A** *County*: **Forsyth**

Property and Status	Alternative	Effect Finding	Reasons
Edgewood Baptist Church (FY3292 – DE)	Original Minimization Alternative 2	Adverse No Adverse with conditions	11' (max.) retaining wall; significant loss of parking spaces; residential relocations to south. 8.5' (max.) retaining wall; reduction of parking space loss; no residential relocations to south. 1. Reduction of retaining wall height; brick to match as closely as possible to existing building; end treatment of wall to be developed with property owner to accommodate maintenance activities; plain metal handrail design. 2. Relocation of church sign to be coordinated with property owner; two signs if needed.
Bel-Air Drive-In Theater (FY 3269 – DE)	Original	No Adverse	Minimal ROW acquisition, preservation of access, and no impacts to components. Design refinement: 2:1 slopes.

Initialed: NCDOT VEP FHWA _____ HPO BSE

R-2577 ABC Historic Properties

	Edgewood Baptist Church Original Alternative	Edgewood Baptist Church Minimization Alternative	Edgewood Baptist Church Minimization Alt. 2	Drive In Theater
Proposed ROW area (SF)	24,336 (SF) 0.56 (AC)	415 (SF) 0.01 (AC)	15,085 (SF) 0.35 (AC)	8974 (SF) 0.21 (AC)
Proposed Temporary Construction Easement	3762 (SF) 0.09 (AC)	5116 (SF) 0.12 (AC)	4986 (SF) 0.11 (AC)	6683 (SF) 0.15 (AC)
Parking Spaces Impacted	38 (permanent)	0	12 (permanent) 8 (temporary)	N/A
Wall Height	5-11 feet	N/A	3.5-8.5 feet	N/A
Driveways Eliminated due to Prop. Partial C/A	1	1	1	N/A
Residential Relocations to south due to minimization	N/A	7	0	N/A
Trees and/or shrubs to be removed	0	0	0	0


R-2577 US 158 Improvements
Forsyth & Guilford Counties
Existing view in front of Edgewood Baptist Church
Looking east - existing
Churchland


Proposed - Minimization Alternative 2
Churchland


R-2577 US 158 Improvements
Forsyth & Guilford Counties
Existing view in front of Edgewood Baptist Church
Looking west - existing


Proposed - Minimization Alternative 2

WBS#: **37405.1.1** *TIP#:* **R-2577ABC** *County:* **Forsyth/Guilford**

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS (Preliminary) #amended 9-22-15

Project Description: **Widen US 158 (Reidsville Road) from existing multi-lane section north of I-40 Business in Forsyth County to US 220 in Guilford County.**

On **July 9, 2013** representatives of the

- [X] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [X] 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:

Vanessa E. Patrick 7-9-13

Representative, NCDOT Date

Sept. 22 2015

~~FHWA, for the Division Administrator, or other Federal Agency~~ Date

USACE

Representative, HPO Date

Renee Gledhill-Earley 7.9.13

State Historic Preservation Officer Date

Amended: 9-22-15

WBS#: **37405.1.1** *TIP#:* **R-2577ABC** *County:* **Forsyth/Guilford**

Property and Status	Alternative	Effect Finding	Reasons
Edgewood Baptist Church (FY 3292 - DOE)	North	Adverse	Proposed construction will impact buildings directly. Loss of row of parking (along US 158). Disruption of access. Noise issues. PUE uncertain – utilities still unknown. ~~with conditions – may necessitate retaining wall~~ Access disruption and noise + PUEs? ~~(visible from church); needs HPO/NCDOT Historic Archit. review.~~
	South	~~No~~ Adverse	
Bel-Air Drive-In Theater (FY 3269 – DOE)	North	No Adverse	Proposed construction will not impact property components. Condition: Preserve access (existing) ~~with conditions – retain access if hydro. requirements affect property, needs additional review~~
	South	No Adverse	
Wray House (GF 1709 – DOE)	All Alternatives	No Effect	
Stokesdale Commercial Historic District (GF 2050 – DOE)	All Alternatives	No Effect	Confirmed ~~After CP 2A~~
D. A. Jones House (GF 1702 – DOE)	All Alternatives	No Effect	widening alternatives ~~appear to~~ avoid all
Taylor-Edwards House (GF 1703 – DOE)	All Alternative	No Effect	
Bi-Rite Supermarket (GF 8327 – DOE)	All Alterative	No Effect	

Initialed: NCDOT VEP 9-22-15 USACE ~~FHWA~~ 9-22-15 HPO RGE agreed to revisions 9-22-15 RGE

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

Appendix D

Relocation Reports

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section A, Segment 1
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	11	34	45	30
Businesses	4	5	9	3
Farms	0	0	0	0
Non-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	60 UP
8	0	20	10	7

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	8	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	1	250-400	0	40-70M	5	250-400	0
70-100M	4	400-600	2	70-100M	10	400-600	10
100 UP	6	600 UP	24	100 UP	100+	600 UP	50
TOTAL	11		34		120+		60

ANSWER ALL QUESTIONS

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

REMARKS (Respond by Number)

1. Commons of Forsyth is non-profit apartments/condos for homeless families. Special services may be needed for these displaces.
3. Overall market of business services will remain available
4. 1 day care approx. 6 employees, 3 minority
   1 self service car wash
   3 C-Stores, 18 employees, 10 of which minority
   1 vet clinic, 8 employees, 2 of which minority
   1 thrift store, 2 empoyees
   1 construction company, 2 employees
   1 used car dealer, 4 employees, 3 minority
6. Zillow, MLS, Realtor.com

8. As required by law. Several displacees live in low income housing. High Rent supplement payments are anticipated

10. Some low income/public housing being affected and will be needed to relocate displacees
11. Overall public housing in Guilford and Forsyth County is adequate

14. Overall business location market is ample according to Zillow and Tax Records.

Right of Way Agent	Date	Relocation Coordinator	Date
[signature]	10/30/18	[signature]	10/31/18

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	**Section A, Segment 2, Option 1**
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	1	0	1	0
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	1	0

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	1	250-400	0	40-70M	5	250-400	0
70-100M	0	400-600	0	70-100M	10	400-600	10
100 UP	0	600 UP	0	100 UP	100+	600 UP	50
TOTAL	1		0		120+		60

ANSWER ALL QUESTIONS

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

REMARKS (Respond by Number)

3. No business affected by this alternate
6. Zillow, MLS, Realtor.com
8. As require by law. High RHP anticipated on this parcel

11. Alternate will not affect Public housing market
12. Overall market unaffected by this alternate
14. No business sites affected by this alternate

J. Taylor Keith - Right of Way Agent — 10/30/18 — Date

Relocation Coordinator — 10/31/18 — Date

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	**COUNTY**	Forsyth & Guilford	**Section A, Segment 2, Option 2**
T.I.P. NO.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	1	0	1	0
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	1	0

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	1	250-400	0	40-70M	5	250-400	0
70-100M	0	400-600	0	70-100M	10	400-600	10
100 UP	0	600 UP	0	100 UP	100+	600 UP	50
TOTAL	1		0		120+		60

ANSWER ALL QUESTIONS

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

REMARKS (Respond by Number)

3. No business affected by this alternate
6. Zillow, MLS, Realtor.com
8. High RHP anticipated on this parcel
11. Alternate will not affect Public housing market
12. Overall market unaffected by this alternate
14. No business sites affected by this alternate

[signature]	10/30/18	[signature]	10/31/18
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section B, Segment 1
T.I.P. NO.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	6	54	60	45
Businesses	1	0	1	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

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

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	12	24	24

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	1	400-600	1	70-100M	10	400-600	10
100 UP	5	600 UP	53	100 UP	100+	600 UP	50
TOTAL	6		54		120+		60

REMARKS (Respond by Number)

1. DISPLACING AN ASSISTED LIVING FACILITY

4. ASSISTED LIVING FACILITY APPROX 20 EMPLOYEES, 50 RESIDENTS, MOSTLY MINORITY EMPLOYEES. ALSO DISPLACING AN OFFICE BUILDING APPROX 15 EMPLOYEES

5. THE ASSISTED LIVING FACILITY WILL PRESENT CHALLENGES IN RELOCATING THE RESIDENTS

6. Zillow, MLS, Realtor.com

8. I ANTICIPATE HIGH RENT SUPPLEMENT AND RHP CALCULATIONS

9. SEVERAL ELDERLY FAMILY OWNED HOMES AND ASSISTED LIVING FACILITY

11. NOT AFFECT ON PUBLIC HOUSING BY THE PROJECT

12. OVERALL HOUSING MARKET PROVIDES AMPLE HOUSING

13. CONCERNED WITH ASSISTED LIVING DISPLACEES FINDING REPLACEMENT HOUSING ON FIXED INCOMES

14. OVERALL BUSINESS MARKET UNAFFECTED BY PROJECT

Right of Way Agent	10/30/18 Date	Relocation Coordinator	10/31/18 Date

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section B, Segment 2 ALT 1
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	8	0	8	2
Businesses	1	0	1	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

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

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	0	8

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	0	400-600	0	70-100M	10	400-600	10
100 UP	8	600 UP	0	100 UP	100+	600 UP	50
TOTAL	8		0		120+		60

REMARKS (Respond by Number)

3 No Affect on business market by project
4 Golf Cart Dealer displaced, approx. 5 employees, 2 minority
6. Zillow, MLS, Realtor.com
8 Anticipate High RHP payments falling under last resort
9 mostly elderly home owners on this section
11 no change to public housing by project
12 ample DSS housing available
14 no change in business sites available

Right of Way Agent	Date	Relocation Coordinator	Date
[signature]	10/30/18	[signature]	10/31/18

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section B, Segment 2 ALT 2
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	5	0	5	1
Businesses	1	0	1	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

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

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	0	5

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	0	150-250	0
40-70M	0	250-400	0
70-100M	0	400-600	0
100 UP	5	600 UP	0
TOTAL	5		0

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	5	150-250	0
40-70M	5	250-400	0
70-100M	10	400-600	10
100 UP	100+	600 UP	50
TOTAL	120+		60

REMARKS (Respond by Number)

3 No Affect on business market by project
4 Golf Cart Dealer displaced, approx. 5 employees, 2 minority
6. Zillow, MLS, Realtor.com
8 Anticipate High RHP payments falling under last resort
9 mostly elderly home owners on this section
11 no change to public housing by project
12 ample DSS housing available
14 no change in business sites available

Right of Way Agent	Date	Relocation Coordinator	Date
J. Tyler Faith	10/30/18		10/31/18

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section C, Segment 1
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	2	0	2	0
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	2	0

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	1	400-600	0	70-100M	10	400-600	10
100 UP	1	600 UP	0	100 UP	100+	600 UP	50
TOTAL	2		0		120+		60

ANSWER ALL QUESTIONS

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

REMARKS (Respond by Number)

3 No Affect on business market by project
6. Zillow, MLS, Realtor.com
8 Anticipate High RHP payments falling under last resort 11 no change to public housing by project
12 ample DSS housing available
14 no change in business sites available

[signature]	10/30/18	[signature]	10/31/18
Right of Way Agent	Date	Relocation Coordinator	Date

FRM15-E

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section C, Segment 2 Alt 2
T.I.P. NO.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	35	10	45	10
Businesses	3	2	5	1
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

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

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	7	9	29

VALUE OF DWELLING

Owners		Tenants	
0-20M	0	$ 0-150	0
20-40M	0	150-250	0
40-70M	0	250-400	0
70-100M	8	400-600	5
100 UP	27	600 UP	10
TOTAL	35		15

DSS DWELLING AVAILABLE

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

REMARKS (Respond by Number)

3 No Affect on business market by project
4 Lamination Services, medium,10-20 employees. Oliver Diesel & Auto Repair, medium, 5-15 employees. Landreth Auto Sales & Services, small, 1-10 employees, minority. Angel Family LTD Partnership, large, 1-10 employees. Parkers Home Cookin, 1-7 employees, small.
6. Zillow, MLS, Realtor.com
8 Anticipate High RHP payments falling under last resort
11 no change to public housing by project
12 ample DSS housing available
14 no change in business sites available

Right of Way Agent	Date	Relocation Coordinator	Date
[signature]	10/30/18	[signature]	10/31/18

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ **E.I.S.** ☐ **CORRIDOR** ☐ **DESIGN**

WBS ELEMENT:	37405.1.1	**COUNTY**	Forsyth & Guilford	**Section C, Segment 3, Alt 3**
T.I.P. NO.:	R-2577ABC			
DESCRIPTION OF PROJECT:	**US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co**			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	22	7	29	15
Businesses	2	2	4	0
Farms				
Non-Profit				

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
		6	10	13

VALUE OF DWELLING

Owners		Tenants	
0-20M		$ 0-150	
20-40M		150-250	
40-70M	5	250-400	2
70-100M	3	400-600	4
100 UP	14	600 UP	1
TOTAL	22		7

DSS DWELLING AVAILABLE

For Sale		For Rent	
0-20M	0	$ 0-150	0
20-40M	5	150-250	0
40-70M	5	250-400	0
70-100M	10	400-600	10
100 UP	100+	600 UP	50
TOTAL	120+		60

ANSWER ALL QUESTIONS

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

REMARKS (respond by number)

3. OVERALL MARKET OF BUSINESS SERVICE IS AMPLE
4. DISPLACING AN OFFICE BUILDING APPROX 5 EMPLOYEES
8. I ANTICIPATE HIGH RENT SUPPLEMENT AND RHP CALCULATIONS
11. NOT AFFECT ON PUBLIC HOUSING BY THE PROJECT
12. OVERALL HOUSING MARKET PROVIDES AMPLE HOUSING
14. OVERALL BUSINESS MARKET UNAFFECTED BY PROJECT

Right of Way Agent	Date		Relocation Coordinator	Date
	10/30/18			

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	37405.1.1	COUNTY	Forsyth & Guilford	Section C, Segment 4
T.I.P. No.:	R-2577ABC			
DESCRIPTION OF PROJECT:	US 158 Improvements from North of US 421/I-40 Business in Forsyth Co to I-73/US 220 in Guilford Co			

ESTIMATED DISPLACEES

Type of Displacees	Owners	Tenants	Total	Minorities
Residential	1	1	2	1
Businesses	0	0	0	0
Farms	0	0	0	0
Non-Profit	0	0	0	0

ANSWER ALL QUESTIONS

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

INCOME LEVEL

0-15M	15-25M	25-35M	35-50M	50 UP
0	0	0	1	1

VALUE OF DWELLING				DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent	
0-20M	0	$ 0-150	0	0-20M	0	$ 0-150	0
20-40M	0	150-250	0	20-40M	5	150-250	0
40-70M	0	250-400	0	40-70M	5	250-400	0
70-100M	0	400-600	1	70-100M	10	400-600	10
100 UP	1	600 UP	0	100 UP	100+	600 UP	50
TOTAL	1		1		120+		60

REMARKS (Respond by Number)

3. OVERALL MARKET OF BUSINESS SERVICE IS AMPLE
6. ZILLOW, MLS, REALTOR.COM
8. I ANTICIPATE HIGH RENT SUPPLEMENT AND RHP CALCULATIONS
11. NOT AFFECT ON PUBLIC HOUSING BY THE PROJECT
12. OVERALL HOUSING MARKET PROVIDES AMPLE HOUSING
14. OVERALL BUSINESS MARKET UNAFFECTED BY PROJECT

Right of Way Agent	10/30/18 Date	Relocation Coordinator	10/31/18 Date

FRM15-E

Appendix E

Merger Team Concurrence Forms

SECTION 404 / NEPA MERGER PROCESS CONCURRENCE AGREEMENT

CONCURRENCE POINT 1: PURPOSE AND NEED

US 158 Improvements, NCDOT Highway Divisions 7 & 9, Guilford & Forsyth Counties
NCDOT TIP Project Nos.: R-2577A, R-2577B & R-2577C
WBS No. 37405

TIP Description: The North Carolina Department of Transportation proposes to widen approximately 18.8 miles of US 158 (Reidsville Road) to a multi-lane facility from multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County to US 220 in Guilford County. The project will be constructed in three sections. Project R-2577A begins at multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County and ends at SR 1965 (Belews Creek Road) in Forsyth County. Project R-2577B begins at SR 1965 (Belews Creek Road) in Forsyth County and ends North of SR 2034 (Anthony Road) in Guilford County. Project R-2577C begins North of SR 2034 (Anthony Road) in Guilford County and ends at US 220 in Guilford County.

Purpose and Need: ~~Based on current project development information~~, the proposed project improvements are necessary to improve the traffic carrying capacity and Level of Service along US 158 in Forsyth - Guilford Counties.

* STUDY CORRIDOR – 500', 250' ON EITHER SIDE OF US 158; 1000' DOWN Y-LINES & AROUND STOKESDALE PER CORRIDOR MAP, MAY 2006, AMMENDED

The Merger Process Team met on August 14, 2007, and concurs with the Purpose and Need of the proposed improvements of US 158 (Reidsville Road) in Forsyth and Guilford Counties.

USACE _____ 8-14-07
John Thomas — Date

USEPA _____ 8-14-07
Christopher A. Militscher — Date

USFWS _____ 8/14/07
Marella Buncick — Date

NCWRC Marla Chambers 8/14/07
Marla Chambers — Date

NCDCR _____ 8-14-07
Sarah McBride — Date

NCDOT Karen S. Reynolds 8/14/07
Karen S. Reynolds — Date

NCDWQ _____ 8/14/2007
Sue Homewood — Date

GUAMPO _____ 8/14/07
Tyler Meyer — Date

WSFUAMPO GREG ERRETT 8/14/07
Gregory Errett — Date

SECTION 404 / NEPA MERGER PROCESS CONCURRENCE AGREEMENT

CONCURRENCE POINT 2: DESIGN OPTIONS FOR FURTHER STUDY - STOKESDALE AREA

US 158 Improvements, NCDOT Highway Divisions 7 & 9, Guilford & Forsyth Counties
NCDOT TIP Project No.: R-2577C
WBS No. 37405

TIP Description: The North Carolina Department of Transportation proposes to widen approximately 18.8 miles of US 158 (Reidsville Road) to a multi-lane facility from multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County to US 220 in Guilford County. The project will be constructed in three sections. Project R-2577A begins at multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County and ends at SR 1965 (Belews Creek Road) in Forsyth County. Project R-2577B begins at SR 1965 (Belews Creek Road) in Forsyth County and ends North of SR 2034 (Anthony Road) in Guilford County. ***Project R-2577C begins North of SR 2034 (Anthony Road) in Guilford County and ends at US 220 in Guilford County.***

Design Options for Further Study: Based on current project development information, the proposed project improvements are necessary to improve the traffic carrying capacity and Level of Service along US 158 in the Stokesdale area of Guilford County.

The Merger Process Team met on February 17, 2009, and concurs with Design Options

~~Alternative 1~~ ~~Alternative 1A~~ **Alternative 1B (South of US 158)**

Alternative 2 **Alternative 2A (South of US 158 and the Alternative 1 Options)**

Alternative 3 (North of US 158) ~~Alternative 4 (Along US 158, through Stokesdale)~~

for Further Study for the proposed improvements to US 158 (Reidsville Road) in the Stokesdale area of Guilford County.

USACE _____ 2/17/09
John Thomas Date

USEPA _____ 2/17/09
Christopher A. Militscher Date

USFWS _____ 2/17/09
Marella Buncick Date

NCWRC Marla Chambers 3/4/2009
Marla Chambers Date

NCDOT Karen S. Reynolds 2/17/09
Karen S. Reynolds Date

NCDWQ _____ 2/17/09
~~Sue Homewood~~ Amy Euliss Date

GUAMPO _____ 2/17/09
~~Tyler Meyer~~ Craig McKinney Date

NCDCR Renee Gledhill-Earley 3-3-09
Renee Gledhill-Earley Date

SECTION 404 / NEPA MERGER PROCESS CONCURRENCE AGREEMENT

CONCURRENCE POINT 2: DESIGN OPTIONS FOR FURTHER STUDY WALKERTOWN – BELEWS CREEK AREAS

US 158 Improvements: NCDOT Highway Divisions 9 & 7, Forsyth & Guilford Counties NCDOT TIP Project No.: R-2577A & B, WBS No. 37405

TIP Description: The North Carolina Department of Transportation proposes to widen approximately 18.8 miles of US 158 (Reidsville Road) to a multi-lane facility, from multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County to US 220 in Guilford County. The project will be constructed in three sections. ***Project R-2577A begins at multi-lanes North of I-40 Business - US 421 - NC 150 in Forsyth County and ends at SR 1965 (Belews Creek Rd) in Forsyth County. Project R-2577B begins at SR 1965 (Belews Creek Road) in Forsyth County and ends North of SR 2034 (Anthony Road) in Guilford County.*** Project R-2577C begins North of SR 2034 (Anthony Road) in Guilford County and ends at US 220 in Guilford County.

Design Options for Further Study: Based on current project development information, the proposed project improvements are necessary to improve the traffic carrying capacity and Level of Service along US 158 in the Walkertown and Belews Creek areas of Guilford County.

The Merger Process Team met on August 22, 2013, and concurs with Design Option(s)

Segment Alternative 1 (North / South-side widening along US 158)
Segment Alternative 2 (North / Transitional / South-side widening along US 158)
Segment Alternative 3 (North / South-side wideping along US 158)
Segment Alternative 4 (North / Transitional / South-side widening along US 158)
Segment Alternative 5 (North / Transitional / Sonth-side widening along US 158)
Segment Alternative 6 (North / Transitional / South-side widening along US 158)
Segment Alternative 7 (North / South-side widening along US 158)

for Further Study of the proposed improvements to US 158 (Reidsville Road) in the Walkertown and the Belews Creek areas of Forsyth and Guilford Counties.

USACE _____ 8/22/2013
John Tilomas — Date

USEPA _____ 8/26/13
Christopher A. Militscher — Date

USFWS _____ 9/5/13
Marella Buncick — Date

NCWRC _____ 8/22/13
Marla Chambers — Date

NCDOT Karen S. Reynolds 8/22/13
Karen S. Reynolds — Date

NCDWR (for) Amy Euliss 8/22/13
Amy Euliss — Date

WSUAMPO GREG ERRETT 8/22/13
Greg Errett — Date

NCDCR _____
Renee Gledhill-Earley — Date

SECTION 404 / NEPA MERGER CONCURRENCE AGREEMENT

CONCURRENCE POINT 2A: BRIDGING DECISIONS AND ALIGNMENT REVIEW

US 158 (Reidsville Road) Improvements - NCDOT Highway Divisions 9 & 7
Forsyth & Guilford Counties, NCDOT TIP Project No.: R-2577 - Sections A, B & C
State WBS Project Number: 37405.1.1

TIP Description: The North Carolina Department of Transportation proposes to improve approximately 18.8 miles of US 158 (Reidsville Road) to a multi-lane facility, from multi-lanes north of I-40 Business in Forsyth County to US 220 in Guilford County. The project will be constructed in three sections. R-2577A begins at the multi-lane Section north of I-40 Business / US 421 / NC 150 in Forsyth County and ends at SR 1965 (Belews Creek Road), just west of SR 2014 (Vance Road) in Forsyth County. R-2577B begins at SR 1965 (Belews Creek Road), just west of SR 2014 (Vance Road) in Forsyth County and ends just west of SR 2034 (Anthony Road) in Guilford County. R-2577C begins just west of SR 2034 (Anthony Road) in Guilford County and ends at US 220 in Guilford County.

Alignment Review: The Merger Team met on September 29, 2015, to discuss six proposed widening segments in Sections A & B and four proposed new-location, US 158 bypass alternatives in Section C. The Team concurred that the following project widening segments and new-location alternative(s) be carried forward in this proposed action.

R-2577A & B: (Widening)

Segment Alternative 1: Four-lane, median-divided, shoulder section, north / south side widening of US 158

Segment Alternative 2: Four-lane, median-divided, shoulder section, north / transitional widening of US 158

Segment Alternative 3: Four-lane, median-divided, shoulder-section, ~~north / south side widening~~ of US 158

SOUTH + TRANSITIONAL WIDENING

R-2577C: (New Location)

~~**Alternative 1B: Four-lane median-divided, shoulder-section, south of US 158 (Reidsville Road)**~~

Alternative 2: Four-lane median-divided, shoulder-section, south of US 158 (Reidsville Road)

~~**Alternative 2A: Four-lane median-divided, shoulder-section, south of US 158 (Reidsville Road)**~~

Alternative 3: Four-lane median-divided, shoulder-section, north of US 158 (Reidsville Road)

SECTION 404 / NEPA MERGER PROCESS CONCURRENCE AGREEMENT
CONCURRENCE POINT 2A: BRIDGING DECISIONS and Alignment Review
R-2577ABC: US 158 (Reidsville Road) Improvements - NCDOT Hwy Divisions 9 & 7 / State WBS Project Number: 37405.1.1

Bridging Decisions: The Merger Team met on September 29, 2015, to discuss the preliminary hydraulics designs for the three major stream crossings of US 158 (Reidsville Road). Based upon the current project development information, the Merger Team concurs with the proposed bridge construction decisions for the major stream crossings along US 158 (Reidsville Road), as presented in the Concurrence Point 2A Meeting Agenda.

USACE _____ 9/29/2015
John Thomas Date

NCDOT Karen S. Reynolds 9/29/15
Karen Reynolds Date

USEPA _____ 29 Sept. 2015
Dr. Cynthia Van Der Wiele Date

USFWS _____ 10/19/15
Marella Buncick Date

NCWRC Marla Chambers 9/24/2015
Marla Chambers Date

NCDWQ _____ 9/29/15
David Wanucha Date

NCDCR _____ 10/6/15
Renee Gledhill-Earley Date

WSMPO GREG ERRETT 9/29/15
Gregory Errett Date

Merger Project Team Meeting Agreement

Concurrence Point No. 3: Least Environmentally Damaging Practicable Alternative (LEDPA)

Project Name/Description: US 158 (Reidsville Road), Widen to multi-lane facility, from multi-lanes north of I-40 Business in Forsyth County to US 220 in Guilford County

TIP Project: R-2577

WBS No.: 37405

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-2577, Section A&B

Segment 1 – Northern widening (concurred on 9/29/2015)
Segment 2 – Transitional widening (concurred on 9/29/2015)
Segment 3
- ☑ Transitional widening
- ☐ Southern widening

Segment 4 – Transitional widening (concurrence on 8/22/2013)
Segment 5 – Transitional widening (concurrence on 8/22/2013)
Segment 6 – Transitional widening (concurrence on 8/22/2013)
Segment 7 – Northern widening (concurrence on 8/22/2013)

Comments _____

R-2577, Section C

- ☐ Alternative 2 (South of Stokesdale)
- ☑ Alternative 3 (North of Stokesdale)

Comments _____

The Project Team has concurred on this date of May 16, 2018, on the above mentioned alternatives as the Least Environmentally Damaging Practicable Alternative (LEDPA) for TIP Project R-2577A, B, and C.

USACE _____ 5-16-18 Date
NCDOT _____ 5/16/18 Date
USEPA _____ 5/24/18 Date
USFWS _____ 5/16/18 Date
NCWRC _____ 4/6/2018 Date
NCDWR _____ 5/23/18 Date
NCDCR _____ 5/21/18 Date
WSMPO _____ 5/24/18 Date

Merger Project Team Meeting Agreement

Concurrence Point No. 4A: Avoidance and Minimization

Project Name/Description: US 158 (Reidsville Road), Widen to multi-lane facility, from multi-lanes north of I-40 Business in Forsyth County to US 220 in Guilford County

TIP Project: R-2577

WBS No.: 37405

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:

1. Existing culverts at the following locations will be replaced with dual bridges:
    - Lowery Mill Creek – proposed bridge lengths of 85'
    - Belews Creek – proposed bridge lengths of 110'
2. Bridge 164 over Belews Lake will be replaced with dual bridges (100') and the vertical alignment has been adjusted at Belews Lake crossing (raised 4').
3. Sideslopes will be reduced from 6:1 to 2:1, where possible and without requiring the installation of guardrail, to further minimize stream and wetland impacts:
    - R-2577 A&B – an estimated reduction of 96 LF of overall stream impacts
    - R-2577 A&B segment 3 transitional widening – an estimated reduction of 101 LF of stream impacts
    - R-2577C Alternative 2 – an estimated reduction of 9 LF of stream impacts
    - R-2577C Alternative 3 – an estimated reduction of 21 LF of stream impacts

Additional minimization measures for non-jurisdictional resources have been incorporated into the preliminary design plans:

1. Edgewood Baptist Church (eligible for National Register of Historic Places [NRHP]) – minimized impacts to church and residences across the street:
    - shifted alignment slightly to the south
    - reduced median width to 23'
    - tightened side slopes to 2:1
    - proposed retaining wall in front of church parking lot
2. Drive-In Movie Theater (eligible for NRHP) – tightened side slopes to reduce impacts

Comments: _____
_____
_____
_____

The Project Team has concurred on this date of May 16, 2018 with the avoidance and minimization measures for TIP Project R-2577.

USACE	5-16-18 Date	NCDOT	5/16/18 Date
USEPA	5/21/18 Date	USFWS	5/16/18 Date
NCWRC	5/16/18 Date	NCDWR	5-23-18 Date
NCDCR	5/21/18 Date	WSMPO	5/24/18 Date

Appendix F

Supporting Figures



R-2577C : STUDY ALTERNATIVES
US 158 Widening
Forsyth & Guilford Counties,
TIP #R-2577 ABC

FORSYTH & GUILFORD COUNTIES
TIP PROJECT R-2577

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

N

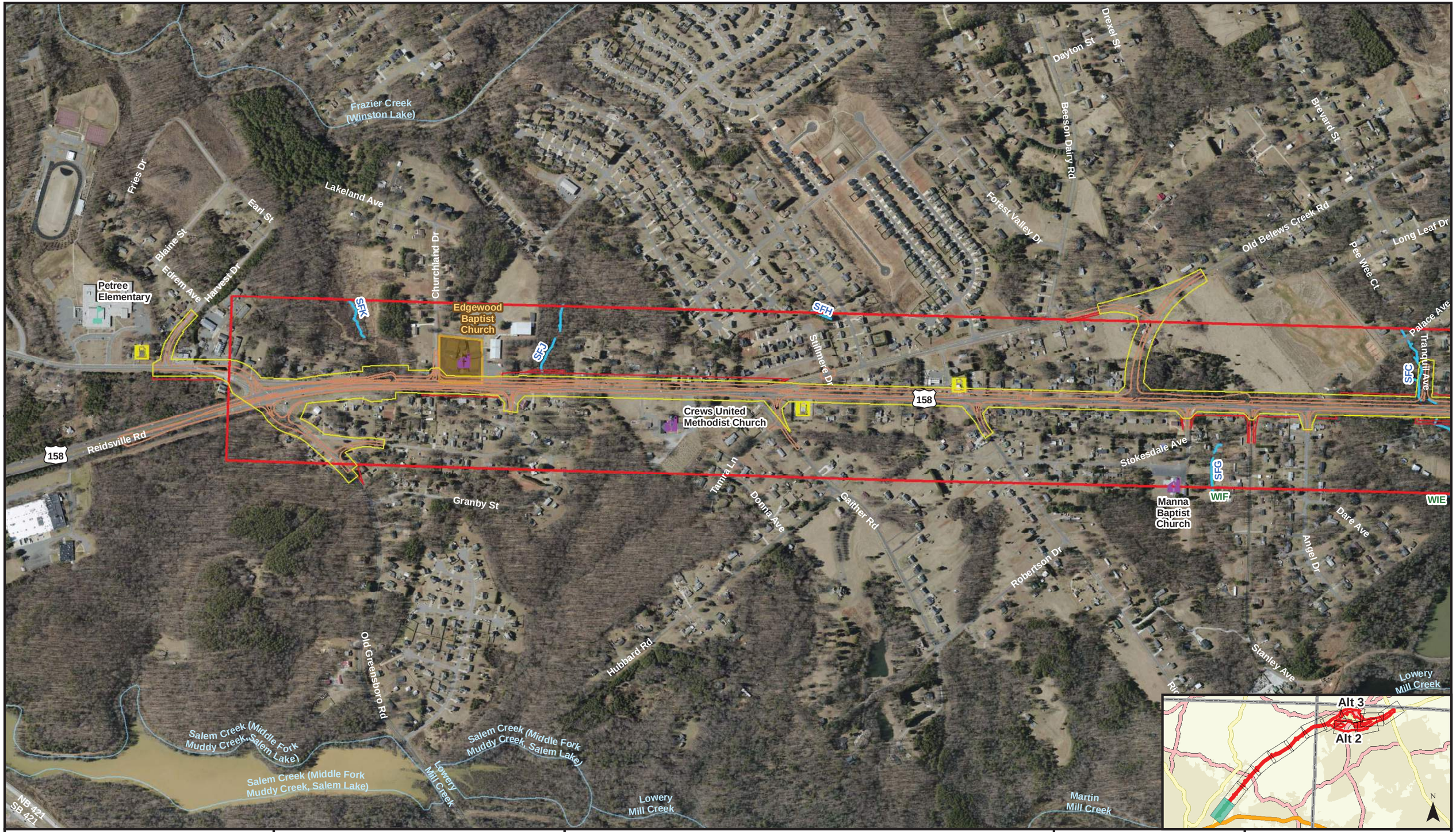
County: FORSYTH & GUILFORD

Div: 9 | TIP# R-2577

WBS: 37405.1.1

AUGUST 2011

Figure 1



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

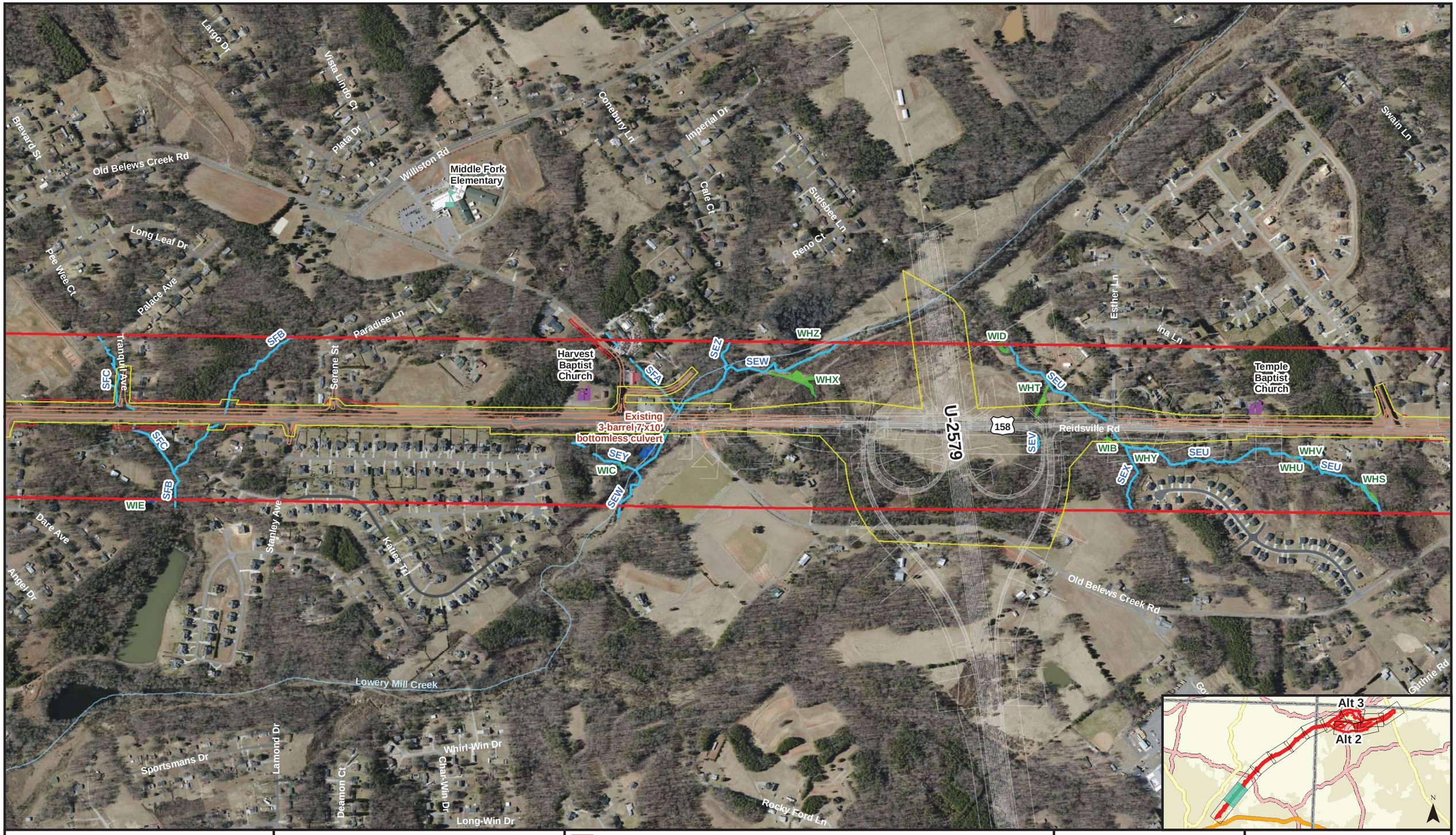
- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Historic Resource
- School
- Church
- Gas Station

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1a



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- School
- Church

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1b

Segment 1
Segment 2
Segment 3
Section A
Morris Chapel United Methodist Church
Darrow Rd
Swain Ln
Martin Mill Creek
Bel Air Drive-in Theater
66
158
Reidsville Rd
Vance Rd
SEP
SEO
SER
SES
SET
WHP
WHQ
WHU
SEU
WHS
WHO
SEN
Old Belews Creek Rd
Walkertown-Guthrie Rd
George West Rd
Old 66 Crk
Old Hollow Rd
Chalet Dr
Alt 3
Alt 2
N

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

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

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Historic Resource
- Church
- Gas Station

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1c

West Belews Creek (Little Belews Creek)
Wallyford Ln
Buckley Forest Trl
Ellworth Ridge Ct
Riverton Rd
Belews Creek Rd
Buxwin Dr
Buxbury Ct
Bienaud Dr
Eldred Rd
Kitty Ln
Woodmere Dr
Riverwood Rd
Ashby Dr
Salem Quarter Rd
Rail Fence Rd
Left Fork Belews Creek
Section B
Section A
SEL
SEM
SEK
SEH
SEG
WHD
WHF
WHH
SEE
WHI
SED
WHC
SEJ
WHK
Reidsville Rd
158
WHL
WHM
WHN
Welcome Home Baptist Church
Old Flatrock Rd
Vance Rd
Summit Dr
Sheffield Place Dr
Williamshire Ct
Robinette Ln
Alt 3
Alt 2
N

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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Church
- Gas Station

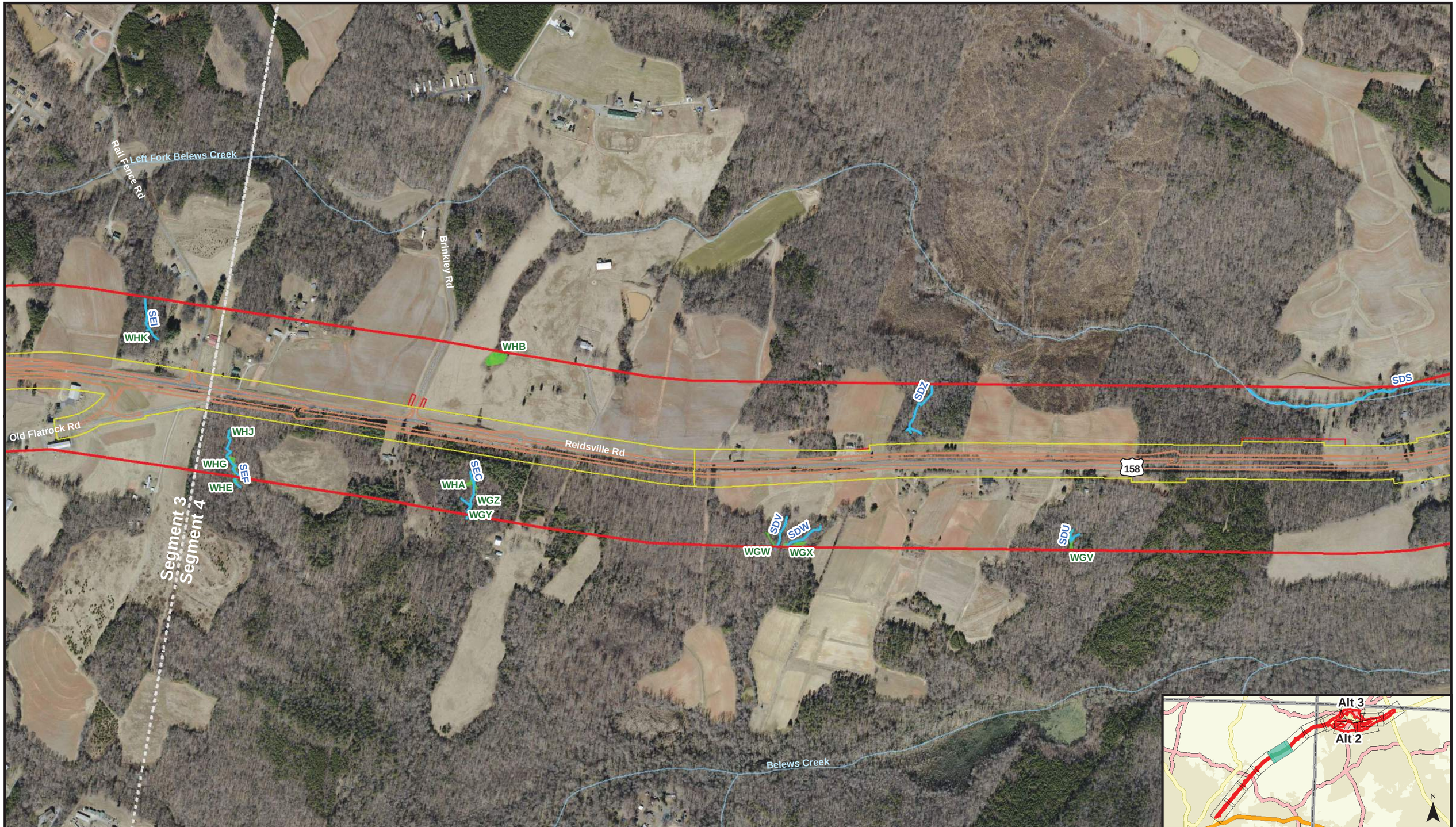
N

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1d



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

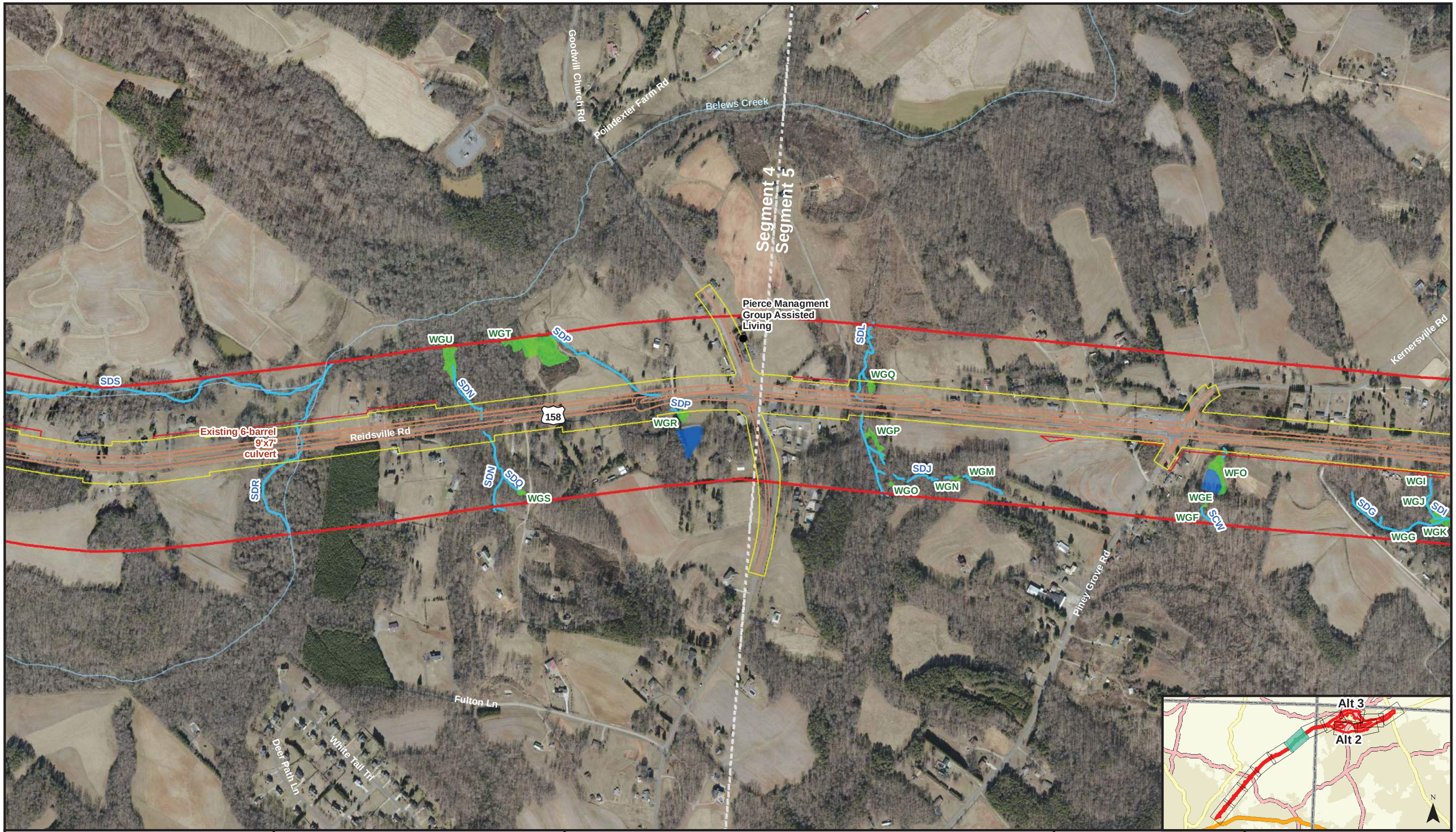
- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1e



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond

N

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1f



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

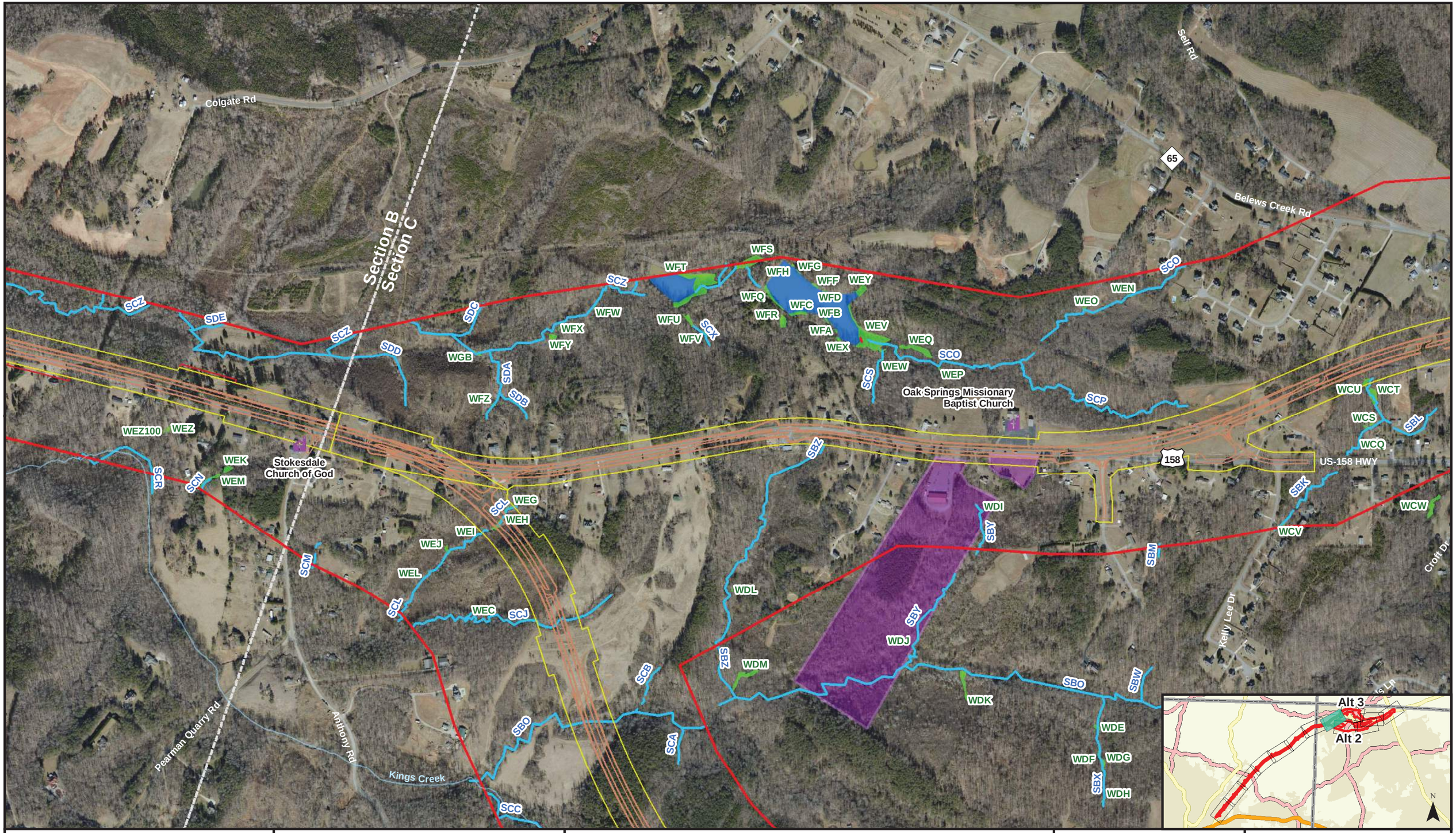
- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1g



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

NRTR Study Area
ROW Limits
Easement
Proposed Pavement Edge
Stream
Wetland
Lake/Pond
Cemetery
Church

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1h



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Historic Resource
- Cemetery
- Church
- Gas Station
- Fire Station

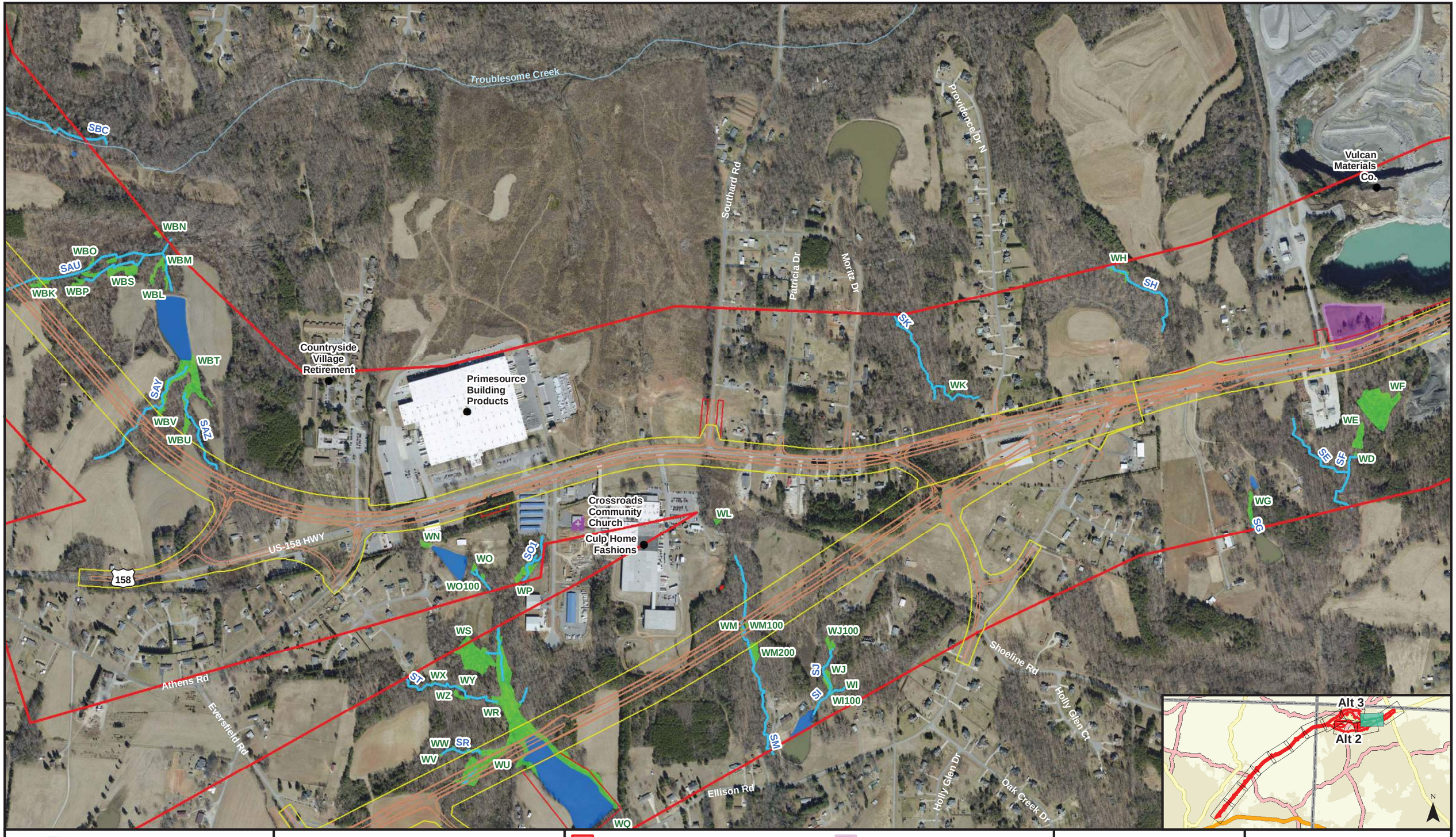
N

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1i



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Cemetery
- Church

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1j



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Cemetery
- Church

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1k



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

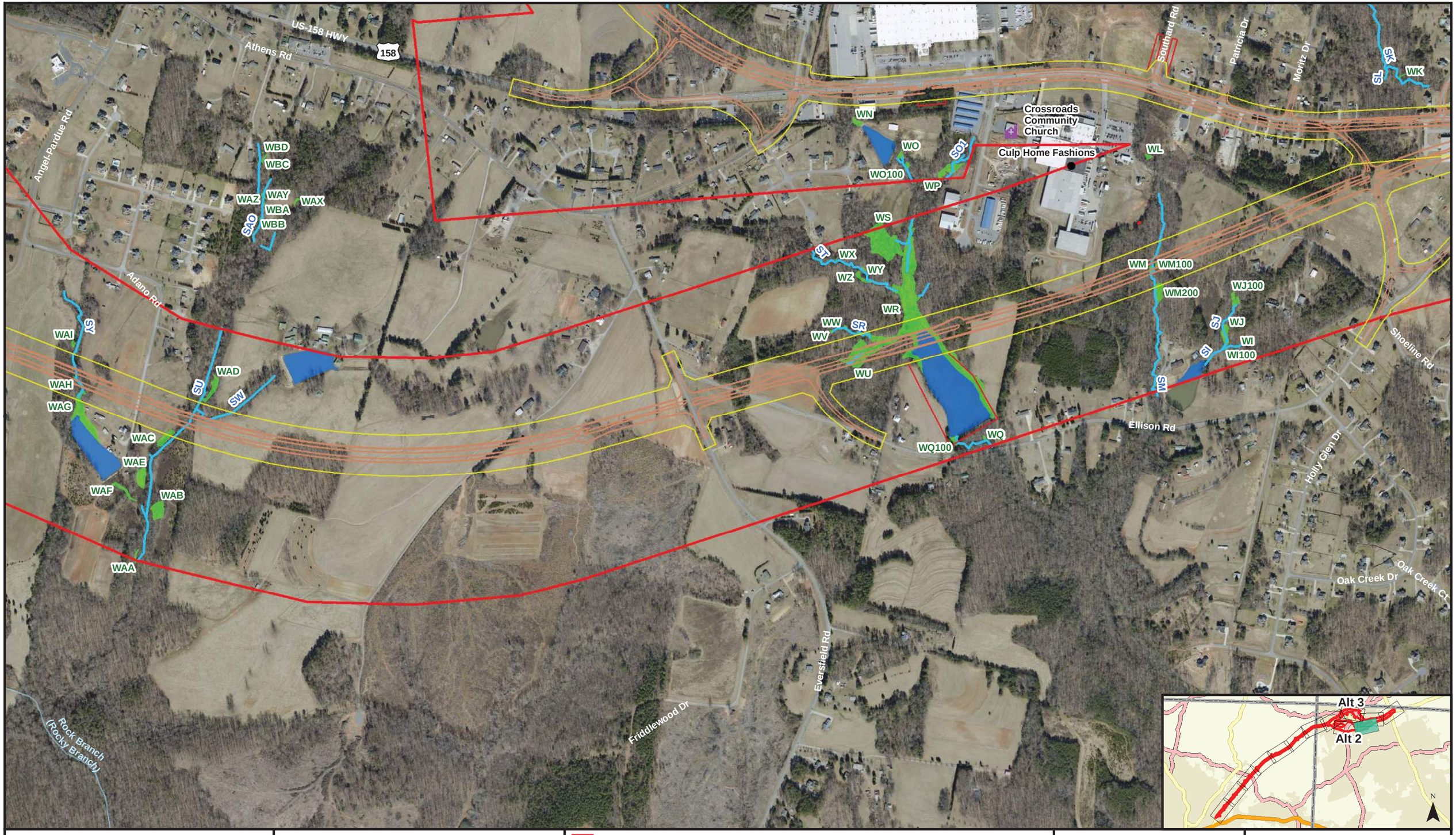
- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Cemetery

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1I



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

JURISDICTIONAL FEATURES MAP

U.S. 158 (Reidsville Road) Improvements
Forsyth and Guilford Counties

TIP Project R-2577

- NRTR Study Area
- ROW Limits
- Easement
- Proposed Pavement Edge
- Stream
- Wetland
- Lake/Pond
- Church

0 500 1,000 Feet

Div:	TIP#
7&9	R-2577

Date: May 2018

Figure 1m

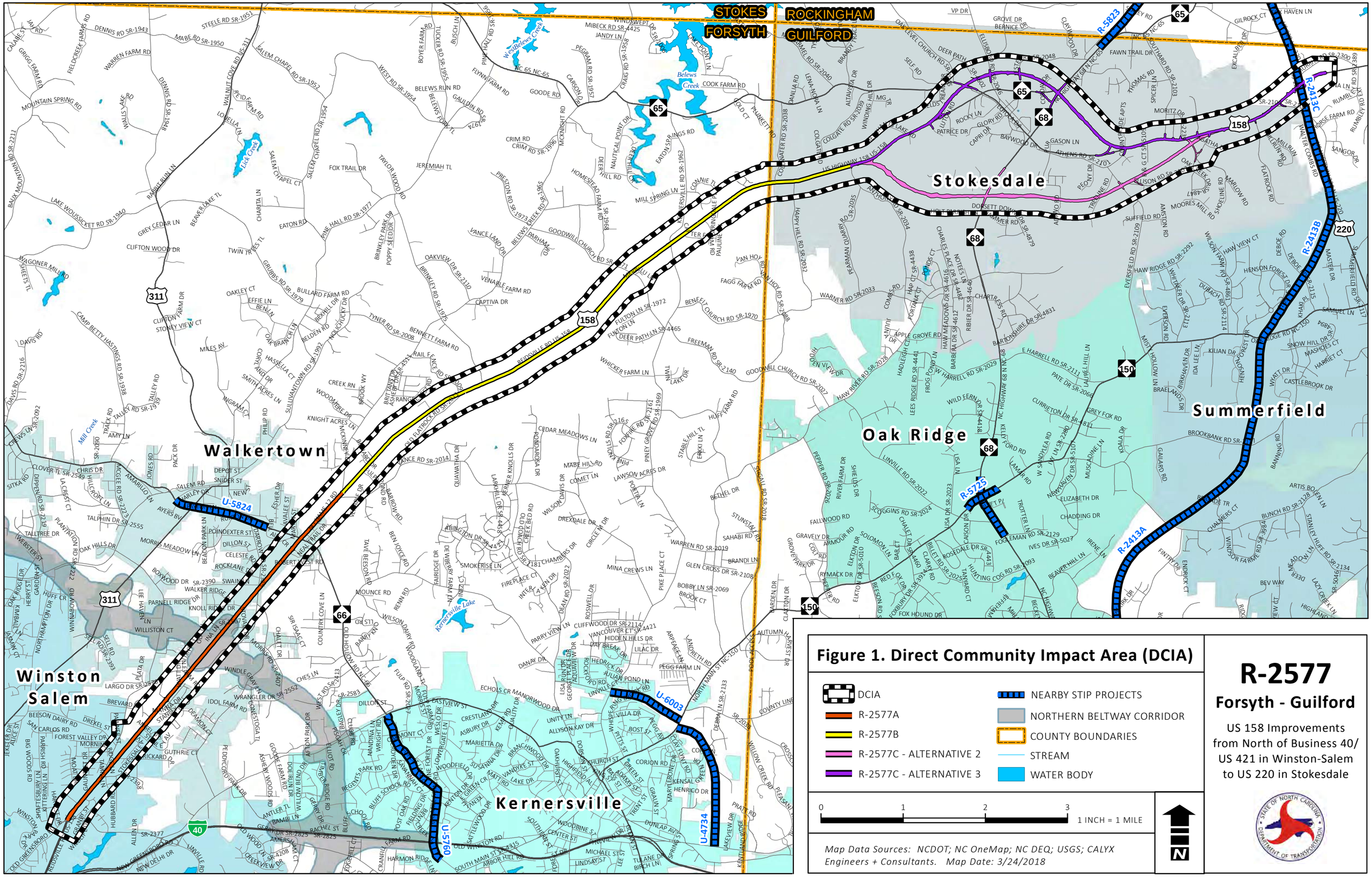


Figure 1. Direct Community Impact Area (DCIA)

- DCIA
- R-2577A
- R-2577B
- R-2577C - ALTERNATIVE 2
- R-2577C - ALTERNATIVE 3
- NEARBY STIP PROJECTS
- NORTHERN BELTWAY CORRIDOR
- COUNTY BOUNDARIES
- STREAM
- WATER BODY

0 1 2 3 1 INCH = 1 MILE

N

Map Data Sources: NCDOT; NC OneMap; NC DEQ; USGS; CALYX Engineers + Consultants. Map Date: 3/24/2018

R-2577

Forsyth - Guilford

US 158 Improvements from North of Business 40/ US 421 in Winston-Salem to US 220 in Stokesdale

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

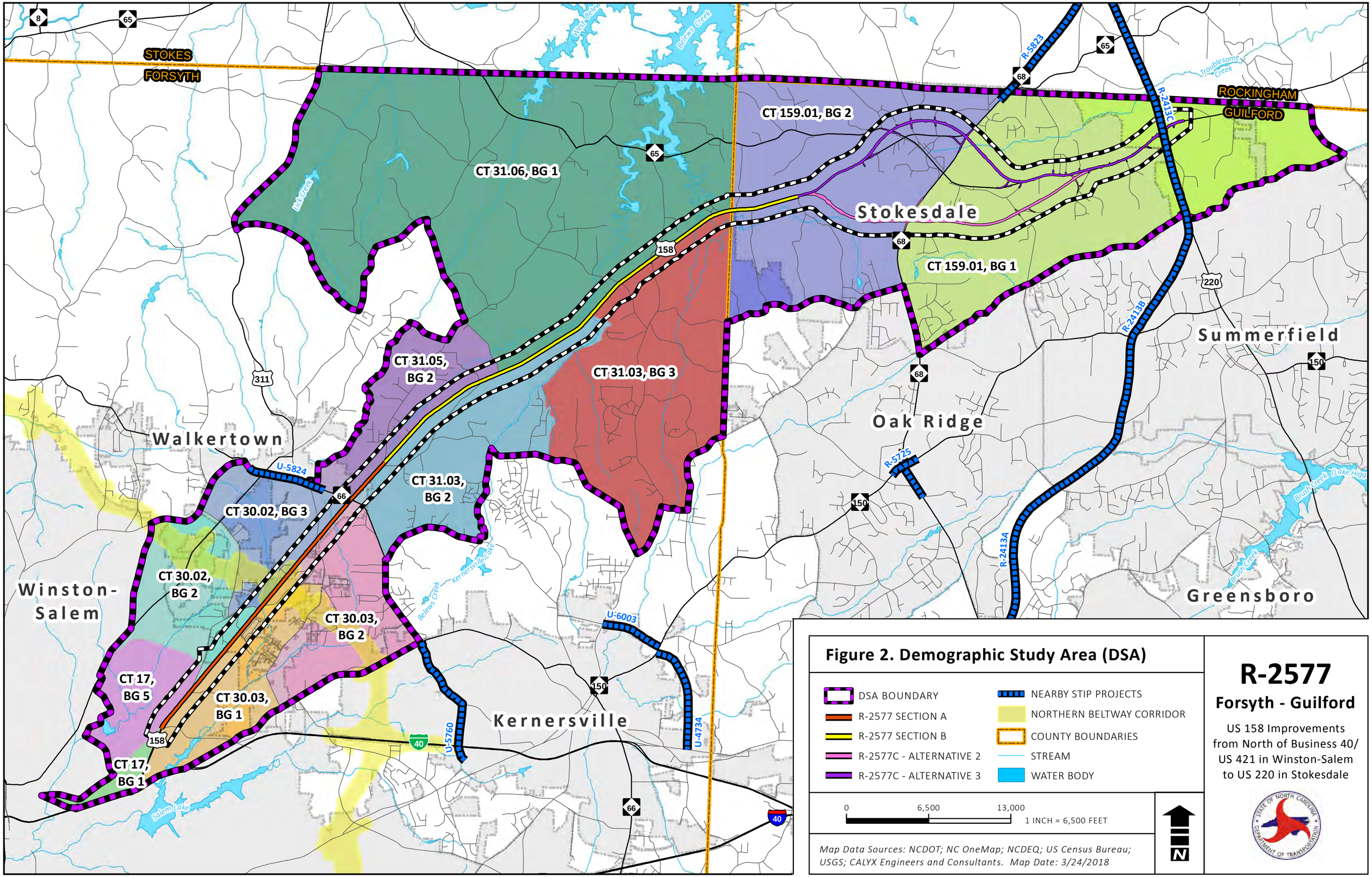


Figure 2. Demographic Study Area (DSA)

- DSA BOUNDARY
- R-2577 SECTION A
- R-2577 SECTION B
- R-2577C - ALTERNATIVE 2
- R-2577C - ALTERNATIVE 3
- NEARBY STIP PROJECTS
- NORTHERN BELTWAY CORRIDOR
- COUNTY BOUNDARIES
- STREAM
- WATER BODY

0 — 6,500 — 13,000

1 INCH = 6,500 FEET

N

Map Data Sources: NCDOT; NC OneMap; NCDEQ; US Census Bureau; USGS; CALYX Engineers and Consultants. Map Date: 3/24/2018

R-2577

Forsyth - Guilford

US 158 Improvements from North of Business 40/ US 421 in Winston-Salem to US 220 in Stokesdale

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

Figure 3. Community Context Mapbook Index Page

R-2577

Forsyth & Guilford Counties

US 158 Improvements from north of Business 40/
US 421 in Winston-Salem to US 220 in Stokesdale

DCIA
Map Grid Line
Stream
Water Body
Municipal Boundaries

Nearby STIP Projects
R-2577 Section A
R-2577 Section B
R-2577C - Alternative 2
R-2577C - Alternative 3

County Boundaries
Railroad
Northern Beltway Corridor
Parks & Protected Land
Duke Power Land Holdings

Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/ Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants.
Map Date: 3/24/2018

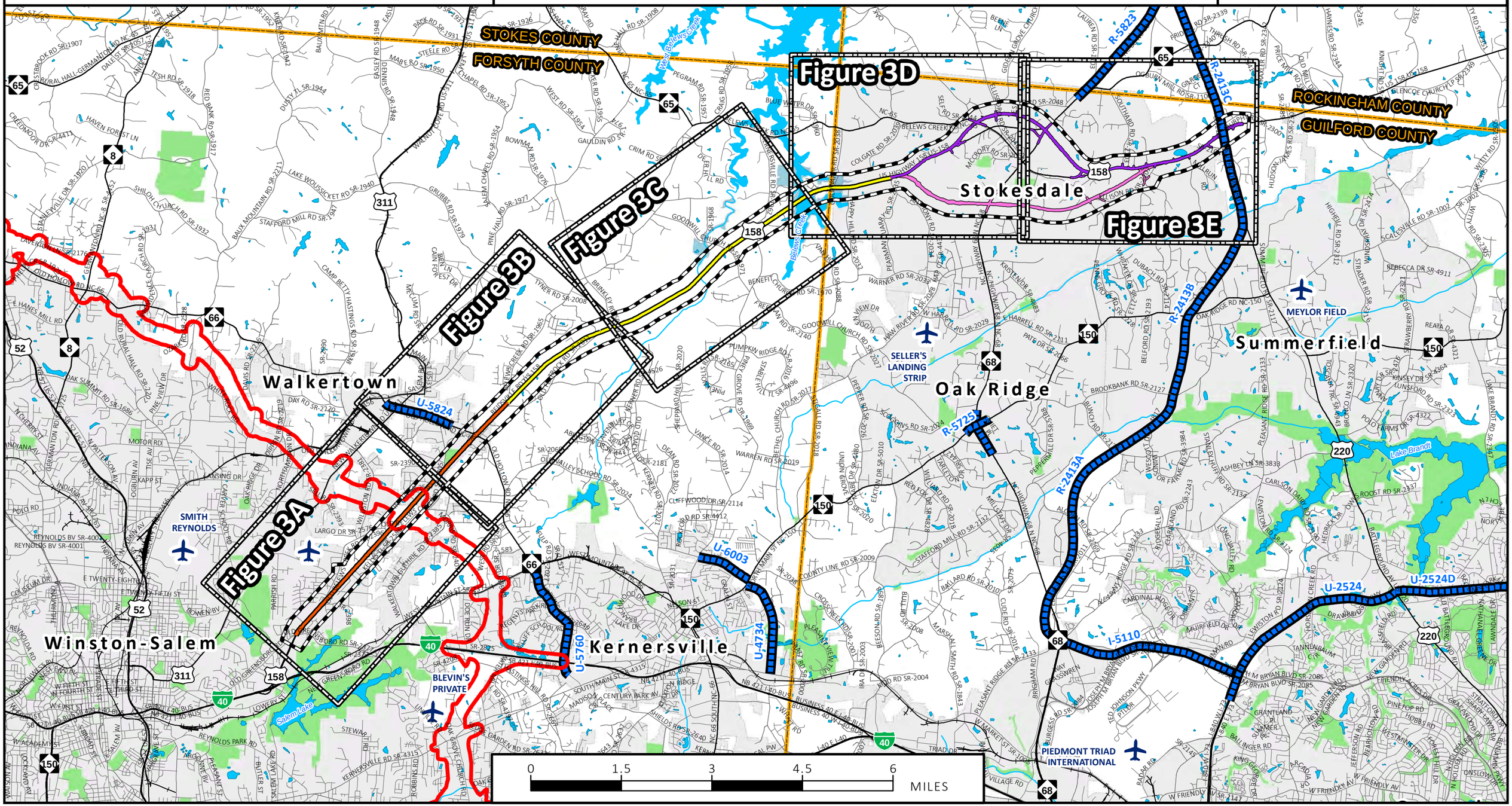
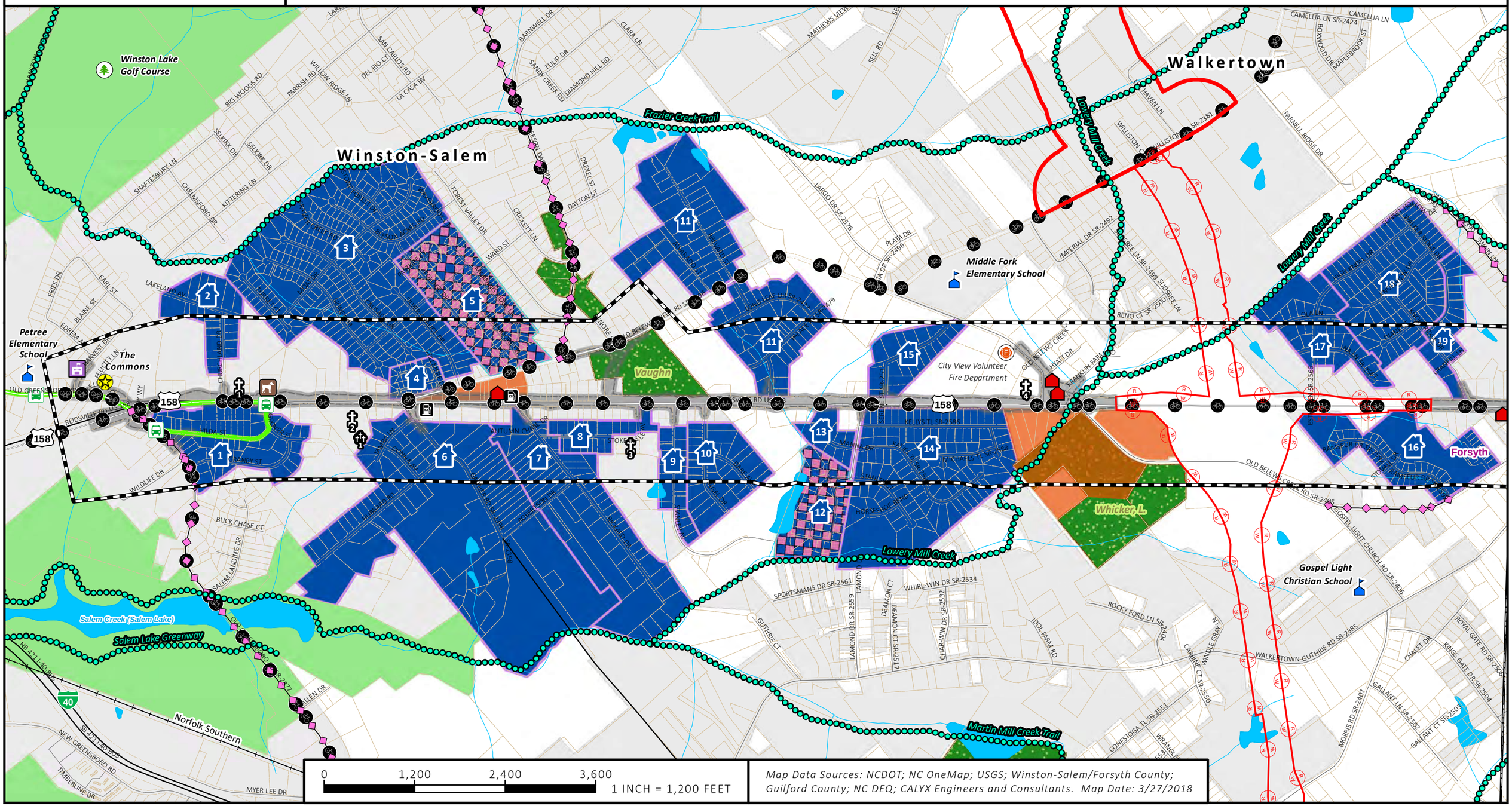


Figure 3A. Community Context

R-2577 Section A
Forsyth - Guilford
US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



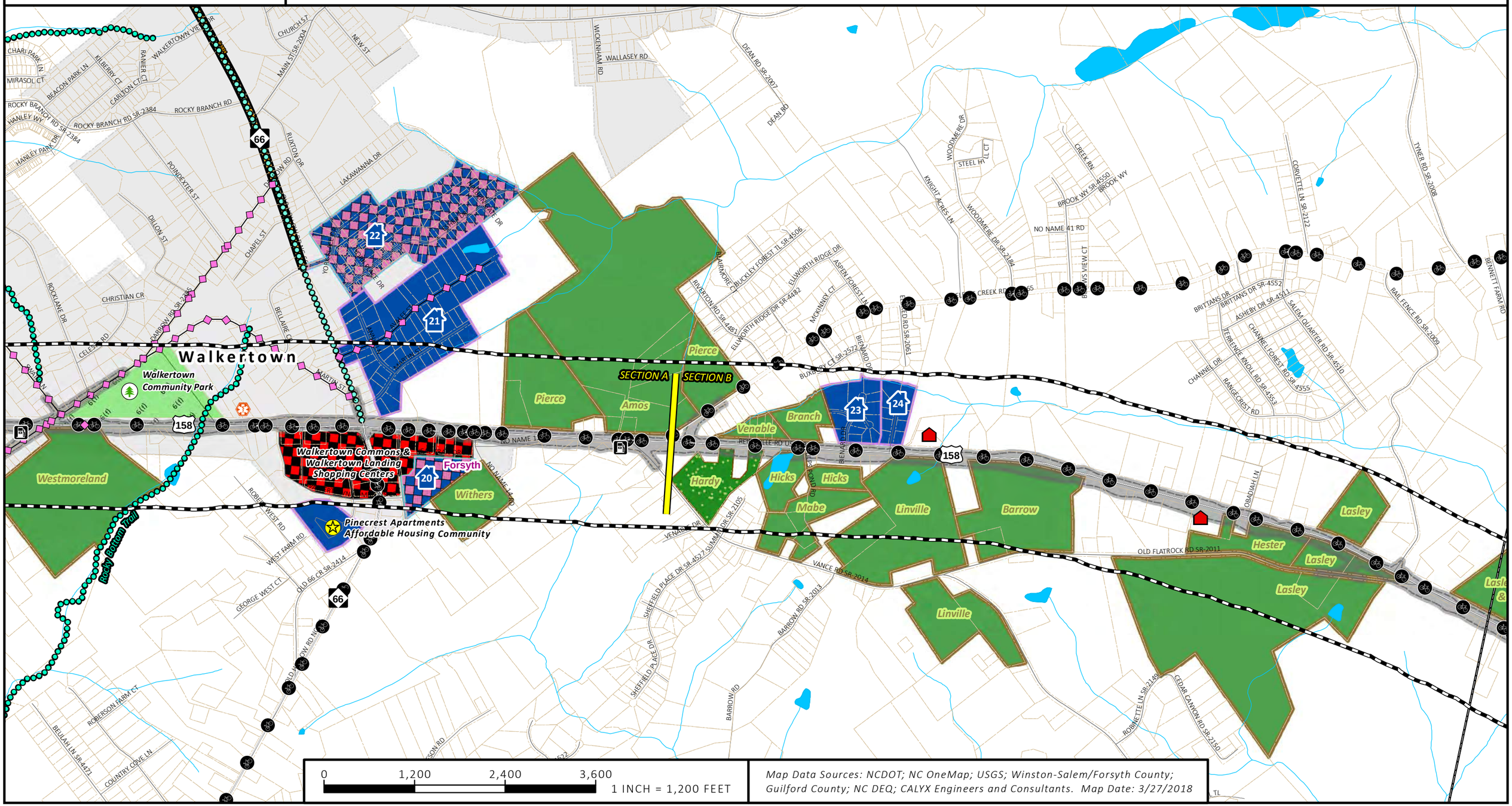
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3B. Community Context

R-2577 Section A-B
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



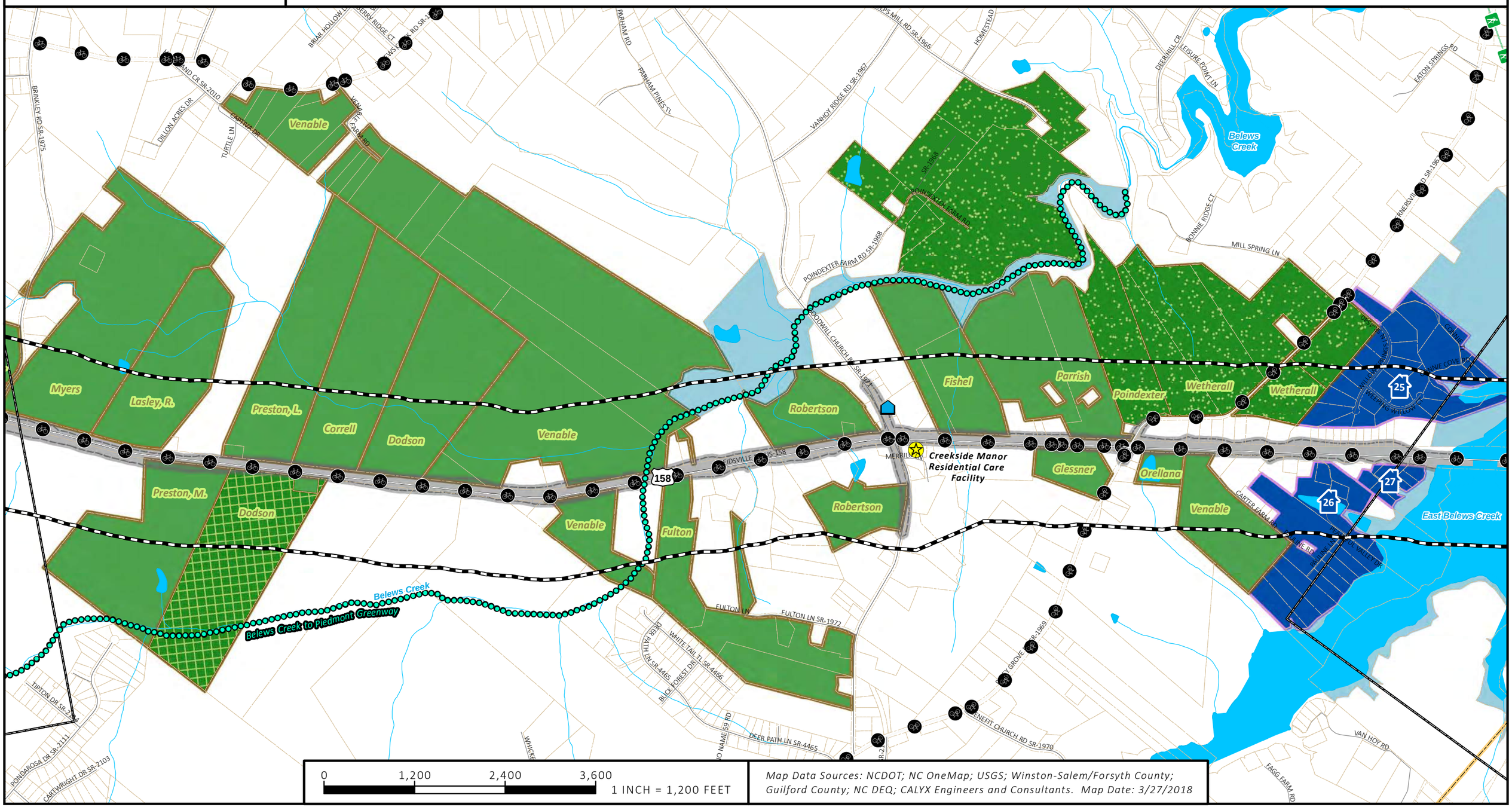
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3C. Community Context

R-2577 Section B
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



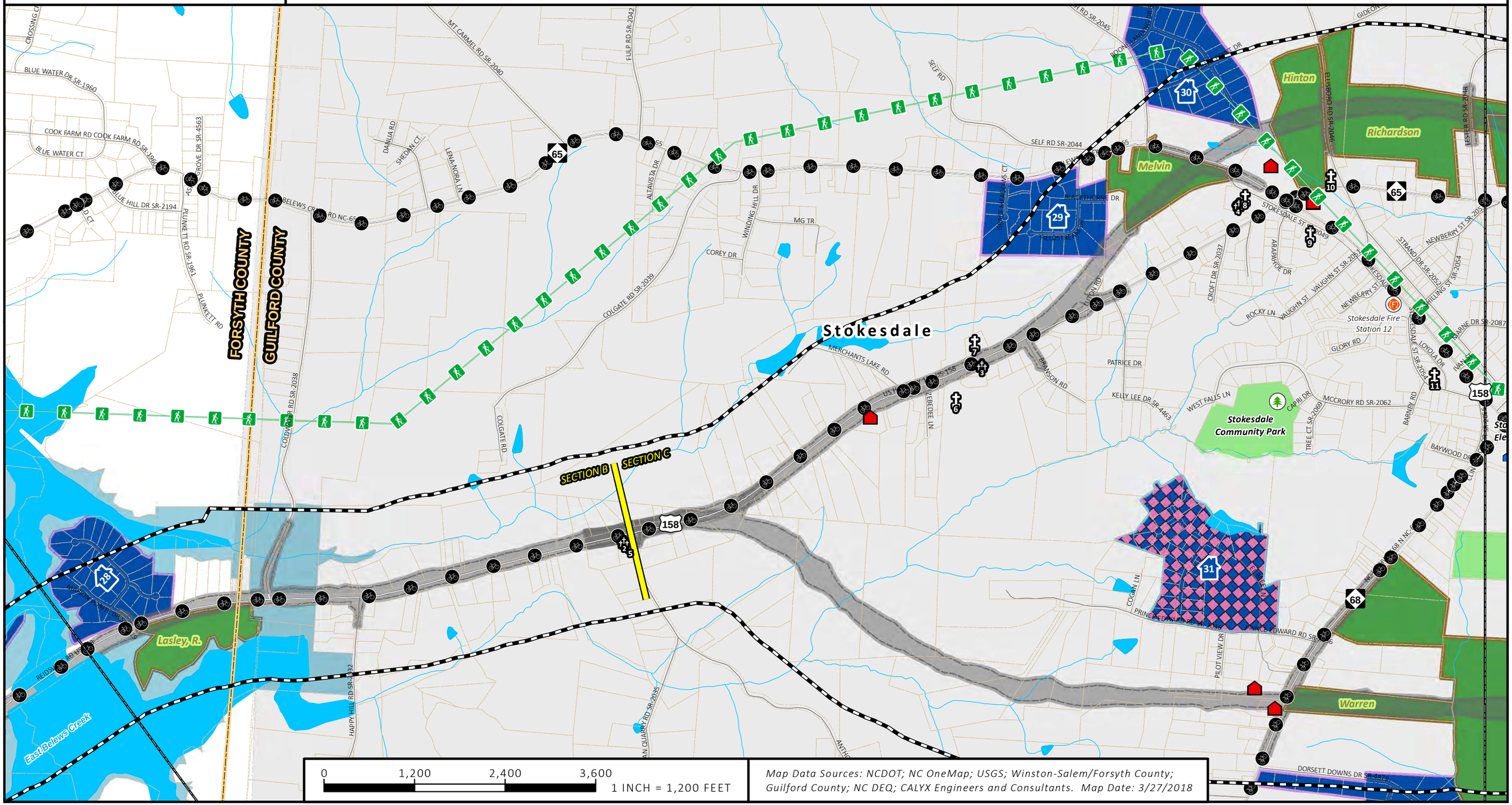
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3D. Community Context

R-2577 Section B-C
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



0 — 1,200 — 2,400 — 3,600
1 INCH = 1,200 FEET

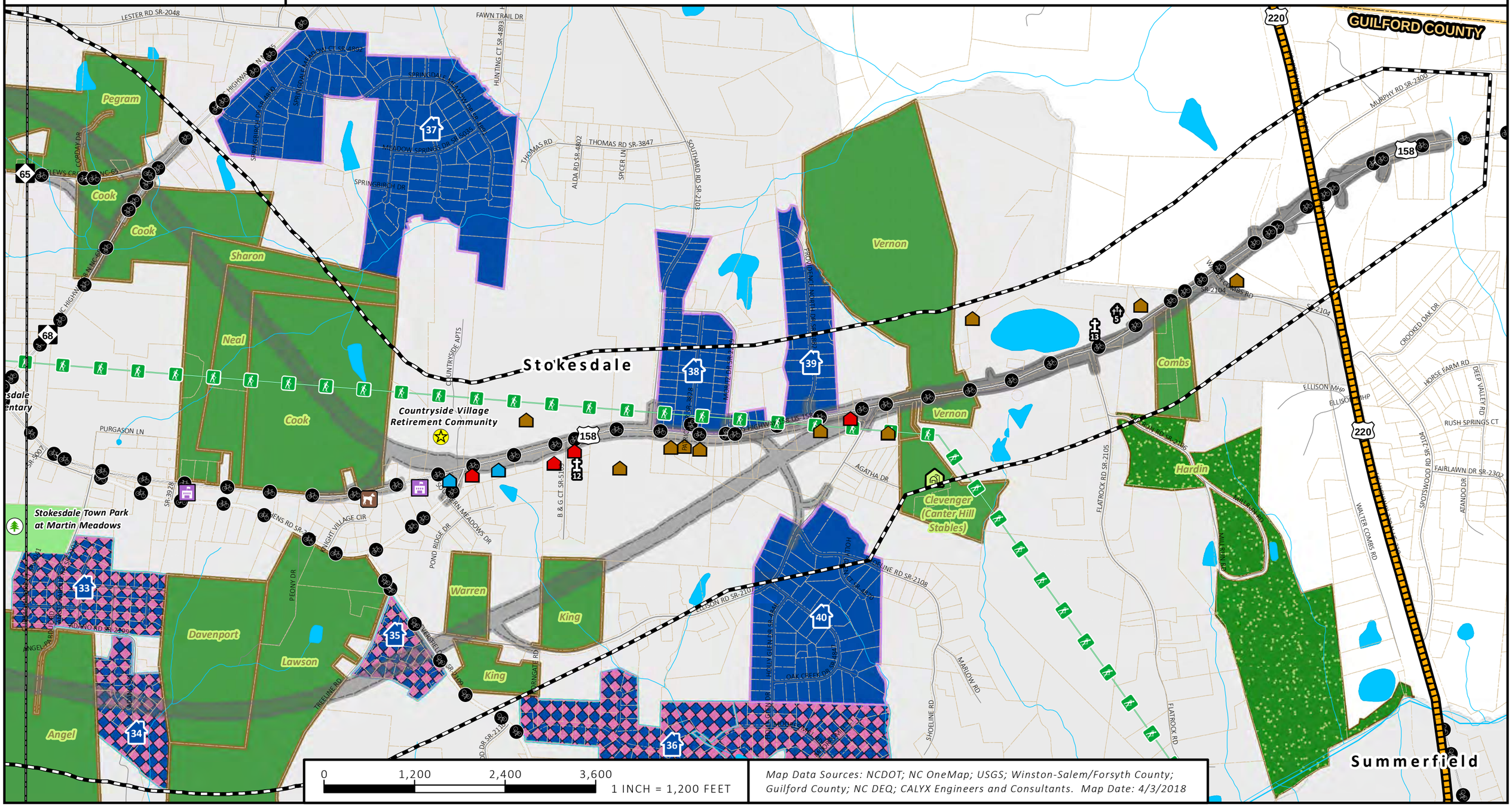
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3E. Community Context

R-2577 Section C
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 4/3/2018

Appendix B: Tabular Demographic Data

POPULATION CHANGE 2000 - 2010						2010 - 2015*			
Geography	2000	2010	Difference 2000-2010	Percent Change	Annualized Growth Rate	2015	Difference 2010-2015	Percent Change	Annualized Growth Rate
CT 17, BG 1	989	824	-165	-16.68%	-1.81%	691	-133	-19.25%	-3.46%
CT 17, BG 5	1,306	1,675	369	28.25%	2.52%	1,805	130	7.20%	1.51%
CT 30.02, BG 2	1,344	1,336	-8	-0.60%	-0.06%	1,175	-161	-13.70%	-2.54%
CT 30.02, BG 3	871	1,261	390	44.78%	3.77%	1,230	-31	-2.52%	-0.50%
CT 30.03, BG 1	1,162	1,484	322	27.71%	2.48%	1,209	-275	-22.75%	-4.02%
CT 30.03, BG 2	1,538	1,788	250	16.25%	1.52%	1,636	-152	-9.29%	-1.76%
CT 31.03, BG 2	1,527	1,911	384	25.15%	2.27%	1,478	-433	-29.30%	-5.01%
CT 31.03, BG 3	1,692	1,742	50	2.96%	0.29%	2,202	460	20.89%	4.80%
CT 31.05, BG 2	1,422	1,730	308	21.66%	1.98%	1,780	50	2.81%	0.57%
CT 31.06, BG 1	2,156	2,445	289	13.40%	1.27%	2,222	-223	-10.04%	-1.89%
CT 159.01, BG 1	2,121	3,070	949	44.74%	3.77%	3,244	174	5.36%	1.11%
CT 159.01, BG 2	1,736	2,200	464	26.73%	2.40%	1,985	-215	-10.83%	-2.04%
DSA Aggregate	17,864	21,466	3,602	20.16%	1.85%	20,657	-809	-3.92%	-0.77%
Winston-Salem	185,776	229,617	43,841	23.60%	2.14%	236,642	7,025	3.06%	0.60%
Walkertown	4,009	4,675	666	16.61%	1.55%	4,839	164	3.51%	0.69%
Forsyth County	306,067	350,670	44,603	14.57%	1.37%	361,684	11,014	3.05%	0.62%
Stokesdale	3,267	5,047	1,780	54.48%	4.45%	5,221	174	3.45%	0.68%
Guilford County	421,048	488,406	67,358	16.00%	1.50%	506,763	18,357	3.62%	0.74%
North Carolina	8,049,313	9,535,483	1,486,170	18.46%	1.71%	9,845,333	309,850	3.15%	0.64%

Data Source (Block Group and County-Level Data): Minnesota Population Center. National Historical Geographic Information System: Version 2.0. Minneapolis, MN: University of Minesota 2011. Census 2000/ Census 2010 Time Series Tables Geographically Standardized

Data Source (Place Data): US Census Bureau, Decennial Census 2000, Summary File 1, Table P001: "Total Population" and Decennial Census 2010, Summary 1, Table P1: "Total Population"

**Data Source: US Census Bureau, American Community Survey 5-Year Estimates (2011-2015), Table B01003 "Total Population."*

RACE																	
Geography	Total Population	White		Black or African American		American Indian & Alaska Native Alone		Asian		Native Hawaiian/ Pac. Islander		Some Other Race		Two or More Races		Total Non-White	
CT 17, BG 1	691	68	9.8%	571	82.6%	0	0.0%	18	2.6%	0	0.0%	13	1.9%	21	3.0%	623	90.2%
CT 17, BG 5	1,805	630	34.9%	1,109	61.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	66	3.7%	1,175	65.1%
CT 30.02, BG 2	1,175	731	62.2%	412	35.1%	32	2.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	444	37.8%
CT 30.02, BG 3	1,230	1,062	86.3%	124	10.1%	9	0.7%	12	1.0%	0	0.0%	0	0.0%	23	1.9%	168	13.7%
CT 30.03, BG 1	1,209	925	76.5%	270	22.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	14	1.2%	284	23.5%
CT 30.03, BG 2	1,636	1,355	82.8%	269	16.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	12	0.7%	281	17.2%
CT 31.03, BG 2	1,478	1,359	91.9%	100	6.8%	0	0.0%	9	0.6%	0	0.0%	0	0.0%	10	0.7%	119	8.1%
CT 31.03, BG 3	2,202	2,044	92.8%	145	6.6%	0	0.0%	13	0.6%	0	0.0%	0	0.0%	0	0.0%	158	7.2%
CT 31.05, BG 2	1,780	1,599	89.8%	143	8.0%	0	0.0%	0	0.0%	0	0.0%	9	0.5%	29	1.6%	181	10.2%
CT 31.06, BG 1	2,222	2,009	90.4%	93	4.2%	0	0.0%	16	0.7%	0	0.0%	39	1.8%	65	2.9%	213	9.6%
CT 159.01, BG 1	3,244	2,803	86.4%	191	5.9%	0	0.0%	1	0.0%	0	0.0%	178	5.5%	71	2.2%	441	13.6%
CT 159.01, BG 2	1,985	1,419	71.5%	161	8.1%	10	0.5%	0	0.0%	0	0.0%	379	19.1%	16	0.8%	566	28.5%
DSA	**20,657**	**16,004**	**77.5%**	**3,588**	**17.4%**	**51**	**0.2%**	**69**	**0.3%**	**0**	**0.0%**	**618**	**3.0%**	**327**	**1.6%**	**4,653**	**22.5%**
Forsyth County	361,684	242,474	67.0%	93,993	26.0%	855	0.2%	7,439	2.1%	403	0.1%	10,555	2.9%	5,965	1.6%	119,210	33.0%
Guilford County	506,763	287,617	56.8%	169,138	33.4%	2,328	0.5%	22,445	4.4%	281	0.1%	13,986	2.8%	10,968	2.2%	219,146	43.2%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B02001, "Race."

HISPANIC OR LATINO ORIGIN					
Geography	Total Population	Hispanic		Not Hispanic	
		#	%	#	%
CT 17, BG 1	691	63	9.1%	628	90.9%
CT 17, BG 5	1,805	0	0.0%	1,805	100.0%
CT 30.02, BG 2	1,175	0	0.0%	1,175	100.0%
CT 30.02, BG 3	1,230	9	0.7%	1,221	99.3%
CT 30.03, BG 1	1,209	12	1.0%	1,197	99.0%
CT 30.03, BG 2	1,636	44	2.7%	1,592	97.3%
CT 31.03, BG 2	1,478	46	3.1%	1,432	96.9%
CT 31.03, BG 3	2,202	60	2.7%	2,142	97.3%
CT 31.05, BG 2	1,780	47	2.6%	1,733	97.4%
CT 31.06, BG 1	2,222	48	2.2%	2,174	97.8%
CT 159.01, BG 1	3,244	306	9.4%	2,938	90.6%
CT 159.01, BG 2	1,985	389	19.6%	1,596	80.4%
DSA	20,657	1,024	5.0%	19,633	95.0%
Forsyth County	361,684	44,745	12.4%	316,939	87.6%
Guilford County	506,763	38,207	7.5%	468,556	92.5%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015), Table B03002, "Hispanic or Latino Origin by Race."

MINORITY POPULATION					
Geography	Total Population	White, Non-Hispanic		Minority Population*	
		#	%	#	%
CT 17, BG 1	691	18	2.6%	673	97.4%
CT 17, BG 5	1,805	630	34.9%	1,175	65.1%
CT 30.02, BG 2	1,175	731	62.2%	444	37.8%
CT 30.02, BG 3	1,230	1,062	86.3%	168	13.7%
CT 30.03, BG 1	1,209	913	75.5%	296	24.5%
CT 30.03, BG 2	1,636	1,311	80.1%	325	19.9%
CT 31.03, BG 2	1,478	1,313	88.8%	165	11.2%
CT 31.03, BG 3	2,202	1,984	90.1%	218	9.9%
CT 31.05, BG 2	1,780	1,561	87.7%	219	12.3%
CT 31.06, BG 1	2,222	2,000	90.0%	222	10.0%
CT 159.01, BG 1	3,244	2,683	82.7%	561	17.3%
CT 159.01, BG 2	1,985	1,409	71.0%	576	29.0%
DSA	20,657	15,615	75.6%	5,042	24.4%
Forsyth County	361,684	209,493	57.9%	152,191	42.1%
Guilford County	506,763	265,781	52.4%	240,982	47.6%

** Minority population includes all races that are non-white and Hispanic populations that are also White.*

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015),Table B03002, "Hispanic or Latino Origin by Race."

POVERTY							
Geography	Total Population for Poverty Status	Below Poverty Level		Very Poor: Under 50% of Poverty Level		Near Poor: Between 100% - 149% of Poverty Level	
CT 17, BG 1	691	226	32.7%	124	17.9%	226	32.7%
CT 17, BG 5	1,805	87	4.8%	25	1.4%	277	15.3%
CT 30.02, BG 2	1,175	105	8.9%	55	4.7%	37	3.1%
CT 30.02, BG 3	1,230	301	24.5%	72	5.9%	86	7.0%
CT 30.03, BG 1	1,145	131	11.4%	103	9.0%	197	17.2%
CT 30.03, BG 2	1,636	149	9.1%	58	3.5%	181	11.1%
CT 31.03, BG 2	1,478	110	7.4%	15	1.0%	86	5.8%
CT 31.03, BG 3	2,202	0	0.0%	0	0.0%	195	8.9%
CT 31.05, BG 2	1,780	42	2.4%	0	0.0%	131	7.4%
CT 31.06, BG 1	2,216	69	3.1%	35	1.6%	85	3.8%
CT 159.01, BG 1	3,156	154	4.9%	99	3.1%	480	15.2%
CT 159.01, BG 2	1,985	543	27.4%	39	2.0%	81	4.1%
DSA	20,499	1,917	9.4%	625	3.0%	2,062	10.1%
Forsyth County	351,667	69,100	19.6%	31,208	8.9%	37,790	10.7%
Guilford County	492,038	86,808	17.6%	38,484	7.8%	53,813	10.9%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015),Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months."

LIMITED ENGLISH PROFICIENCY (LEP)									
Geography	Total Adult Population (Over 17 Years)	Primary Language Group of Persons Who Speak English Less than Very Well							
		Spanish		Other Indo-Euro		Asian/Pacific		Other	
		#	%	#	%	#	%	#	%
CT 17, BG 1	540	31	5.7%	0	0.0%	0	0.0%	0	0.0%
CT 17, BG 5	1,392	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 30.02, BG 2	1,023	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 30.02, BG 3	928	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 30.03, BG 1	958	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 30.03, BG 2	1,262	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 31.03, BG 2	1,119	46	4.1%	0	0.0%	0	0.0%	0	0.0%
CT 31.03, BG 3	1,781	15	0.8%	0	0.0%	0	0.0%	0	0.0%
CT 31.05, BG 2	1,354	9	0.7%	0	0.0%	0	0.0%	0	0.0%
CT 31.06, BG 1	1,857	0	0.0%	0	0.0%	0	0.0%	0	0.0%
CT 159.01, BG 1	2,395	2	0.1%	0	0.0%	0	0.0%	0	0.0%
CT 159.01, BG 2	1,444	139	9.6%	0	0.0%	0	0.0%	0	0.0%
DSA Aggregate	16,053	242	1.5%	0	0.0%	0	0.0%	0	0.0%

Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015),Table B16004, "Age by Language Spoken at Home by Ability to Speak English for the Population 5 Years and Over."

HOUSING + TRANSPORTATION COSTS AS % OF INCOME	
Geography	H+T Costs % Income
CT 17, BG 1	43.00%
CT 17, BG 5	63.40%
CT 30.02, BG 2	55.54%
CT 30.02, BG 3	60.69%
CT 30.03, BG 1	58.21%
CT 30.03, BG 2	55.25%
CT 31.03, BG 2	67.72%
CT 31.03, BG 3	68.09%
CT 31.05, BG 2	60.52%
CT 31.06, BG 1	65.66%
CT 159.01, BG 1	67.2%
CT 159.01, BG 2	68.5%
DSA Average	**61.2%**
Forsyth County	57.0%
Guilford County	60.0%

Data Source: Center for Neighborhood Technology H+T Index Map (http://htaindex.cnt.org/map/) (ACS 5-Year Estimates [2011-2013])

ZERO CAR HOUSEHOLDS (HH)							
Geography	Total HH	No Vehicle Available		1 Vehicle Available		2 + Vehicles Available	
		#	%	#	%	#	%
CT 17, BG 1	301	22	7.3%	155	51.5%	124	41.2%
CT 17, BG 5	739	9	1.2%	155	21.0%	575	77.8%
CT 30.02, BG 2	518	0	0.0%	186	35.9%	332	64.1%
CT 30.02, BG 3	499	0	0.0%	78	15.6%	421	84.4%
CT 30.03, BG 1	584	20	3.4%	259	44.3%	305	52.2%
CT 30.03, BG 2	665	11	1.7%	197	29.6%	457	68.7%
CT 31.03, BG 2	572	0	0.0%	114	19.9%	458	80.1%
CT 31.03, BG 3	859	0	0.0%	230	26.8%	629	73.2%
CT 31.05, BG 2	650	27	4.2%	110	16.9%	513	78.9%
CT 31.06, BG 1	949	13	1.4%	146	15.4%	790	83.2%
CT 159.01, BG 1	1,118	29	2.6%	182	16.3%	907	81.1%
CT 159.01, BG 2	718	26	3.6%	118	16.4%	574	79.9%
DSA Aggregate	**8,172**	**157**	**1.9%**	**1,930**	**23.6%**	**6,085**	**74.5%**
Forsyth County	143,207	11,598	8.1%	49,923	34.9%	81,686	57.0%
Guilford County	199,540	14,214	7.1%	73,168	36.7%	112,158	56.2%
North Carolina	3,715,565	244,500	6.6%	1,216,772	32.7%	2,254,293	60.7%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015),Table B25044, "Tenure by Vehicles Available."

MEDIAN HOUSEHOLD INCOME (MHHI) IN THE PAST 12 MONTHS							
Geography	Total Population for MHHI	*Total MHHI	*MHHI Householder < 25 yrs	*MHHI Householder 25-44 yrs	*MHHI Householder 45-64 yrs	*MHHI Householder > 65 yrs	Weight (for DSA MHHI)
CT 17, BG 1	0						0.00
CT 17, BG 5	1,805	$57,284	$0	$80,455	$45,100	$54,861	11.44
CT 30.02, BG 2	1,175	$46,250	$0	$41,327	$52,176	$36,771	7.45
CT 30.02, BG 3	1,230	$50,729	$0	$54,213	$70,938	$42,361	7.80
CT 30.03, BG 1	1,209	$34,125	$0	$39,946	$31,161	$26,818	7.66
CT 30.03, BG 2	1,636	$57,951	$0	$58,796	$44,969	$53,056	10.37
CT 31.03, BG 2	1,478	$59,737	$0	$62,727	$72,054	$31,509	9.37
CT 31.03, BG 3	0						0.00
CT 31.05, BG 2	1,780	$63,942	$0	$78,056	$69,886	$56,765	11.28
CT 31.06, BG 1	2,222	$62,440	$0	$88,214	$62,857	$44,886	14.08
CT 159.01, BG 1	3,244	$69,375	$0	$102,031	$98,381	$25,000	20.56
CT 159.01, BG 2	0						0.00
***DSA**	**15,779**	**$58,439**	**$0**	**$73,743**	**$65,335**	**$40,687**	
Forsyth County	361,684	$45,471	$20,427	$45,432	$56,874	$38,008	
Guilford County	506,763	$45,651	$19,383	$44,544	$58,673	$37,795	
North Carolina	9,845,333	$46,868	$24,575	$50,479	$55,715	$35,696	

**Median Household Income values for the DSA are a weighted average of the MHHI values for each Block Group, weighted based on the proportion of total (aggregate) DSA population residing within each Block Group and calculated using the "Sum Product" function.*

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015) - Table B19049, "Median Household Income in the Past 12 Months (In 2015 Inflation-Adjusted Dollars) by Age of Householder"

EMPLOYMENT												
Geography	Total Pop Age 16+	Total Population Age 16+ In Labor Force		Civilian Labor Force					Armed Forces Labor Force		Total Population Age 16+ Not in Labor Force	
				Total	Employed		Unemployed					
CT 17, BG 1	585	401	68.5%	401	323	80.5%	78	19.5%	0	0.0%	184	31.5%
CT 17, BG 5	1,412	1,017	72.0%	979	872	89.1%	107	10.9%	38	3.7%	395	28.0%
CT 30.02, BG 2	1,070	641	59.9%	641	610	95.2%	31	4.8%	0	0.0%	429	40.1%
CT 30.02, BG 3	952	562	59.0%	562	544	96.8%	18	3.2%	0	0.0%	390	41.0%
CT 30.03, BG 1	990	505	51.0%	505	476	94.3%	29	5.7%	0	0.0%	485	49.0%
CT 30.03, BG 2	1,291	775	60.0%	775	709	91.5%	66	8.5%	0	0.0%	516	40.0%
CT 31.03, BG 2	1,138	697	61.2%	697	620	89.0%	77	11.0%	0	0.0%	441	38.8%
CT 31.03, BG 3	1,812	1,369	75.6%	1,369	1,282	93.6%	87	6.4%	0	0.0%	443	24.4%
CT 31.05, BG 2	1,407	858	61.0%	858	794	92.5%	64	7.5%	0	0.0%	549	39.0%
CT 31.06, BG 1	1,878	1,263	67.3%	1,263	1,124	89.0%	139	11.0%	0	0.0%	615	32.7%
CT 159.01, BG 1	2,468	1,742	70.6%	1,742	1,646	94.5%	96	5.5%	0	0.0%	726	29.4%
CT 159.01, BG 2	1,464	953	65.1%	953	915	96.0%	38	4.0%	0	0.0%	511	34.9%
DSA	**16,467**	**10,783**	**65.5%**	**10,745**	**9,915**	**92.3%**	**830**	**7.7%**	**38**	**0.4%**	**5,684**	**34.5%**
Forsyth County	284,965	180,182	63.2%	179,860	162,790	90.5%	17,070	9.5%	322	0.2%	104,783	36.8%
Guilford County	404,441	259,279	64.1%	258,863	236,140	91.2%	22,723	8.8%	416	0.2%	145,162	35.9%
North Carolina	7,812,594	4,909,108	62.8%	4,826,193	4,372,773	90.6%	453,420	9.4%	82,915	1.7%	2,903,486	37.2%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015) - Table B23025, "Employment Status for the Population 16 Years and Over"

COMMUTERS - PLACE OF WORK					
Geography	Total	Not in State of Residence		Not in County of Residence	
CT 17, BG 1	316	25	7.9%	4	1.3%
CT 17, BG 5	893	346	38.7%	0	0.0%
CT 30.02, BG 2	586	125	21.3%	0	0.0%
CT 30.02, BG 3	528	129	24.4%	0	0.0%
CT 30.03, BG 1	466	88	18.9%	0	0.0%
CT 30.03, BG 2	674	184	27.3%	0	0.0%
CT 31.03, BG 2	620	182	29.4%	10	1.6%
CT 31.03, BG 3	1,282	463	36.1%	29	2.3%
CT 31.05, BG 2	776	290	37.4%	21	2.7%
CT 31.06, BG 1	1,108	452	40.8%	16	1.4%
CT 159.01, BG 1	1,646	352	21.4%	0	0.0%
CT 159.01, BG 2	915	184	20.1%	0	0.0%
DSA	9,810	2,820	28.7%	80	0.8%
Forsyth County	160,181	30,912	19.3%	1,665	1.0%
Guilford County	232,011	32,859	14.2%	2,792	1.2%
North Carolina	4,361,591	109,968	2.5%	1,123,682	25.8%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015) - Table B08007, "Sex of Workers by Place of Work - State and County Level"

COMMUTERS - MODE OF TRAVEL													
Geography	Total Commuters	Car, Truck or Van						Public Transportation		Walk or Bike		Other	
		Total		Alone		Carpools							
CT 17, BG 1	316	293	92.7%	244	77.2%	49	15.5%	11	3.5%	0	0.0%	12	3.8%
CT 17, BG 5	893	757	84.8%	702	78.6%	55	6.2%	0	0.0%	17	1.9%	7	0.8%
CT 30.02, BG 2	586	560	95.6%	528	90.1%	32	5.5%	0	0.0%	0	0.0%	0	0.0%
CT 30.02, BG 3	528	528	100.0%	473	89.6%	55	10.4%	0	0.0%	0	0.0%	0	0.0%
CT 30.03, BG 1	466	460	98.7%	451	96.8%	9	1.9%	0	0.0%	0	0.0%	0	0.0%
CT 30.03, BG 2	674	626	92.9%	575	85.3%	51	7.6%	0	0.0%	0	0.0%	0	0.0%
CT 31.03, BG 2	620	565	91.1%	490	79.0%	75	12.1%	0	0.0%	9	1.5%	0	0.0%
CT 31.03, BG 3	1,282	1,182	92.2%	1,157	90.2%	25	2.0%	0	0.0%	0	0.0%	16	1.2%
CT 31.05, BG 2	776	688	88.7%	653	84.1%	35	4.5%	20	2.6%	0	0.0%	0	0.0%
CT 31.06, BG 1	1,108	1,047	94.5%	875	79.0%	172	15.5%	0	0.0%	16	1.4%	29	2.6%
CT 159.01, BG 1	1,646	1,593	96.8%	1,551	94.2%	42	2.6%	0	0.0%	1	0.1%	9	0.5%
CT 159.01, BG 2	915	865	94.5%	767	83.8%	98	10.7%	0	0.0%	0	0.0%	0	0.0%
DSA	9,810	9,164	93.4%	8,466	86.3%	698	7.1%	31	0.3%	43	0.4%	73	0.7%
Forsyth County	160,181	145,667	90.9%	133,598	83.4%	12,069	7.5%	1,966	1.2%	2,748	1.7%	1,782	1.1%
Guilford County	232,011	211,408	91.1%	190,311	82.0%	21,097	9.1%	2,907	1.3%	4,036	1.7%	1,314	0.6%
North Carolina	4,361,591	3,972,462	91.1%	3,537,155	81.1%	435,307	10.0%	48,600	1.1%	88,883	2.0%	35,057	0.8%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015) - Table B08301, "Means of Transportation to Work"

COMMUTERS - TRAVEL TIME TO WORK									
Geography	Pop. for Travel Time	Commute < 15 Minutes		Commute 15-30 Minutes		Commute 30-45 Minutes		Commute > 45 Minutes	
CT 17, BG 1	316	120	38.0%	164	51.9%	28	8.9%	4	1.3%
CT 17, BG 5	781	297	38.0%	296	37.9%	168	21.5%	20	2.6%
CT 30.02, BG 2	560	138	24.6%	312	55.7%	58	10.4%	52	9.3%
CT 30.02, BG 3	528	82	15.5%	219	41.5%	159	30.1%	68	12.9%
CT 30.03, BG 1	460	97	21.1%	290	63.0%	73	15.9%	0	0.0%
CT 30.03, BG 2	626	105	16.8%	330	52.7%	188	30.0%	3	0.5%
CT 31.03, BG 2	574	39	6.8%	289	50.3%	205	35.7%	41	7.1%
CT 31.03, BG 3	1,198	198	16.5%	500	41.7%	424	35.4%	76	6.3%
CT 31.05, BG 2	708	51	7.2%	347	49.0%	223	31.5%	87	12.3%
CT 31.06, BG 1	1,092	121	11.1%	334	30.6%	517	47.3%	120	11.0%
CT 159.01, BG 1	1,603	200	12.5%	589	36.7%	599	37.4%	215	13.4%
CT 159.01, BG 2	885	145	16.4%	246	27.8%	419	47.3%	75	8.5%
DSA Aggregate	**9,331**	**1,593**	**17.1%**	**3,916**	**42.0%**	**3,061**	**32.8%**	**761**	**8.2%**
Forsyth County	152,608	47,199	30.9%	72,083	47.2%	21,698	14.2%	11,628	7.6%
Guilford County	220,368	67,474	30.6%	102,444	46.5%	35,173	16.0%	15,277	6.9%
North Carolina	4,157,395	1,173,623	28.2%	1,673,507	40.3%	798,134	19.2%	512,131	12.3%

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015),Table B08303, "Travel Time to Work"

HOUSING									
Geography	Total Housing Units	Total Occupied		Owner Occupied		Renter Occupied		Median Home Value	Weight
CT 17, BG 1	367	301	82.0%	76	25.2%	225	74.8%	$63,400	4.01
CT 17, BG 5	767	739	96.3%	724	98.0%	15	2.0%	$118,200	8.38
CT 30.02, BG 2	551	518	94.0%	429	82.8%	89	17.2%	$134,700	6.02
CT 30.02, BG 3	558	499	89.4%	395	79.2%	104	20.8%	$133,400	6.10
CT 30.03, BG 1	645	584	90.5%	517	88.5%	67	11.5%	$135,300	7.05
CT 30.03, BG 2	740	665	89.9%	458	68.9%	207	31.1%	$133,900	8.09
CT 31.03, BG 2	664	572	86.1%	466	81.5%	106	18.5%	$200,000	7.26
CT 31.03, BG 3	911	859	94.3%	734	85.4%	125	14.6%	$183,700	9.96
CT 31.05, BG 2	778	650	83.5%	604	92.9%	46	7.1%	$143,100	8.50
CT 31.06, BG 1	1,067	949	88.9%	884	93.2%	65	6.8%	$172,400	11.66
CT 159.01, BG 1	1,223	1,118	91.4%	958	85.7%	160	14.3%	$192,200	13.37
CT 159.01, BG 2	877	718	81.9%	570	79.4%	148	20.6%	$143,900	9.59
DSA	**9,148**	**8,172**	**89.3%**	**6,815**	**83.4%**	**1,357**	**16.6%**	**$153,655**	
Forsyth County	159,748	143,207	89.6%	88,917	62.1%	54,290	37.9%	$151,100	
Guilford County	222,057	199,540	89.9%	118,976	59.6%	80,564	40.4%	$156,100	

**Median Home Value for the DSA is a weighted average of the Median Home Values for each Block Group, weighted based on the proportion of housing units in eahc block group relative to the total (aggregate) number of housing units in the DSA and calculated using the "Sum Product" function.*

Data Source: US Census Bureau, American Community Survey 5-year Estimates (2011-2015) - Table B25003, "Tenure" & Table B25077, "Median Value (Dollars)"

Appendix C: Local Government Interviews

NC Department of Transportation Community Studies Group, Human Environment Section

Local Planner Input Form

STIP Project R-2577 Forsyth & Guilford County - Community Impact Assessment

Contact Information

Interviewee Name: Gary Roberts, Jr. AICP

Date: 3/28/17

Title/Position: Project Planner

Phone Number: 336-747-0765

Organization/Agency: Winston-Salem/Forsyth County Planning Board

Email: garyr@cityofws.org

Completed Via: ☒ Email ☐ Phone

Interview Information/Instructions

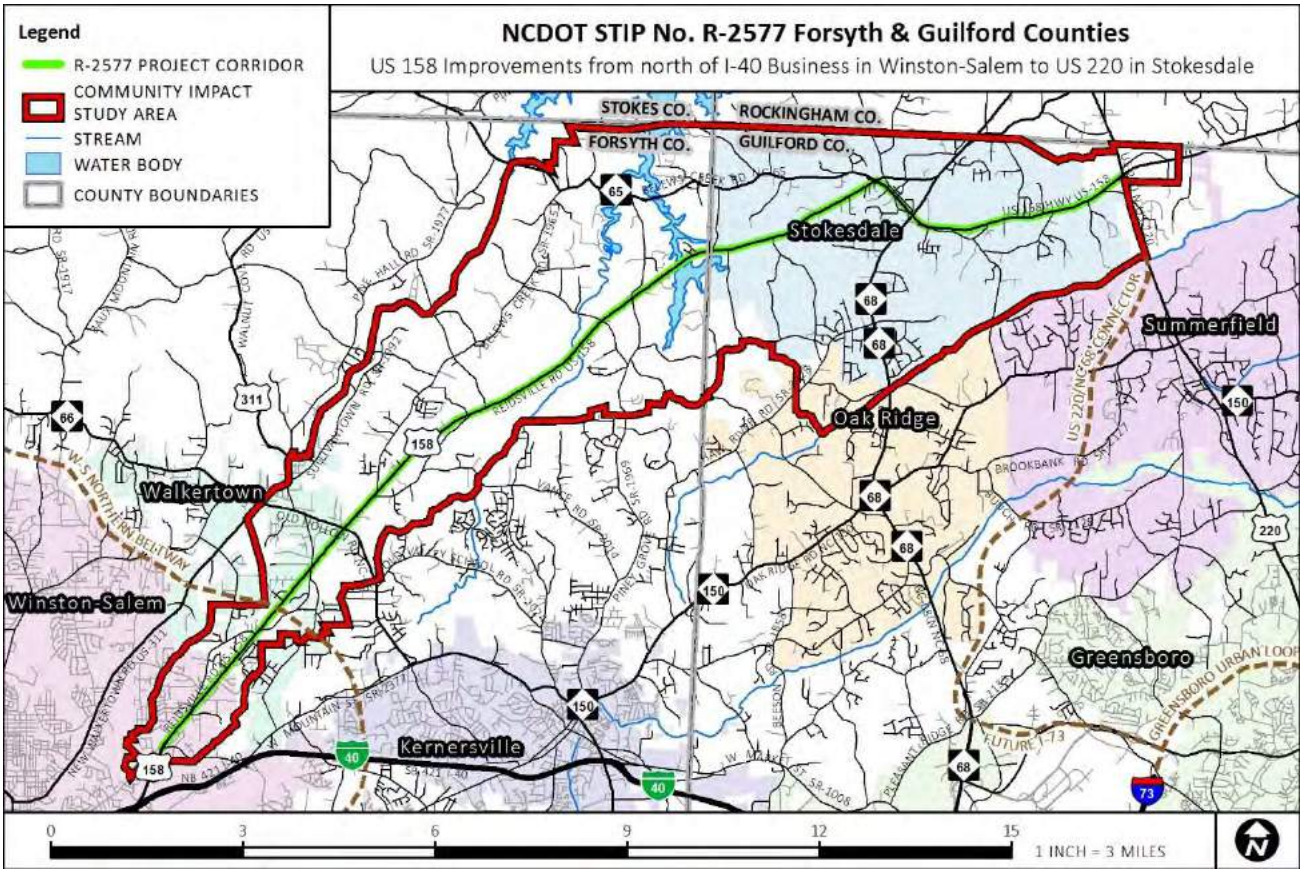
Using the project information and map below, please respond to the following questions by typing your answers in the space provided. Then save this file for your records and e-mail the ***new*** file back to the original sender. If you would prefer to complete a hard copy of this form, please send all sheets to the address or email below:

Martha Hodge, AICP
CALYX Engineers + Consultants
mhodge@CALYXengineers.com
(919) 858-1811

Martha Hodge, AICP
CALYX Engineers + Consultants
6750 Tryon Rd.
Cary, NC 27518

Project Information

Project Type: ☐ Bridge ☒ Corridor



NCDOT proposes to improve US 158 from north of US 421/ I-40 Business in Winston-Salem to US 220 in Stokesdale for a total length of approximately 18.8 miles. The project is included in the NC Statewide Transportation Improvement Program (STIP) as project number R-2577 and proposes to widen the existing two-lane US 158 roadway to a multi-lane, median divided facility, including a new location section to bypass the existing US 158 alignment in Stokesdale. The R-2577 project is divided into three sections:

- **A.** Section A begins west of Old Greensboro Road (SR 2357) in Winston-Salem and extends to Old Belews Creek Road (SR 1965) in Forsyth County.
- **B.** Section B begins at Old Belews Creek Road (SR 1965) in Forsyth County and extends to Anthony Road (SR 2034) in Stokesdale (Guilford County).
- **C.** Section C begins at Anthony Road (SR 2034) in Stokesdale and extends to the junction of US 158 and US 220, including a new location bypass section of existing US 158.

Right-of-way acquisition and construction for each of the three sections will occur independently. Environmental documents and permits for the project will include all three project sections. The current *2017-2027 Draft STIP* includes funding for Section A only, with initial right-of-way acquisition scheduled to begin in FY 2020 and construction in FY 2022. Sections B and C of the project are currently unfunded.

The purpose of the project is to improve traffic flow and level-of-service (LOS) along US 158. The project will improve existing and anticipated transportation deficiencies associated with the growth of new residential communities in northeast Guilford County and transitioning rural to suburban land uses along the corridor and its vicinity.

For all applicable questions, please provide a detailed explanation of your response in the field provided.	***Check if item is applicable***
Growth and Development	
1. Are there any known plans for development in the vicinity of the project? Nothing that I know of that is not already built.	☐
2. Are there any adopted plans for growth or economic development that could directly affect or be affected by this project? Yes see this link to the Walkertown Area Plan and the Northeast Suburban Area Plans which gives guidance for development in this general area: http://www.cityofws.org/Departments/Planning/Area-Plans/Walkertown-Area http://www.cityofws.org/Departments/Planning/Area-Plans/Northeast-Suburban	☒
3. Are there plans to extend water/sewer lines or to build any new facilities, such as fire stations, schools, or other facilities, in the vicinity of the project? None that I know of.	☐
4. Are there any specific business and/or economic resources present in the project area, such as business parks, distribution centers, manufacturing facilities, etc.? None that I know of.	☐
Special Populations	
5. Are you aware of any minority, low-income or limited English proficiency (LEP) populations/ communities in the vicinity of the project? If so, please provide the locations of these populations in the area. ***[If yes, proceed to Question 6. If no, skip to Question 7.]*** None that I know of.	☐

6. Are there specific community resources or services that are used by minority, low-income or LEP populations in the vicinity of the project? How is the project likely to affect minority and low-income populations? None that I know of. I do not know.	☐
7. Are there any tribal groups connected with land, religious, ethnic or other special populations with different mobility needs or outreach needs in the project area? None that I know of.	☐
8. Who should we contact to discuss outreach needs for any special populations? Please provide input on community leader contacts, media sources or other ways to reach these populations. I do not know.	☐
Access, Accessibility, and Mobility	
9. Is there pedestrian or bicycle activity/traffic or transit use along the project? If so, please describe multimodal activity in the project area. The northern limits of WS bus route 94 runs along US158 terminating at Grover Street: http://www.wstransit.com/wp-content/uploads/2016/12/2017-Systems-Routes-Mtg-Map_edited-Final-with-Transfers-Mobile.pdf	☒
10. Are there any existing access, accessibility, or mobility concerns or any barriers to non-auto travel in the area? Please consider all modes. None that I know of.	☐
11. Are there any adopted plans for pedestrian, greenway, bicycle, or transit facilities in the area? For each plan, please provide a description of how the plan applies to the project area, the title of the plan, its year of adoption, and the current status of its implementation. Please see this link for our Pedestrian Facilities Plan: http://www.cityofws.org/departments/transportation/planning/plans-and-studies/2007-pedestrian-facilities-maps http://www.cityofws.org/Departments/Transportation/Planning/Plans-and-Studies/Comprehensive-Transportation-Plan	☒
Agricultural Operations	
12. Are you aware of any active agricultural operations in the vicinity of the project? If so, please describe these operations (e.g. size, ownership, crops, years farmed, suppliers, customers, value to the community). *[If yes, answer Question 12. If no, skip to Question 13.]* None that I know of other that looking at current aerial images.	☐
13. Are farm support services—such as farm suppliers, equipment dealers, processing and storage facilities, and farmer's markets—located in the vicinity of the project? If so, please describe these services (e.g. type, location). None that I know of.	☐
14. Does the project lie within a VAD or EVAD district, or are you aware of any land with other farmland protections (plans, tax districts or credits, trust, agricultural zoning, deed restrictions)? If so, please describe the nature and location of these areas and properties. Yes there are some VAD districts that you can see on this link to the Forsyth County Tax Departments GeoData. Click on the VAD tab under the Boundaries Map Layer: http://maps.co.forsyth.nc.us/forsythjs/	☒

Other Notable Features	
15. Are there any recreational properties within the project area that were purchased or improved with Land and Water Conservation Act funds? I do not know.	☐
16. Are there any other specific notable community resources or issues in the project area? (e.g. socio-economic resources, recreational resources, community safety concerns, cohesive neighborhoods, areas in decline) If so, please describe. Belews Lake.	☒
Detours and Closures	
17. Are there any future time periods or events that you know of where road or bridge closure or reduction in number of lanes for construction would be of particular concern? Possibly during the Spring and Fall Martinsville VA races.	☒
18. *[If applicable]* Based on your knowledge of the project area, do you have any concerns with the condition/capacity of potential detour routes, or the location of resources along these routes? Not that I know of.	☐
19. Rate the overall impact on local planning objectives if the bridge or roadway were closed or at reduced capacity for up to a year: ☐ Positive Impact ☐ No Impact ☐ Low Impact ☒ Moderate Impact ☐ High Impact	
Closing Questions	
20. Are road names referenced by the names locals would use? Yes as far as I can see from the above map.	☒
21. Is there anyone else you feel should be contacted regarding this project (i.e. local officials or stakeholders)? The Town of Walkertown, Town Manager Scott Snow at 336-595-4212.	☒
22. Do you have any additional comments about this project? Question #19 is hard to answer especially in regard to what exactly “planning objectives” means. There may be some areas of the project where sidewalks would be helpful.	☒

NC Department of Transportation Community Studies Group, Environmental Analysis Unit

Local Planner Input Form

STIP Project R-2577 Forsyth & Guilford County - Community Impact Assessment

Contact Information

Interviewee Name: Oliver Bass

Date: 12/5/17

Title/Position: Senior Planner

Phone Number: 336-641-3578

Organization/Agency: Guilford Co Planning

Email: obass@myguilford.com

Completed Via: ☒ Email ☐ Phone

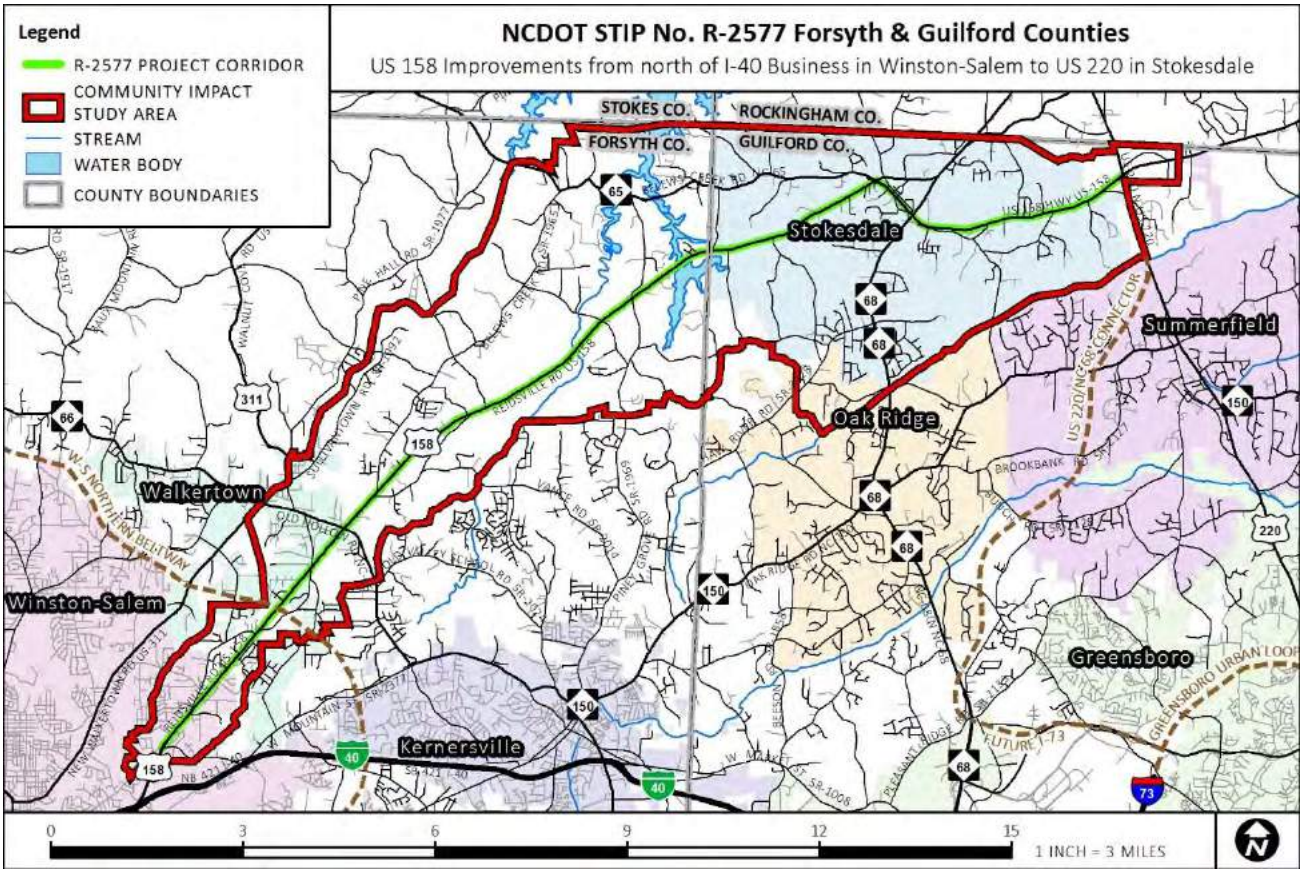
Interview Information/Instructions

Using the project information and map below, please respond to the following questions and return your completed form via email or mail to the following:

Martha Hodge, AICP
CALYX Engineers and Consultants
6750 Tryon Rd.
Cary, NC 27518
mhodge@CALYXengineers.com
(919) 858-1811

Project Information

Project Type: ☐ Bridge ☒ Corridor



NCDOT proposes to improve US 158 from north of US 421/ I-40 Business in Winston-Salem to US 220 in Stokesdale for a total length of approximately 18.8 miles. The project is included in the NC Statewide Transportation Improvement Program (STIP) as project number R-2577 and proposes to widen the existing two-lane US 158 roadway to a multi-lane, median divided facility, including a new location section to bypass the existing US 158 alignment in Stokesdale. The R-2577 project is divided into three sections:

- **A.** Section A begins west of Old Greensboro Road (SR 2357) in Winston-Salem and extends to Old Belews Creek Road (SR 1965) in Forsyth County.
- **B.** Section B begins at Old Belews Creek Road (SR 1965) in Forsyth County and extends to Anthony Road (SR 2034) in Stokesdale (Guilford County).
- **C.** Section C begins at Anthony Road (SR 2034) in Stokesdale and extends to the junction of US 158 and US 220, including a new location bypass section of existing US 158.

Right-of-way acquisition and construction for each of the three sections will occur independently. Environmental documentation and permitting for the project will consider all sections. Right-of-way and construction of Section A are programmed in the current adopted 2018-2027 STIP for 2020 and 2022. Section B is currently included in the Developmental Program with right-of-way beginning in 2024 and construction in 2026. Section C of the project is currently unfunded.

The purpose of the project is to improve traffic flow and level-of-service (LOS) along US 158. The project will improve existing and anticipated transportation deficiencies associated with the growth of new residential communities in northeast Guilford County and transitioning rural to suburban land uses along the corridor and its vicinity.

For all applicable questions, please provide a detailed explanation of your response in the field provided.	*Check if item is applicable*
Growth and Development	
1. Are there any known plans for development in the vicinity of the project? The Town has received several minor and major subdivision applications in the project area.	☒
2. Are there any adopted plans for growth or economic development that could directly affect or be affected by this project? The Stokesdale Land Use plan calls for low density residential in most of west towards Forsythe/Designated Town Core is economic center for town.	☒
3. Are there plans to extend water/sewer lines or to build any new facilities, such as fire stations, schools, or other facilities, in the vicinity of the project? New subdivisions may require water line extension when approximate to existing water lines	☒
4. Are there any specific business and/or economic resources present in the project area, such as business parks, distribution centers, manufacturing facilities, etc.? The CBD area is located at Hwy 150/68 cross road. Some moderate commercial and industry developed in town core.	☒
Special Populations	
5. Are you aware of any minority, low-income or limited English proficiency (LEP) populations/ communities in the vicinity of the project? If so, please provide the locations of these populations in the area. ***[If yes, proceed to Question 6. If no, skip to Question 7.]*** Highly likely but it has not been quantified.	☒
6. Are there specific community resources or services that are used by minority, low-income or LEP populations in the vicinity of the project? How is the project likely to affect minority and low-income populations? Demographics of area means there are likely low-income/minority pop in area. Not quantified	☒

7. Are there any tribal groups connected with land, religious, ethnic or other special populations with different mobility needs or outreach needs in the project area? Likely but not quantified	☒
8. Who should we contact to discuss outreach needs for any special populations? Please provide input on community leader contacts, media sources or other ways to reach these populations. Northwest Observer is main newspaper serving that part of county.	☒
Access, Accessibility, and Mobility	
9. Is there pedestrian or bicycle activity/traffic or transit use along the project? If so, please describe multimodal activity in the project area. No substantial activity. Transit is not available or limited.	☒
10. Are there any existing access, accessibility, or mobility concerns or any barriers to non-auto travel in the area? Please consider all modes. Much of area lacks sidewalks or protected bike lanes.	☒
11. Are there any adopted plans for pedestrian, greenway, bicycle, or transit facilities in the area? For each plan, please provide a description of how the plan applies to the project area, the title of the plan, its year of adoption, and the current status of its implementation. Greensboro Bike-Ped (2015) plan proposes future bike lanes in project area.	☒
Agricultural Operations	
12. Are you aware of any active agricultural operations in the vicinity of the project? If so, please describe these operations (e.g. size, ownership, crops, years farmed, suppliers, customers, value to the community). ***[If yes, answer Question 12. If no, skip to Question 13.]***	☐
13. Are farm support services—such as farm suppliers, equipment dealers, processing and storage facilities, and farmer's markets—located in the vicinity of the project? If so, please describe these services (e.g. type, location).	☐
14. Does the project lie within a VAD or EVAD district, or are you aware of any land with other farmland protections (plans, tax districts or credits, trust, agricultural zoning, deed restrictions)? If so, please describe the nature and location of these areas and properties. VAD, Bona Fide Farms are in the area, mainly in west side of town.	☒
Other Notable Features	
15. Are there any recreational properties within the project area that were purchased or improved with Land and Water Conservation Act funds? No	☒
16. Are there any other specific notable community resources or issues in the project area? (e.g. socio-economic resources, recreational resources, community safety concerns, cohesive neighborhoods, areas in decline) If so, please describe. Traffic safety as expressed through past rezoning and other public hearings.	☒
Detours and Closures	
17. Are there any future time periods or events that you know of where road or bridge closure or reduction in number of lanes for construction would be of particular concern? During peak-hour traffic. Major east/west corridor for eastern part of town.	☒

18. ***[If applicable]*** **Based on your knowledge of the project area, do you have any concerns with the condition/capacity of potential detour routes, or the location of resources along these routes?** Potential increase on Highway 68 as alternate route to Greensboro/High Point area.	☐
19. Rate the overall impact on local planning objectives if the bridge or roadway were closed or at reduced capacity for up to a year: ☐ Positive Impact ☐ No Impact ☐ Low Impact ☐ Moderate Impact ☒ High Impact	
Closing Questions	
20. Are road names referenced by the names locals would use? Yes	☒
21. Is there anyone else you feel should be contacted regarding this project (i.e. local officials or stakeholders)? Kim Hemric, Town Administrator, 336-643-4011	☒
22. Do you have any additional comments about this project? None	☐

NC Department of Transportation Community Studies Group, Environmental Analysis Unit

Local Schools Input Form

STIP Project R-2577 Forsyth & Guilford County - Community Impact Assessment

Contact Information

Interviewee Name: Beatrice Cheely

Date: 12/12/2017

Title/Position: TIMS Coordinator

Phone Number: 336-370-8085

Organization/Agency: Guilford County Schools Transportation Department

Email: cheelyb@gcsnc.com

Completed Via: ☒ Email ☐ Phone

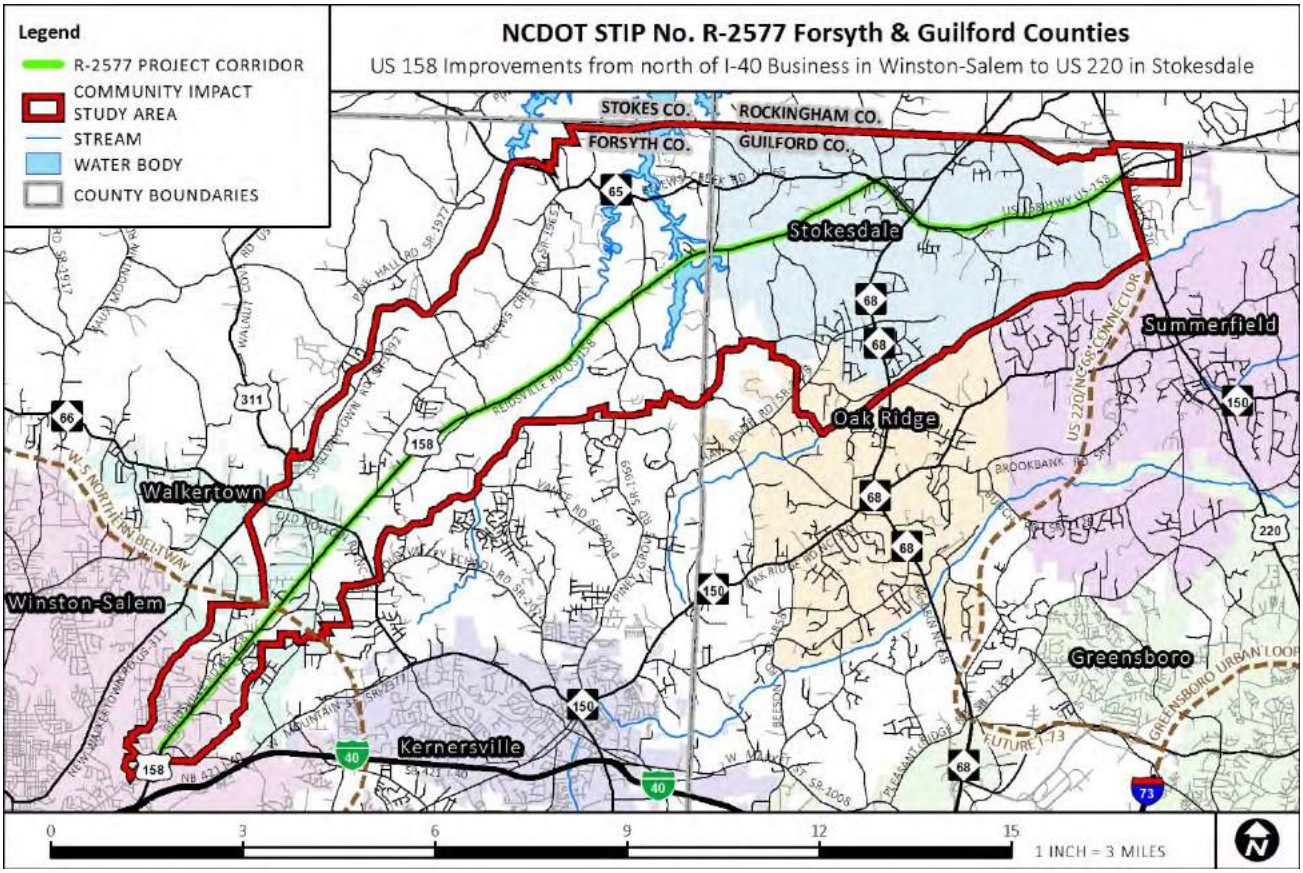
Interview Information/Instructions

Using the project information and map below, please respond to the following questions and return your completed form via email or mail to the following:

Martha Hodge, AICP
CALYX Engineers and Consultants
6750 Tryon Rd.
Cary, NC 27518
mhodge@CALYXengineers.com
(919) 858-1811

Project Information

Project Type: ☐ Bridge ☒ Corridor



NCDOT proposes to improve US 158 from north of US 421/ I-40 Business in Winston-Salem to US 220 in Stokesdale for a total length of approximately 18.8 miles. The project is included in the NC Statewide Transportation Improvement Program (STIP) as project number R-2577 and proposes to widen the existing two-lane US 158 roadway to a multi-lane, median divided facility, including a new location section to bypass the existing US 158 alignment in Stokesdale. The R-2577 project is divided into three sections:

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- **C.** Section C begins at Anthony Road (SR 2034) in Stokesdale and extends to the junction of US 158 and US 220, including a new location bypass section of existing US 158.

Right-of-way acquisition and construction for each of the three sections will occur independently. Environmental documentation and permitting for the project will consider all sections. Right-of-way and construction of Section A are programmed in the current adopted 2018-2027 STIP for 2020 and 2022. Section B is currently included in the Developmental Program with right-of-way beginning in 2024 and construction in 2026. Section C of the project is currently unfunded.

The purpose of the project is to improve traffic flow and level-of-service (LOS) along US 158. The project will improve existing and anticipated transportation deficiencies associated with the growth of new residential communities in northeast Guilford County and transitioning rural to suburban land uses along the corridor and its vicinity.

For all applicable questions, please provide a detailed explanation of your response in the field provided.	***Check if item is applicable***
1. How many school buses *[cross the bridge/pass through the corridor]* per day (total # of daily buses, total # daily of trips)? We have 14 Buses making approximately 34 trips total through this corridor.	√
2. Is the corridor used by carpool traffic or pedestrians to access local schools? If yes, please describe the location and time(s) of day. N/A	☐
3. *[Applicable if schools are located in or near the project area]* Are there any Safe Routes to School plans in place at schools in the vicinity of the project? N/A	☐
4. Based on your knowledge of the project area, do you have any concerns with the condition/capacity of potential detour routes or the location of resources along these routes with respect to school traffic? The amount of traffic on this corridor will probably cause they most delays if there is a detour but with adequate notice, our school buses could be rerouted to accommodate the changes.	√
5. Are there any future time periods or events that you know of where bridge or road closure or reduction in number of lanes for construction would be of particular concern? N/A	☐
6. Rate the overall impact on school transportation if the bridge or roadway were closed or at reduced capacity for up to a year: ☐ No Impact ☐ Low Impact √ Moderate Impact ☐ High Impact	
7. Are road names referenced by the names locals would use? N/A	☐

8. Is there anyone else you feel should be contacted regarding this project (i.e. local officials or stakeholders)? Curtis Stacey, Asst Director of Transportation or Beatrice Cheely, TIMS Coordinator , both at Guilford County Schools Transportation Department, 131 Franklin Blvd, Greensboro, NC 27401, 336-370-8920	√
9. Are there any other concerns you have regarding the potential impact of this project on school transportation services or any additional comments? Please be as specific as possible. If we are notified in advance of any road closings we can let our bus drivers know in time to make necessary adjustments.	√

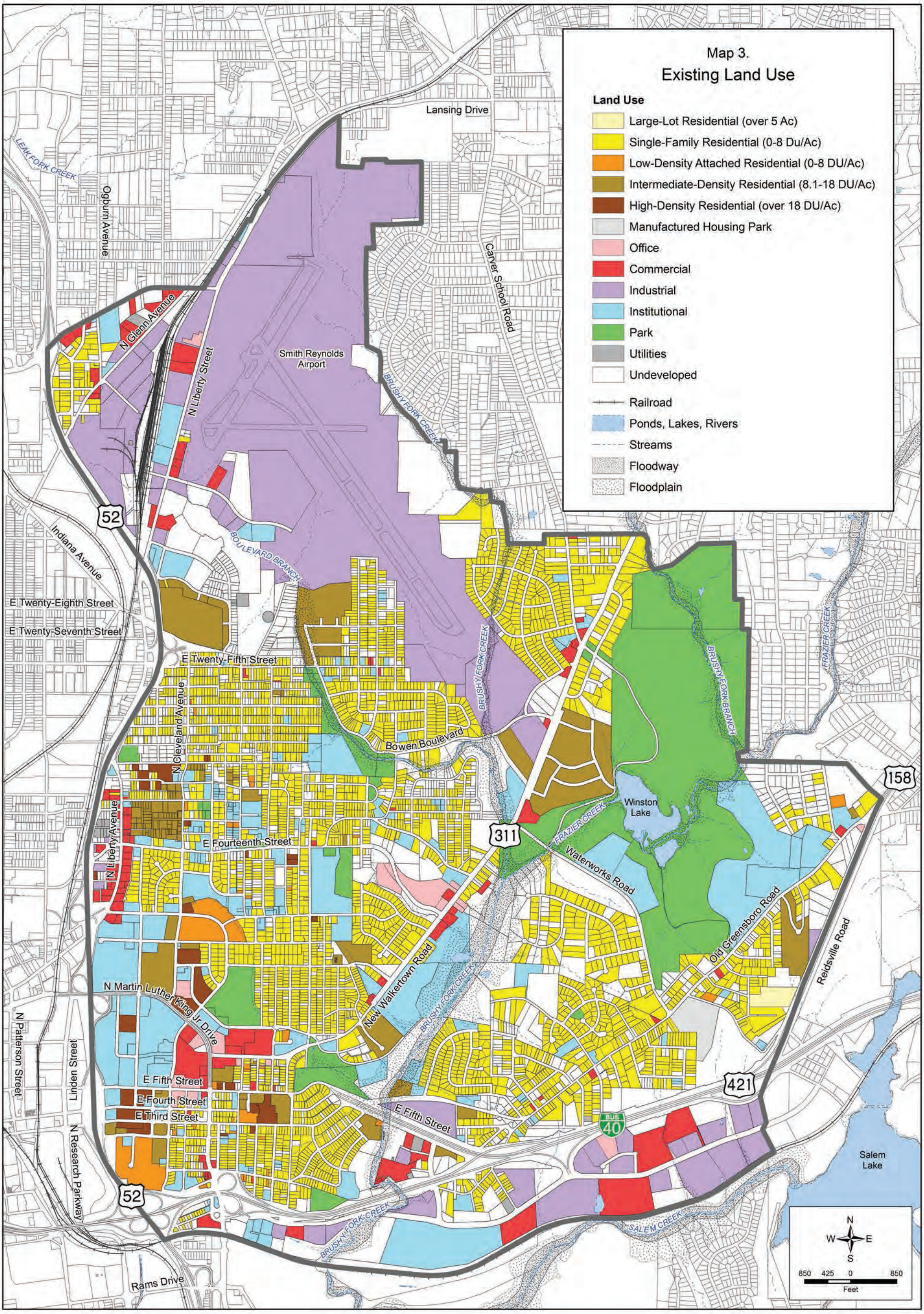
Appendix D: Mapping from Local Area Plans

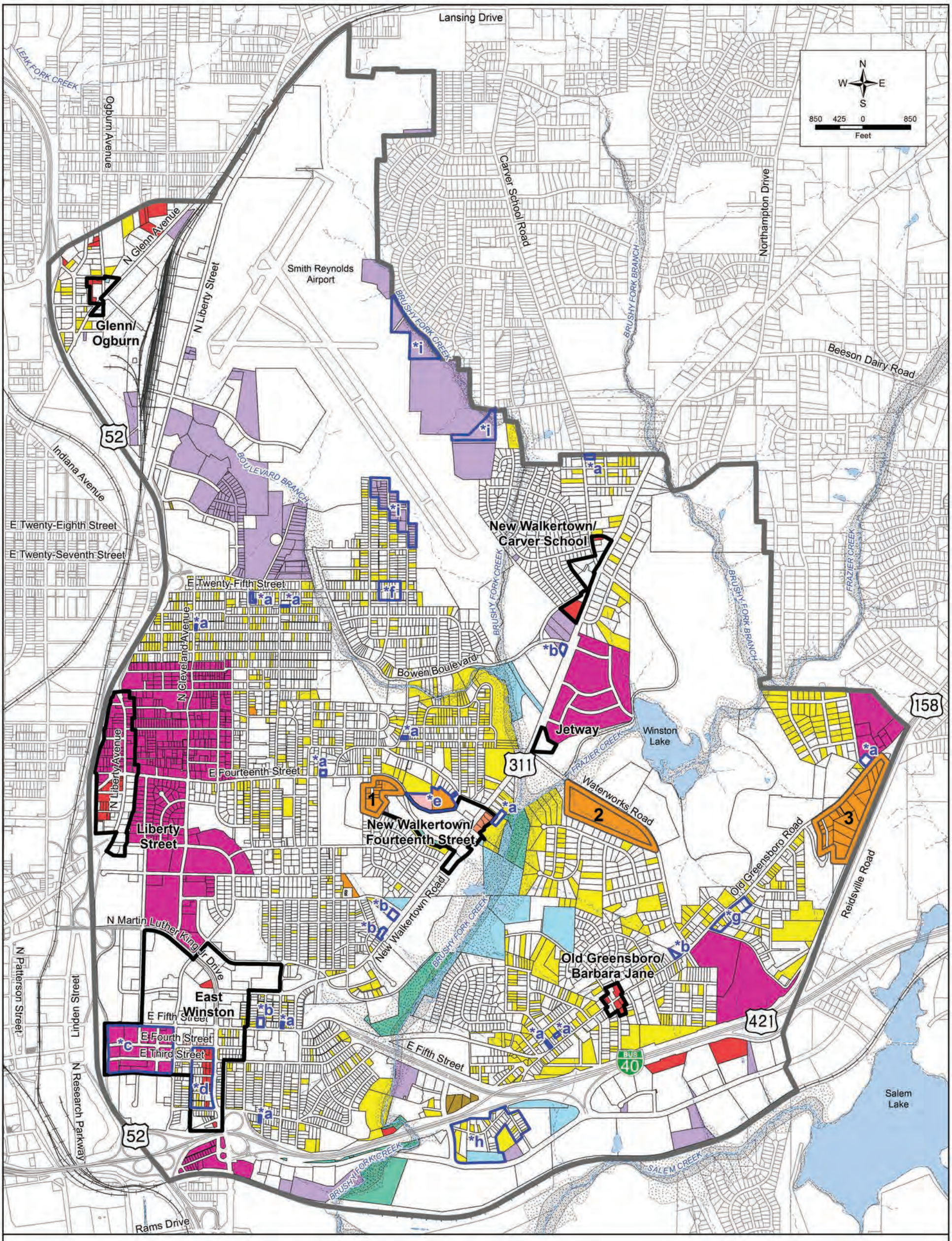
Forsyth County……**D-2**

- *East-Northeast Area Plan Update (2016, Winston-Salem – Forsyth County Planning Board)*: Existing Land Use Map & Future Land Use Map
- *Walkertown Area Plan (2014, Winston-Salem – Forsyth County Planning Board)*: Existing Land Use Map & Future Land Use Map
- *Northeast Suburban Area Plan (2011, Winston-Salem – Forsyth County Planning Board)*: Existing Land Use Map & Future Land Use Map

Guilford County……**D-8**

- Town of Stokesdale Future Land Use Update (2007, Guilford County)


Map 3.
Existing Land Use
Land Use
Large-Lot Residential (over 5 Ac)
Single-Family Residential (0-8 Du/Ac)
Low-Density Attached Residential (0-8 DU/Ac)
Intermediate-Density Residential (8.1-18 DU/Ac)
High-Density Residential (over 18 DU/Ac)
Manufactured Housing Park
Office
Commercial
Industrial
Institutional
Park
Utilities
Undeveloped
Railroad
Ponds, Lakes, Rivers
Streams
Floodway
Floodplain
Lansing Drive
LEAK FORK CREEK
Ogburn Avenue
N Glenn Avenue
N Liberty Street
Smith Reynolds Airport
Carver School Road
BRUSHY FORK CREEK
52
Indiana Avenue
BOULEVARD BRANCH
E Twenty-Eighth Street
E Twenty-Seventh Street
E Twenty-Fifth Street
N Cleveland Avenue
N Liberty Avenue
E Fourteenth Street
Bowen Boulevard
BRUSHY FORK CREEK
BRUSHY FORK BRANCH
FRAZIER CREEK
Winston Lake
311
158
Waterworks Road
Old Greensboro Road
Reidsville Road
N Martin Luther King Jr Drive
New Walkertown Road
E Fifth Street
E Fourth Street
E Third Street
N Patterson Street
N Linden Street
N Research Parkway
421
BUS 40
Salem Lake
SALEM CREEK
Rams Drive
N
W
E
S
850 425 0 850
Feet



Map 5.

Proposed Land Use Changes

(See Area Plan for specific recommendations starting page 23.)

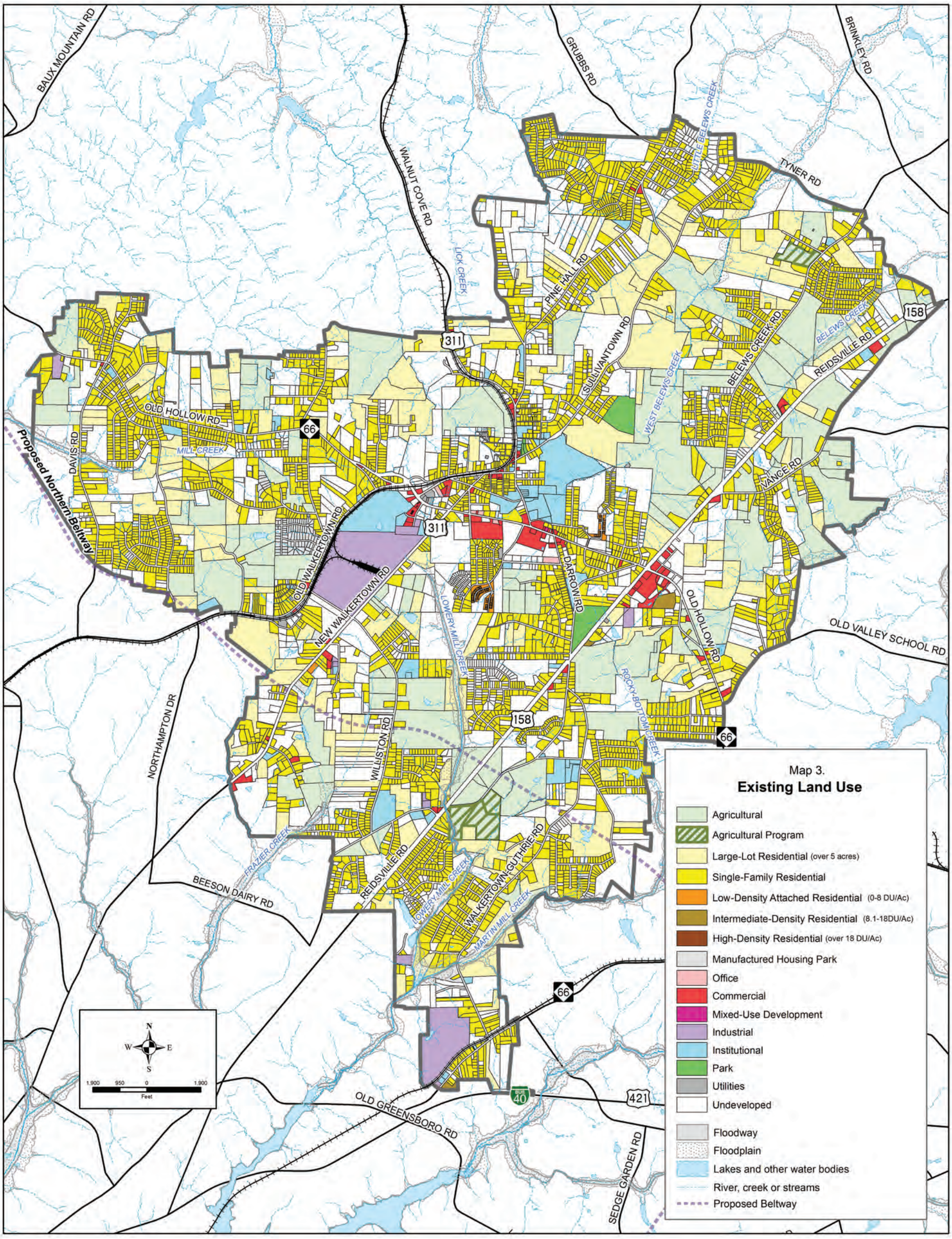
Proposed Land Use

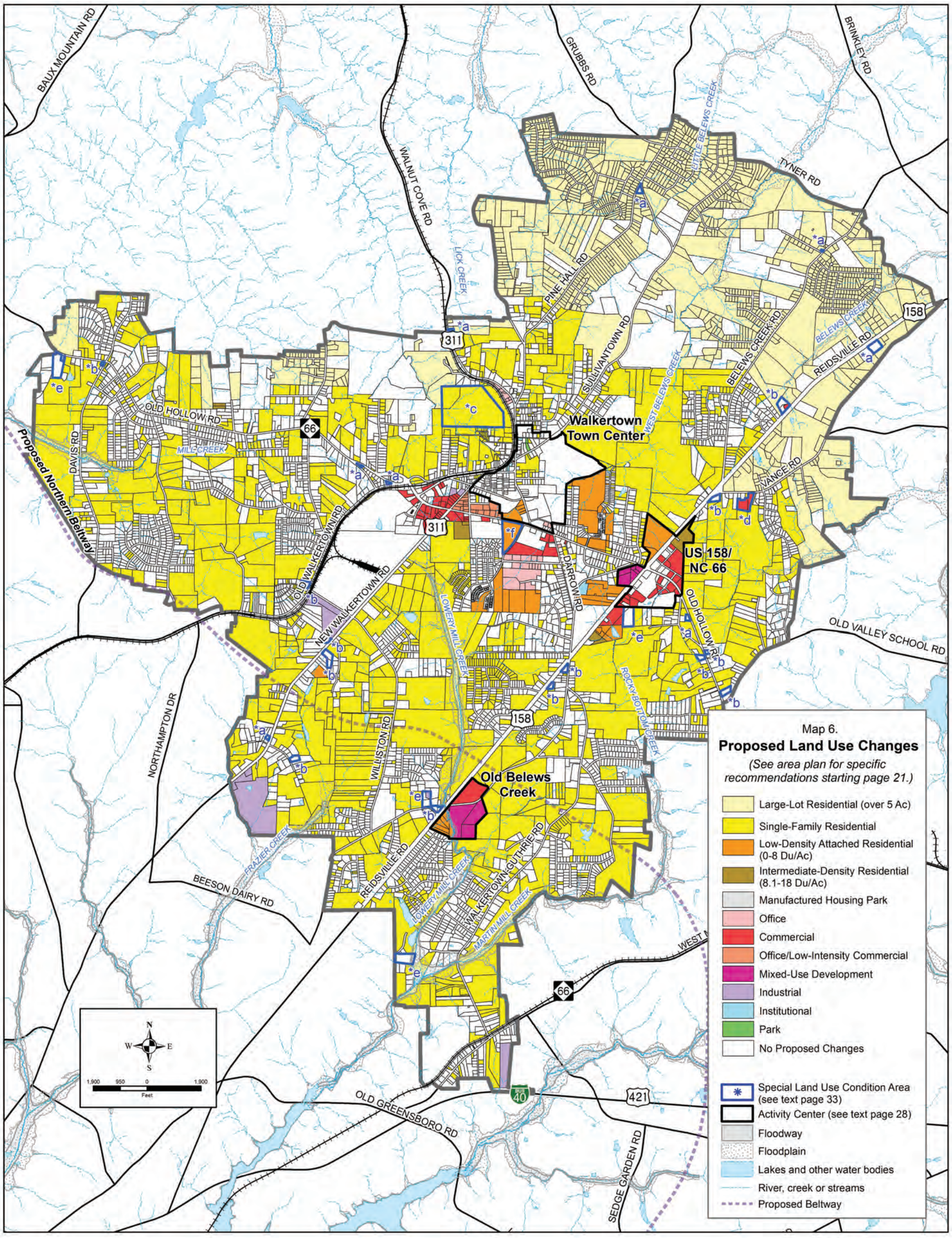
- Single-Family Residential (0-8 Du/Ac)
- Low-Density Attached Residential (0-8 DU/Ac)
- Intermediate-Density Residential (8.1-18 DU/Ac)
- Office
- Office/Low-Intensity Commercial
- Commercial
- Mixed-Use Development
- Industrial
- Institutional
- Open space

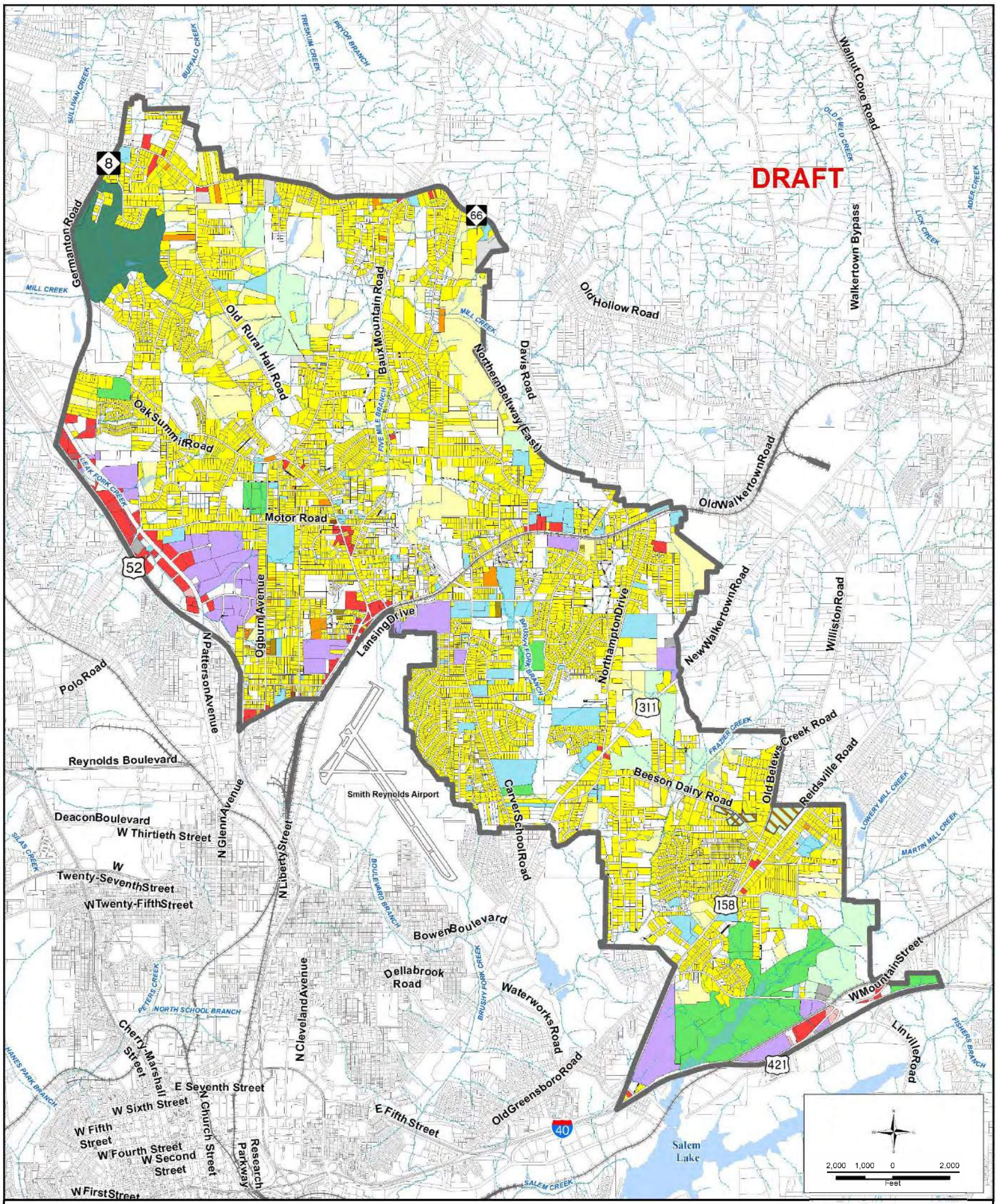
Special Land Use Conditions

- Activity Center
- Special Land Use Condition Area
- Residential Opportunity Area: Low-Density Attached Resdential

- Railroad
- Ponds, Lakes, Rivers
- Streams
- Floodway
- Floodplain


BAUX MOUNTAIN RD
WALNUT COVE RD
GRUBBS RD
BRINKLEY RD
LITTLE BELEWS CREEK
TYNER RD
LICK CREEK
PINE HALL RD
SULLIVANTOWN RD
BELEWS CREEK RD
BELEWS CREEK
REIDSVILLE RD
158
311
WEST BELEWS CREEK
OLD HOLLOW RD
66
MILL CREEK
DAVIS RD
Proposed Northern Beltway
VANCE RD
OLD WALKERTOWN RD
NEW WALKERTOWN RD
DARROW RD
LOWERY MILL CREEK
OLD VALLEY SCHOOL RD
ROCKY BOTTOM CREEK
NORTHAMPTON DR
WILLISTON RD
FRAZIER CREEK
BEESON DAIRY RD
WALKERTOWN-GUTHRIE RD
MARTIN MILL CREEK
OLD GREENSBORO RD
SEDGE GARDEN RD
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Feet
Map 3.
Existing Land Use
Agricultural
Agricultural Program
Large-Lot Residential (over 5 acres)
Single-Family Residential
Low-Density Attached Residential (0-8 DU/Ac)
Intermediate-Density Residential (8.1-18DU/Ac)
High-Density Residential (over 18 DU/Ac)
Manufactured Housing Park
Office
Commercial
Mixed-Use Development
Industrial
Institutional
Park
Utilities
Undeveloped
Floodway
Floodplain
Lakes and other water bodies
River, creek or streams
Proposed Beltway

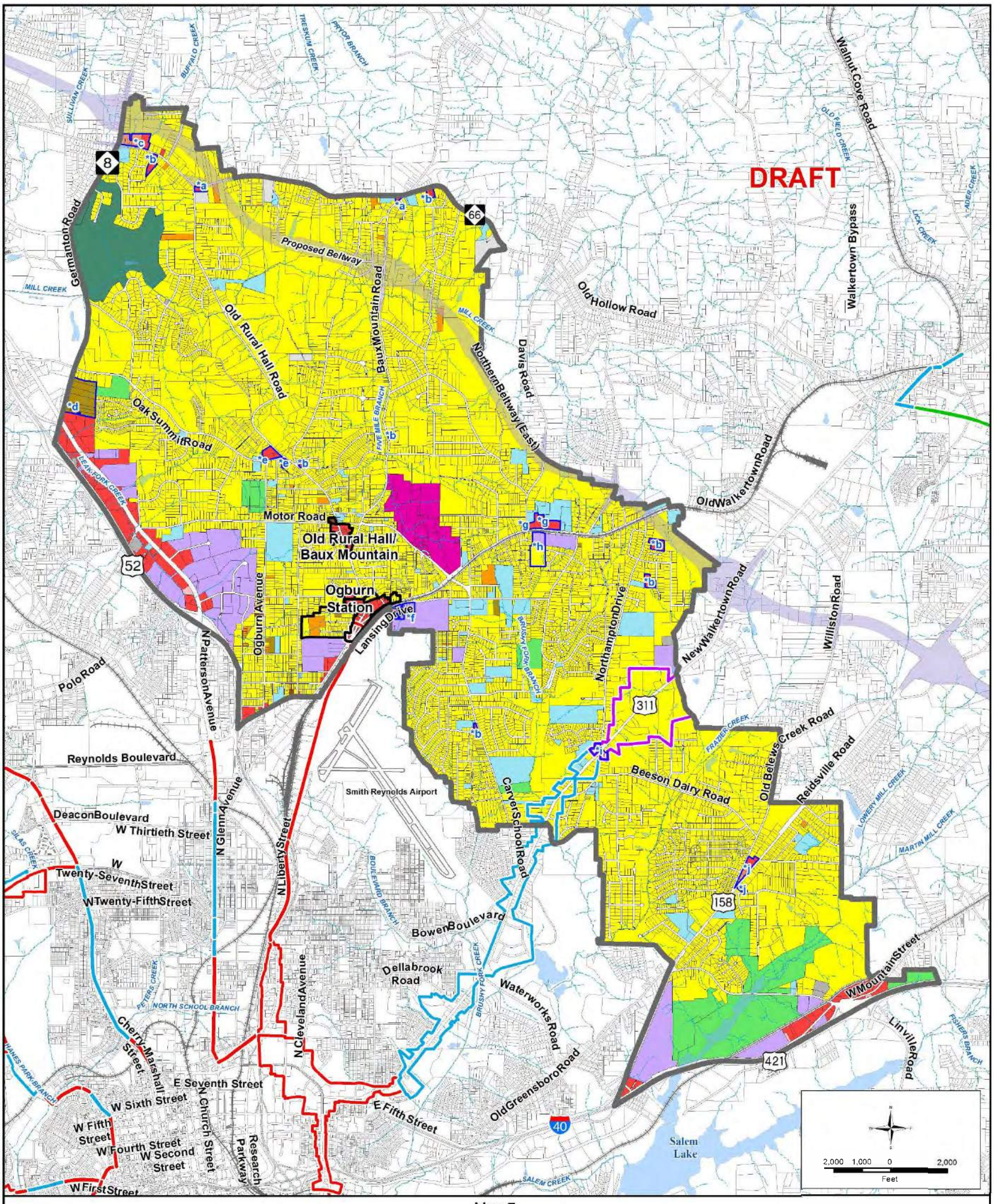

BAUX MOUNTAIN RD
WALNUT COVE RD
GRUBBS RD
BRINKLEY RD
LITTLE BELEWS CREEK
TYNER RD
LICK CREEK
PINE HALL RD
SULLIVANTOWN RD
BELEWS CREEK RD
BELEWS CREEK
158
REIDSVILLE RD
311
66
OLD HOLLOW RD
MILL CREEK
DAVIS RD
Proposed Northern Beltway
Walkertown Town Center
WEST BELEWS CREEK
VANCE RD
US 158/ NC 66
DARROW RD
OLD WALKERTOWN RD
NEW WALKERTOWN RD
LOWERY MILL CREEK
OLD HOLLOW RD
OLD VALLEY SCHOOL RD
ROCKY BOTTOM CREEK
NORTHAMPTON DR
WILLISTON RD
Old Belews Creek
REIDSVILLE RD
FRAZIER CREEK
BEESON DAIRY RD
WALKERTOWN-GUTHRIE RD
MARTIN MILL CREEK
WEST M
OLD GREENSBORO RD
SEDGE GARDEN RD
421
Bus 40
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Feet
Map 6.
Proposed Land Use Changes
(See area plan for specific recommendations starting page 21.)
Large-Lot Residential (over 5 Ac)
Single-Family Residential
Low-Density Attached Residential (0-8 Du/Ac)
Intermediate-Density Residential (8.1-18 Du/Ac)
Manufactured Housing Park
Office
Commercial
Office/Low-Intensity Commercial
Mixed-Use Development
Industrial
Institutional
Park
No Proposed Changes
Special Land Use Condition Area (see text page 33)
Activity Center (see text page 28)
Floodway
Floodplain
Lakes and other water bodies
River, creek or streams
Proposed Beltway



Map 3.

Existing Land Use

- Agriculture Tax Deferred
- Voluntary Agriculture District
- Large-Lot Residential (over 5 Ac)
- Single-Family Residential (0-8 Du/Ac)
- Low-Density Attached Residential (0-8 DU/Ac)
- Intermediate-Density Residential (8.1-18 DU/Ac)
- High-Density Residential (over 18 DU/Ac)
- Manufactured Housing Park
- Office
- Commercial
- Industrial
- Institutional
- Park
- Commercial Recreation
- Utilities
- Undeveloped
- Closed Road Right-of-Way
- Streams
- Ponds, Lakes, Rivers
- Floodway
- Floodplain



Map 7.

Proposed Land Use

(See Area Plan for specific recommendations starting page 23.)

- Single-Family Residential (0-8 Du/Ac)
- Low-Density Attached Residential (0-8 DU/Ac)
- Intermediate-Density Residential (8.1-18 DU/Ac)
- High-Density Residential (over 18 DU/Ac)
- Manufactured Housing Development
- Office
- Commercial
- Mixed-Use Development
- Office/Low-Intensity Commercial
- Industrial
- Institutional
- Park
- Commercial Recreation
- Utilities

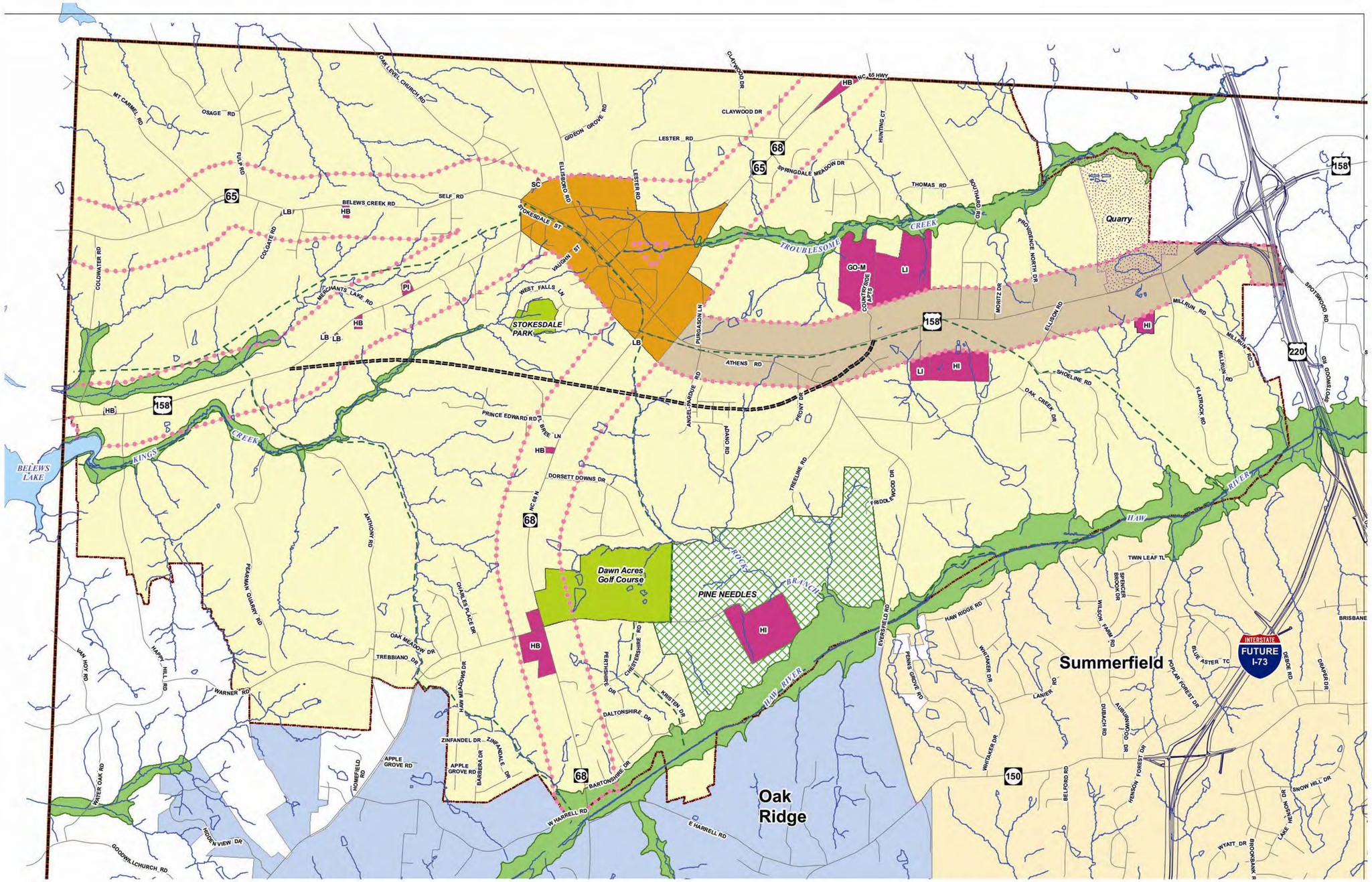
Growth Corridors

- Rural Form - Large-Lot Residential
- Urban/Suburban Form - Residential
- Urban Form - Commercial/Office/Multifamily
- Suburban Form - Commercial/Office/Multifamily

- * Special Land Use Condition Area
- Activity Center
- Proposed Beltway
- Streams
- Ponds, Lakes, Rivers
- Floodway
- Floodplain

Town of Stokesdale

Future Land Use Update 2007



Legend

- Town Core (TC)
- Prof./Manufacturing Corridor (PMC)
- Residential
- Pine Needles Buffer Zone
- Recreation outside of TC/PMC
- Non-Res Zoning outside of TC/PMC
- Quarry
- Floodplain
- Scenic Corridors
- Proposed US-158 Connector
- Proposed Trails
- County_Boundary
- Stokesdale Town Limits

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Feet

Geographic Information Services
COUNTY OF GUILFORD
NORTH CAROLINA
2007

Appendix E: Other Relevant Information

1) Greensboro Urban Area MPO Complete Streets Policy……E-2
2) Winston-Salem Urban Area MPO Complete Streets Policy……E-6
3) NC Mountains-to-Sea Trail Segment 5: Atlantic & Yadkin Greenway……..E-9
4) Winston-Salem Transit Authority Route 94 Brochure……..E-13
5) The SECU Commons Fact Sheet……E-15

Complete Streets Policy

1. Policy Objective

Complete Streets roadways are designed, constructed, and maintained to enable all users to safely and comfortably travel along and across the corridor. "All users" includes pedestrians, bicyclists, wheelchair users, children, the elderly, and transit riders as well as motorized vehicles. The Greensboro Urban Area Metropolitan Planning Organization establishes a complete streets policy to reflect its commitment to creating a well balanced multimodal transportation system, improving pedestrian and bicycle safety, and improving accessibility. This policy is important to realizing the vision statement of the Metropolitan Transportation Plan Vision:

> "To develop and maintain a safe, efficient, and environmentally compatible transportation system that provides convenient choices for accessing destinations throughout the Greensboro Metropolitan Area and the Triad, including well-integrated, connected public transportation, pedestrian, and bicycle networks."

Complete streets bring improved traffic safety and more desirable conditions for walking and bicycling. The benefits are many, including increased non-motorized trips, increased transit usage, supporting desirable land use patterns including pedestrian and transit oriented development, improvements to public health, and reduction in harmful air pollutant emissions. Complete streets result in improved quality of life, support increased property values, and enhance the economy and the potential for future economic growth.

2. Related Plans and Policies

The MPO and its member jurisdictions have adopted a variety of policies, plans and standards that support Complete Streets elements. The MPO Complete Streets Policy links and extends these policies, plans, and standards which include but are not limited to: the voter approved Greensboro Transportation Bonds (2000 and 2008), Greensboro Walkability Policy (2002); City of Greensboro Sidewalk Ordinances (2003); Bicycle, Pedestrian, and Greenways Master Plan (2006); Greensboro Street Design Standards Manual (2008); 2030 LRTP, 2035 LRTP, 2035 LRTP Update, and 2040 MTP (2004, 2008, 2012, and 2015, respectively); Town of Oak Ridge Comprehensive Pedestrian Transportation Plan (2013); Town and County development ordinances, and the Town of Pleasant Garden Comprehensive Bicycle and Pedestrian Transportation Plan (2015).

3. Applicability

As qualified below, the Complete Streets Policy applies to projects in the MPO area, including the construction, reconstruction, rehabilitation, repair, maintenance, or planning of roadways, trails, greenways, and other transportation facilities. This applies to projects with direct MPO involvement (those using federal and state funds) as well as locally funded projects undertaken by MPO member agencies.

4. Facility Inclusion and Policy Exceptions

Complete Streets elements will be included in street construction, retrofit, and reconstruction projects except where that is not possible due to law, project scale, or other such factors as described below:

- Pedestrian facilities should be provided on all roadways expect freeways or access controlled facilities where pedestrians are prohibited. In urban and urbanizing areas sidewalks are recommended; in rural areas they may be paved shoulders.
- On street bicycling is allowed on all roadways except freeways and access controlled facilities. On street bicycle facilities including bicycle lanes and shared lane markings should be provided where they can be feasibly installed in consideration of roadway width, traffic, connectivity/bicycling demand, and other factors.

- The ability of all roadway users to reasonably and conveniently cross the facility should be a key consideration in roadway design and construction, including on grade separated freeway and controlled access facility crossings.
- Complete Streets elements may be omitted from projects if the cost of establishing such accommodations is excessively disproportionate compared to the expected need or possible use. Context including nearby land uses, connectivity to needed destinations, and current and latent pedestrian demand are key considerations.
- Complete Streets elements should be factored into routine maintenance work. For example, some reconstruction and resurfacing requires curb ramp installation or replacement and/or sidewalk repair or replacement to remove accessibility barriers. But complete streets should be a consideration even in routine, small scale work by taking care not to unnecessarily block or obstruct non-motorized travel paths, and to use appropriate signage and alternative facilities where warranted.

5. Design Guidance

Efforts must be made to accommodate all users. Facility design and construction should comply with applicable laws and regulations. Context sensitive design principles should be considered and included where needed. The following design guidelines or their successors should be consulted: NCDOT guidelines and manuals, including the NCDOT Complete Streets Planning and Design Guidelines; Manual on Uniform Traffic Control Devices (MUTCD); Americans with Disabilities Act Accessibility Guidelines (ADAAG); American Association of State Highway and Transportation Officials (AASHTO) publications; Public Rights-of-Way Accessibility Guidelines (PROWAG); and the Urban Bikeway Design Guide and Urban Street Design Guide by the National Association of City Transportation Officials (NACTO).

6. Implementation & Next Steps

Although the MPO and its jurisdictions have been hard at work for more than a decade to create transportation networks that are accessible to all users, much remains to be done. Achieving Complete Streets is by definition an ongoing task, with many opportunities to learn from successes and failures and thereby improve results over time. To support active implementation and to enable refinement in approaches and strategies over time the following steps are recommended:

- Establish a standing Bicycle and Pedestrian Committee as outlined in the BiPed Plan Update (2015).
- Implement project and policy recommendations of the BiPed Plan for pedestrian, bicycle, greenways, and trails.
- Continue to review future projects in the Metropolitan Transportation Plan for applicability of this policy and review designs of facilities to ensure access for all users is provided along and across these facilities.
- The MPO should elevate projects that effectively take into account all roadway users in the project selection and funding process.
- Individual communities should evaluate and modify this policy for adoption at the local level to ensure consistency throughout the MPO.

7. Evaluation

Evaluation of outcomes is key to tracking complete streets progress or the lack thereof. The MPO will continue and expand its data collection and evaluation efforts. The Greensboro Urban Area MPO collects data for the Congestion Management Program (CMP) and has begun utilizing automated traffic monitoring equipment to count non-motorized travelers. The MPO has also analyzed safety data from NCDOT on bicycle and pedestrian crashes to identify high-crash locations and other statistics that can help determine areas where better accommodations are needed for these users. Potential performance measures for this Complete Streets Policy include: pedestrian, bicyclist, and motorist crash rates; volume counts for vehicles, bus passengers, bicyclists, and pedestrians; linear feet or miles of new or reconstructed sidewalks; number of new or reconstructed ADA accessible curb ramps; number of new or repainted crosswalks; number of new pedestrian signals and their locations; linear feet or miles of on-street bicycle facilities; percentage completion of bicycle and pedestrian networks identified in the BiPed Plan Update; number of transit stops with shelters; percentage of transit stops accessible via sidewalks and ADA accessible curb ramps; user satisfaction surveys; increase in mode shares for pedestrians, cyclists, and transit users; percentage of funds spent on bicycle, pedestrian, and transit facilities; level of service for transit, cyclists, and pedestrians; share of roads with design speeds in the safe range for pedestrians; and percentage of work completed in local bicycle and pedestrian plans.

RESOLUTION ADOPTING A COMPLETE STREETS POLICY FOR THE GREENSBORO URBAN AREA METROPOLITAN PLANNING ORGANIZATION

A motion was made by TAC Member ___Cheryl McQueary__ and seconded by TAC Member _____Alan Branson_____ for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, the Greensboro Urban Area MPO is committed to improving transportation safety and accessibility, connecting residents and neighborhoods with needed destinations, and promoting healthy and active lifestyles through the provision of multiple transportation choices including non-motorized transportation options; and

WHEREAS, Complete Streets are designed and constructed to accommodate all users safely and comfortably, regardless of age or ability; and

WHEREAS, a Complete Streets Policy will help realize the vision of the Metropolitan Transportation Plan, "to develop and maintain a safe, efficient, and environmentally compatible transportation system that provides convenient choices for accessing destinations throughout the Greensboro Metropolitan Area and the Triad, including well-integrated, connected public transportation, pedestrian, and bicycle networks"; and

WHEREAS, Complete Streets elements will be applied in all street construction, retrofit, and reconstruction projects except in unusual or extraordinary circumstances; and

WHEREAS, this policy builds upon existing policies, plans, and standards throughout the MPO area that promote access for all users, including the City of Greensboro Walkability Policy, the Bicycle, Pedestrian, and Greenway Master Plan (BiPed), the Greensboro Street Design Standards Manual, the 2040 MTP, the Town of Oak Ridge Comprehensive Pedestrian Transportation Plan, the Town of Pleasant Garden Comprehensive Bicycle and Pedestrian Transportation Plan; and

WHEREAS, policy applies to all surface transportation projects in the Greensboro Urban Area MPO, including the new construction, reconstruction, rehabilitation, repair, maintenance, or planning of roadways, trails, greenways, and other transportation facilities, including those use federal and state funds as well as locally funded projects; and

WHEREAS, the Greensboro Urban Area MPO will implement this policy through its involvement in project funding, development, and implementation for complete streets projects, and by encouraging member governments and the NCDOT to do the same and more in the form of maintenance, repair, and transportation system management responsibilities;

NOW THEREFORE, be it resolved by the Greensboro Urban Area Transportation Advisory Committee, to adopt the MPO Complete Streets Policy on this, the 10th day of November, 2015.

****

I, Marikay Abuzuaiter, TAC Alternate Chair,

(Name of Certifying Official) *(Title of Certifying Official)*

do hereby certify that the above is a true and correct copy of an excerpt from the minutes of a meeting of the Greensboro Urban Area TAC duly held on this, the 10th day of November, 2015.

TAC Alternate Chair, Transportation Advisory Committee

****

Subscribed and sworn to me on this, the 10th day of November, 2015.

Notary Public

DEIDRE E. BROWN
NOTARY PUBLIC
GUILFORD COUNTY, NC
My Commission Expires 2-17-2018

My commission expires

RESOLUTION
ADOPTING A COMPLETE STREETS POLICY
FOR THE WINSTON-SALEM URBAN AREA MPO

A motion was made by TAC Member _____ and seconded by TAC Member _____ for the adoption of the following resolution, and upon being put to a vote was duly adopted.

WHEREAS, NCDOT has adopted, and is now implementing, a complete streets policy at the state level; and

WHEREAS, the Winston-Salem Urban Area MPO endeavors to build a transportation system that is multimodal and accommodates all roadway users; and

WHEREAS, a complete streets policy adopted at the WSUAMPO level will ensure that all MPO projects take into account the needs of all roadway users; and

WHEREAS, implementation of a complete streets policy will lay the foundation for future changes to WSUAMPO practices to encourage the funding, design, and construction of context-sensitive multimodal transportation corridors.

NOW, THEREFORE, BE IT RESOLVED that the Transportation Advisory Committee of the Winston-Salem Urban Area Metropolitan Planning Organization adopts a complete streets policy.

Adopted on this the 21st day of March, 2013.

_____
Larry T. Williams, Chairman
Transportation Advisory Committee

_____
Margaret C. Bessette, Secretary
Transportation Advisory Committee

Winston-Salem Urban Area MPO Complete Streets Policy

Vision

The Winston-Salem Urban Area MPO and its member communities continue to build livable communities in part by building a complete transportation network that serves all users, including pedestrians, cyclists, transit vehicles and riders, children, the elderly, people off all abilities, and motor vehicle operators. Our transportation network not only affects our ability to get from one place to another, it shapes our land uses, economic development, housing choices, air and water quality, health, and even our physical fitness. To that end, our community can encourage active transportation options by providing the facilities and support necessary to make those modes the easy, safe, and convenient choice for all residents.

Commitment

The Winston-Salem Urban Area MPO and its member communities shall scope, plan, design, fund, construct, operate, and maintain all MPO streets to provide a comprehensive and integrated network of facilities that are safe and convenient for people of all ages and abilities traveling by foot, bicycle, automobile, public transportation, and commercial vehicle.

MPO communities will incorporate these complete streets principles into municipal development plans, area plans, transportation plans, unified development ordinances, standards and specifications documents, and other plans, manuals, rules, regulations, and programs as appropriate based on the land use context, both current and future. These policies will also be applied to all new MPO projects, privately funded developments, and incrementally on existing streets through a series of small improvements and activities over time, as opportunities and funds allow.

All sources of transportation funding should be drawn upon to implement complete streets principles within the MPO.

Complete streets principles will be applied in all street construction, retrofit, and reconstruction projects except in unusual or extraordinary circumstances as detailed below. Even under the conditions outlined below, a project's impact will be evaluated for the effect it would have on the usefulness of the street for all users, now and in the future, and the ability to implement other adopted plans in the future.

1. Pedestrians and bicyclists are prohibited by law from using the facility. In this case, alternative facilities and accommodations shall be provided within the same transportation corridor, and the ability to reasonably and conveniently cross the facility will be part of the facility design and construction.

2. Where existing right-of-way does not allow for the accommodation of all users. In this case alternatives shall be explored, such as obtaining additional right-of-way, use of revised travel lane configurations, paved shoulders, signage, traffic calming, and education or enforcement to accommodate pedestrians, cyclists, transit vehicles and riders, and people of all abilities.

3. The cost of establishing walkways or bikeways or other accommodations would be disproportionate to the need, particularly if alternative facilities are available within a reasonable walking and/or bicycling distance.

4. Where application of complete streets principles is unnecessary or inappropriate because it would be contrary to public safety and increase risk of injury or death.

5. The construction is not practically feasible or cost effective because of unreasonable adverse impacts on the environment or on neighboring land uses, including impact from right-of-way acquisition.

6. Where an agency is performing ordinary public works or utility maintenance activities, including, but not limited to: water, sewer and storm sewer main repairs; installation of new or removal of existing water or sewer service lines, installation or repair of fire hydrants, installation or repair of private utility fixtures.

Implementation & Next Steps

This complete streets policy represents the first step in the process of creating a fully accessible transportation network for all users in the Winston-Salem Urban Area MPO. The MPO and its member communities must take the necessary steps to achieve the complete streets goals stated above.

1. The MPO Bicycle and Pedestrian Subcommittees are responsible for reviewing transportation projects and providing recommendations to staff engineers and consultants.

2. The MPO should adjust the funding selection process for all roadway projects to elevate those projects that take into account all roadway users.

3. Individual communities should evaluate and modify this policy for adoption at the local level to ensure consistency throughout the MPO.

4. The MPO should create or adapt a set of design guidelines for bicycle, pedestrian, and transit facilities that member communities can use in the design and construction of projects.

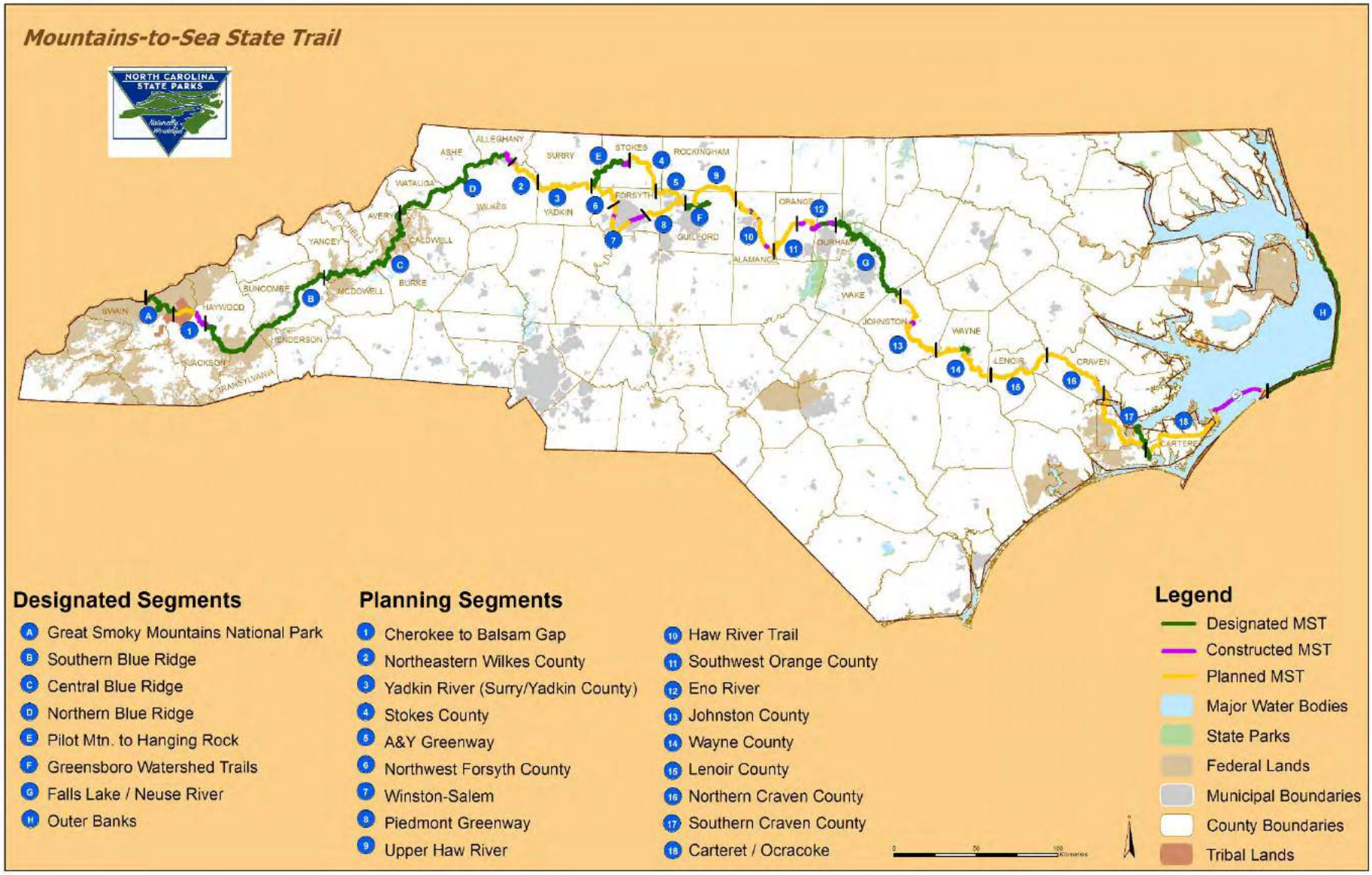
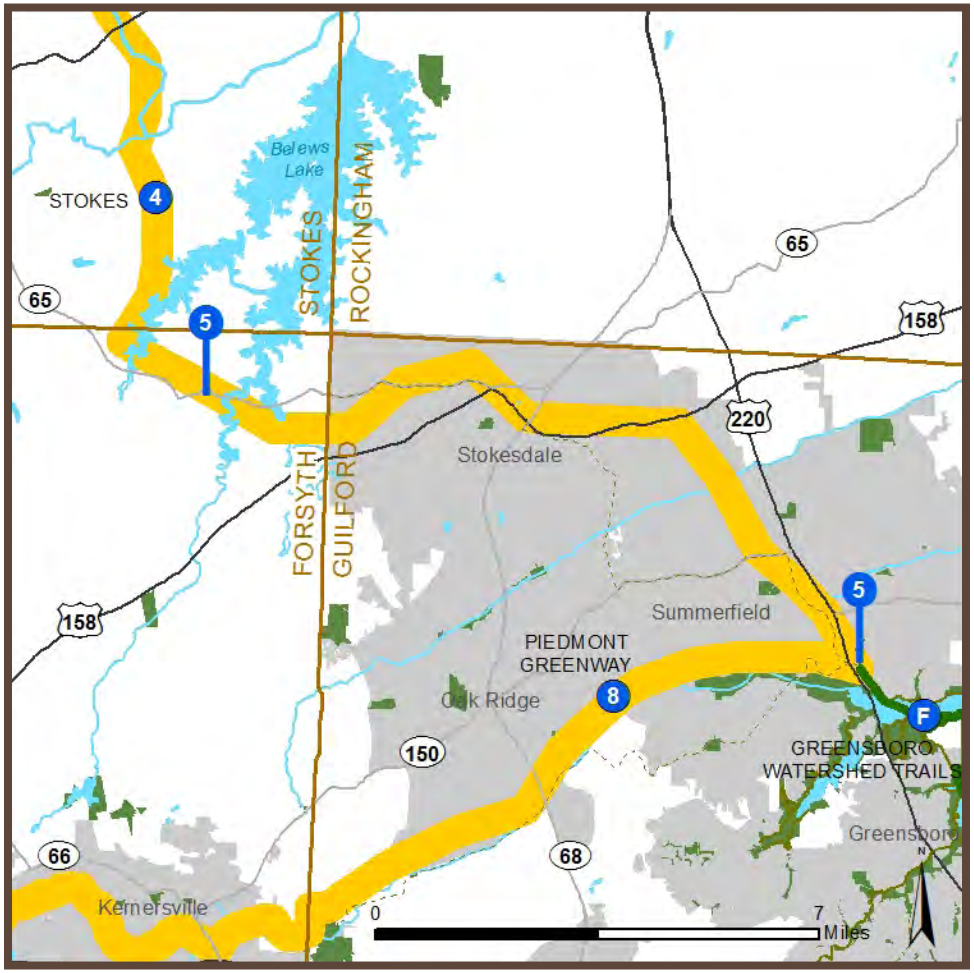


Figure 4. North Carolina Statewide Map of the Designated and Planning Segments for the MST

SEGMENT 5: Atlantic and Yadkin Greenway

Planning Priority

Near-Term	Mid-Term	Long-Term



Legend

MST Status
- Constructed
- Designated
- Planned Route (1/4 mi. buffer)
- # Adjacent Segment
- # Segment Start and End Points

- County Boundary
- State Park
- Open Space
- Institutional
- Municipal Boundary
- State Boundary
- Interstate #
- NC Route #
- US Route #
- Major Hydrography
- Proposed Trail
- Other Trail

Description

From: Belews Lake (Forsyth County)

To: Existing A&Y Greenway northern terminus (Greensboro Watershed Trails)

This segment is the Atlantic & Yadkin Greenway extension from its northern terminus in Greensboro to the railroad trestle over Belews Lake, owned by Duke Power Company, near the Forsyth County line.

Planning Strategies

After partnering to conduct a feasibility study on the A&Y extension, the Greensboro Urban Area MPO, Guilford County and the Towns of Summerfield and Stokesdale are working together to finalize the alignment and move the trail forward. Further coordination is needed with potential managers of adjoining segments.

Opportunities

The abandoned A&Y Railroad corridor from Stokesdale north to Belews Lake will accommodate that portion of the trail. Trail partners are actively coordinating to move forward this segment.

	Large Landholdings		Stream/River Corridors		Staff Resources
	Public Land		Sidewalk/Bicycle Network		Federal Property
x	Local Planning	x	Floodplain/Wetlands	x	Abandoned RR ROW

Challenges

The primary challenge is establishing easements across private property and crossing Belews Lake. Multiple planning corridors in this area makes coordination and efficient use of resources difficult.

x	Stream/River Crossings	x	Coordinating Easements	x	Local Planning
x	Detailed Alignment	x	Urbanized Corridor		Federal Property
	Major Roadway Crossing	x	Floodplain/Wetlands		

Segment Details

Constructed Trails: None Constructed

Route Alignment: Atlantic & Yadkin Railroad, sidewalks, private property

Key Properties: Belews Lake

Approximate Length: 13 miles

Potential Section Sponsors(s):

Guilford County, Summerfield, Stokesdale, Forsyth County

Additional Planning Stakeholders:

Greensboro, Duke Energy, Winston-Salem MPO, Greensboro MPO, Friends of the MST, DPR

Designated Segments within Planned Segment: None

Table 2. Prioritized Planning Segments

Planning Segment Name	Approximate Length	From	To
Near-Term Planning Priorities			
1 - Cherokee to Balsam Gap	24 mi	Great Smoky Mountains National Park	Eastern Band of Cherokee Nation Lands
2 - Northeast Wilkes	25 mi	Stone Mountain State Park	Surry County
5 - Atlantic & Yadkin Greenway	13 mi	Belews Lake	Greensboro Watershed Trails
7 - Winston-Salem	30 mi	Northwest Forsyth County near Bethania	Future Piedmont Greenway near Kernersville border
10 - Haw River Trail	35 mi	Alamance County northwest border	Orange County
11 - Southwest Orange County	19 mi	Alamance County	Hillsborough
12 - Eno River	26 mi	Hillsborough (Occoneechee Mtn)	Falls Lake/Neuse River
14 - Wayne County	39 mi	Johnston County	Lenoir County
Mid-Term Planning Priorities			
3 - Yadkin River (Yadkin/Surry)	34 mi	Wilkes County	Pilot Mountain State Park
8 - Piedmont Greenway	19 mi	Winston-Salem City Limits	Greensboro Watershed Trails
13 - Johnston County	52 mi	Neuse River Greenway terminus in Clayton	Wayne County
15 - Lenoir County	39 mi	Wayne County	Craven County
17 - Southern Craven County	36 mi	Bridge Creek (South of New Bern)	Carteret County

Planning Segment Name	Approximate Length	From	To
Long-term Planning Priorities			
4 - Stokes County	32 mi	Hanging Rock State Park	Belews Lake
6 - Northwest Forsyth County	14 mi	Pilot Mountain State Park	Winston-Salem City Limits
9 - Upper Haw River	27 mi	Greensboro Watershed Trails	Alamance County Haw River Trail
16 - Northern Craven County	31 mi	Lenoir County	Bridge Creek (South of New Bern)
18 - Carteret/Ocracoke	81 mi	Craven County	Cedar Island Ferry to the Outer Banks

MAP Legend

Major bus stops are numbered and listed on the map.

The bus leaves at each of the times listed below this symbol.

TIP: The number in the column matches the same number location on the map.

All WSTA buses are lift equipped.

All WSTA buses are bicycle rack equipped.

HOLIDAY SERVICE

WSTA is closed on the following holidays:

New Years Day
Martin Luther King, Jr. Day
Good Friday
Memorial Day
Fourth of July
Labor Day
Thanksgiving Day
Christmas Day

WSTA SERVICE HOURS (vary by route)
Monday : Friday: 5:00 AM to 11:30 PM
Saturday : 6:00 AM to 11:30 PM
Sunday : 7:00 AM to 6:30 PM

Want to know how to reduce your wait time?

Use NextBus! WSTA's realtime travel software program allows you to plan and track your trip on your mobile device, laptop or computer.

Design your trip your way by siging up to receive text alerts that will let you know when your bus is headed to your bus stop. Want to know more about how to use NextBus? Contact us at:

Phone: 336.727.2000
Website: www.wstransit.com

WSTA bus stops have changed!

Look for the green bus stop sign with information on routes you can catch at your stop, and your stop number. Just in case you decide to visit NextBus to figure out the time your bus is arriving, your stop number is on the bus stop sign.



WSTA BUS FARES (Exact fare only)

Adult Fares

Cash	**$1.00**
Transfers	**Free**
Rolling Monthly Pass	**$30.00**
10-Ride Pass	**$10.00**

Elderly-Disabled & Medicare Card Holders

Cash	**$ .50**
Transfers	**Free**
Rolling Monthly Pass	**$15.00**
10-Ride Pass	**$ 5.00**

Children shorter than the farebox and accompanied by an adult ride free.

** Senior Citizen or Medicare Card or WSTA Special Population Card required as ID for Elderly and Disabled passengers.*

Route 94



Atkins High School
Kensington Village Apts
Petree Elementary School
East Forsyth High School

For more information
call 336.727.2000
TTY NC Relay
1.800.735.8262
www.wstransit.com

WSTA
WINSTON-SALEM TRANSIT AUTHORITY

Route 94 Bay B-2

Atkins High School
Kensington Village Apts
East Forsyth High School



Monday - Friday

Outbound to East Forsyth High School				Inbound to Transportation Center				
	Transportation Center B-2	5th Street & MLK Blvd	Old Greensboro Rd & Mt. Vernon Ave	East Forsyth High School	East Forsyth High School	Old Greensboro Rd & Mt. Vernon Ave	5th Street & MLK Blvd	Transportation Center B-2	
	1 BUS STOP	2 BUS STOP	3 BUS STOP	4 BUS STOP	4 BUS STOP	3 BUS STOP	2 BUS STOP	1 BUS STOP	
A.M.					5:25	5:33	5:41	6:00	A.M.
	6:00	6:09	6:17	6:25	6:25	6:33	6:41	7:00	
	7:00	7:09	7:17	7:25	7:25	7:33	7:41	8:00	
	8:00	8:09	8:17	8:25	8:25	8:33	8:41	9:00	
	9:00	9:09	9:17	9:25	9:25	9:33	9:41	10:00	
	10:00	10:09	10:17	10:25	10:25	10:33	10:41	11:00	
P.M.	11:00	11:09	11:17	11:25	11:25	11:33	11:41	12:00	P.M.
	12:00	12:09	12:17	12:25	12:25	12:33	12:41	1:00	
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	2:00	2:09	2:17	2:25	2:25	2:33	2:41	3:00	
	3:00	3:09	3:17	3:25	3:25	3:33	3:41	4:00	
	4:00	4:09	4:17	4:25	4:25	4:33	4:41	5:00	
	5:00	5:09	5:17	5:25	5:25	5:33	5:41	6:00	
	6:00	6:09	6:17	6:25	6:25	Travels To TC Bay B-2			

Saturday

Outbound to East Forsyth High School				Inbound to Transportation Center				
	Transportation Center B-2	5th Street & MLK Blvd	Old Greensboro Rd & Mt. Vernon Ave	East Forsyth High School	East Forsyth High School	Old Greensboro Rd & Mt. Vernon Ave	5th Street & MLK Blvd	Transportation Center B-2	
	1 BUS STOP	2 BUS STOP	3 BUS STOP	4 BUS STOP	4 BUS STOP	3 BUS STOP	2 BUS STOP	1 BUS STOP	
A.M.					7:25	7:33	7:41	8:00	A.M.
	8:00	8:09	8:17	8:25	8:25	8:33	8:41	9:00	
	9:00	9:09	9:17	9:25	9:25	9:33	9:41	10:00	
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	11:00	11:09	11:17	11:25	11:25	11:33	11:41	12:00	
	12:00	12:09	12:17	12:25	12:25	12:33	12:41	1:00	
P.M.	1:00	1:09	1:17	1:25	1:25	1:33	1:41	2:00	P.M.
	2:00	2:09	2:17	2:25	2:25	2:33	2:41	3:00	
	3:00	3:09	3:17	3:25	3:25	3:33	3:41	4:00	
	4:00	4:09	4:17	4:25	4:25	4:33	4:41	5:00	
	5:00	5:09	5:17	5:25	5:25	5:33	5:41	6:00	
	6:00	6:09	6:17	6:25	6:25	6:33	6:41	7:00	
Night Service	7:00	7:09	7:17	7:25	7:25	7:33	7:41	8:00	Night Service
	8:00	8:09	8:17	8:25	8:25	8:33	8:41	9:00	
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	10:00	10:09	10:17	10:25	10:25	10:33	10:41	11:00	
	11:00	11:09	11:17	11:25	11:25	11:33	11:41	To TC Bay B-2	

This route provides Saturday service until midnight. This route does not provide night service Monday through Friday. This route does not provide service on Sunday

Print date: January 2017

The SECU Commons Fact Sheet

What is the purpose of The SECU Commons?

The SECU Commons proposes a new model for offering vulnerable populations the basic needs for: 1) daily living; 2) guidance toward healthy, productive lives; and 3) tools for self-sufficient futures. The SECU Commons will employ a strategy of offering education and supportive housing to help people achieve:

- Permanent housing
- Employment or financial self-sufficiency
- Becoming a net CONTRIBUTOR to community services rather than a net CONSUMER of community services

Who will The SECU Commons serve?

Three populations in Forsyth County have been identified as being at high risk of becoming homeless:

- Homeless families with minor children (Winston-Salem/Forsyth County has over 160 families annually)
- Youth aging out of foster care (approximately 15 young adults in Winston-Salem/Forsyth County annually)
- Self-sufficient autistic young adults, which studies indicate that almost 60% have never held a job two years after high school (500 adolescents and young adults, ages 15-24, in Winston-Salem/Forsyth County have ASD challenges)

Many are eligible for short-term assistance, but there is no continuity from immediate "emergency" help to longer-term residence and life/employment training. The SECU Commons will fill a void by helping transition people in these three populations into permanent housing and self-sufficiency.

Where is The SECU Commons located?

The SECU Commons is located at 2351 Felicity Circle, Winston-Salem, NC 27101. This 16-acre campus off Old Greensboro Road is five minutes from downtown, accessed via Business 40, and served by existing bus routes. Four acres of the site are developed with 41,000 sq. ft. of existing space, including the following:

- 13 2-bedroom condominiums (1,200 sq. ft. each)
- 1 1-bedroom condominium (900 sq. ft.)
- 1 4-bedroom condominium (2,400 sq. ft.)
- A multi-purpose building with 20 bedrooms with private bathrooms
- 2 multi-bedroom stand alone houses
- A conference center with training rooms (4,800 sq. ft.)
- A medical building with 9 private offices
- An office building with 10 offices
- A commercial kitchen
- An occupational training workshop (1,800 sq. ft.)
- Gardens and walking trails

How will The SECU Commons work?

Property Operations – The NCHF will own, manage and maintain the campus.

Resident Recruitment – Referral agencies will pre-quality residents. NCHF's on-site management team will meet with potential residents to:

- Identify services they qualify to receive
- Investigate additional help they may need
- Assist candidates in completing paperwork necessary to qualify for benefits
- Prepare candidates for agency interviews to request benefits/services

Once invited to live at The SECU Commons, NCHF on-site team will ensure each resident:

- Fulfills supportive housing requirements
- Attends executive function skill classes
- Utilizes credit counseling services
- Formulates initial education/career plans

Programs and Services – A coalition of partner agencies – Goodwill, Youth In Transition, iCan House and the United Way – is planning and will deliver programming. Drawing on its long history of training success, Goodwill will provide programming leadership and coordinate services and programs provided by all participating non-profit organizations.

How will The SECU Commons be sustained financially?

Several key elements provide the structure by which The SECU Commons will remain financially self-sustaining.

- **Property and facilities owned debt-free** – Due to the success of its capital campaign The SECU Commons campus will be owned by the NCHF with no debt.
- **Residential rent** – Residents of The SECU Commons will pay modest rent, which will vary based on circumstances and the residence they occupy.
- **Resident business revenue** – As part of their workforce training and preparation, various small businesses that leverage campus resources – commercial kitchen, workshop facilities, etc. – are planned. Revenue generated will revert to The SECU Commons.
- **Fundraising** – An on-going development effort, managed by The SECU Commons and the NCHF will occur to ensure appropriate funding is maintained for program success.

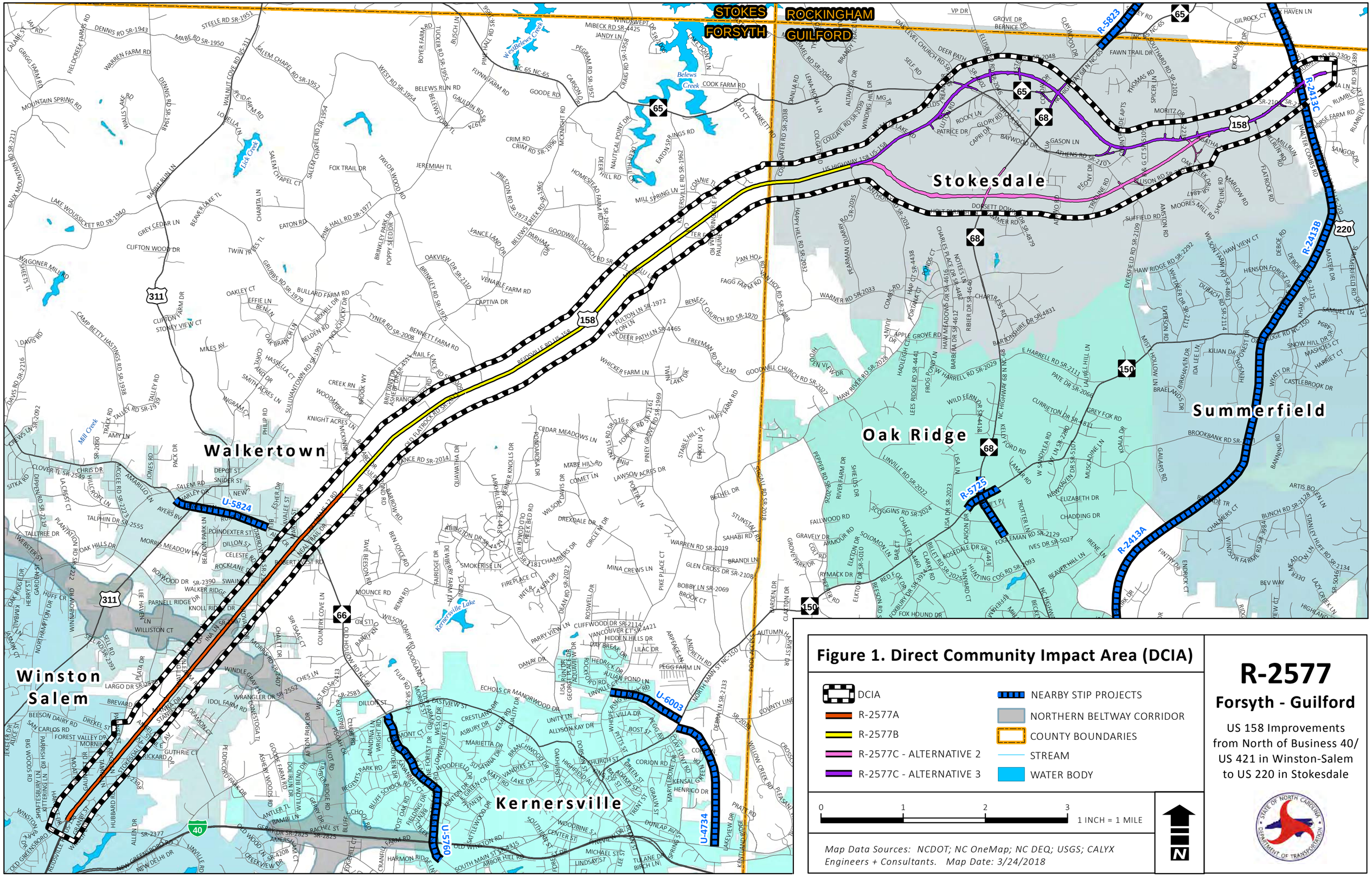


Figure 1. Direct Community Impact Area (DCIA)

- DCIA
- R-2577A
- R-2577B
- R-2577C - ALTERNATIVE 2
- R-2577C - ALTERNATIVE 3
- NEARBY STIP PROJECTS
- NORTHERN BELTWAY CORRIDOR
- COUNTY BOUNDARIES
- STREAM
- WATER BODY

0 1 2 3 1 INCH = 1 MILE

N

Map Data Sources: NCDOT; NC OneMap; NC DEQ; USGS; CALYX Engineers + Consultants. Map Date: 3/24/2018

R-2577

Forsyth - Guilford

US 158 Improvements from North of Business 40/ US 421 in Winston-Salem to US 220 in Stokesdale

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

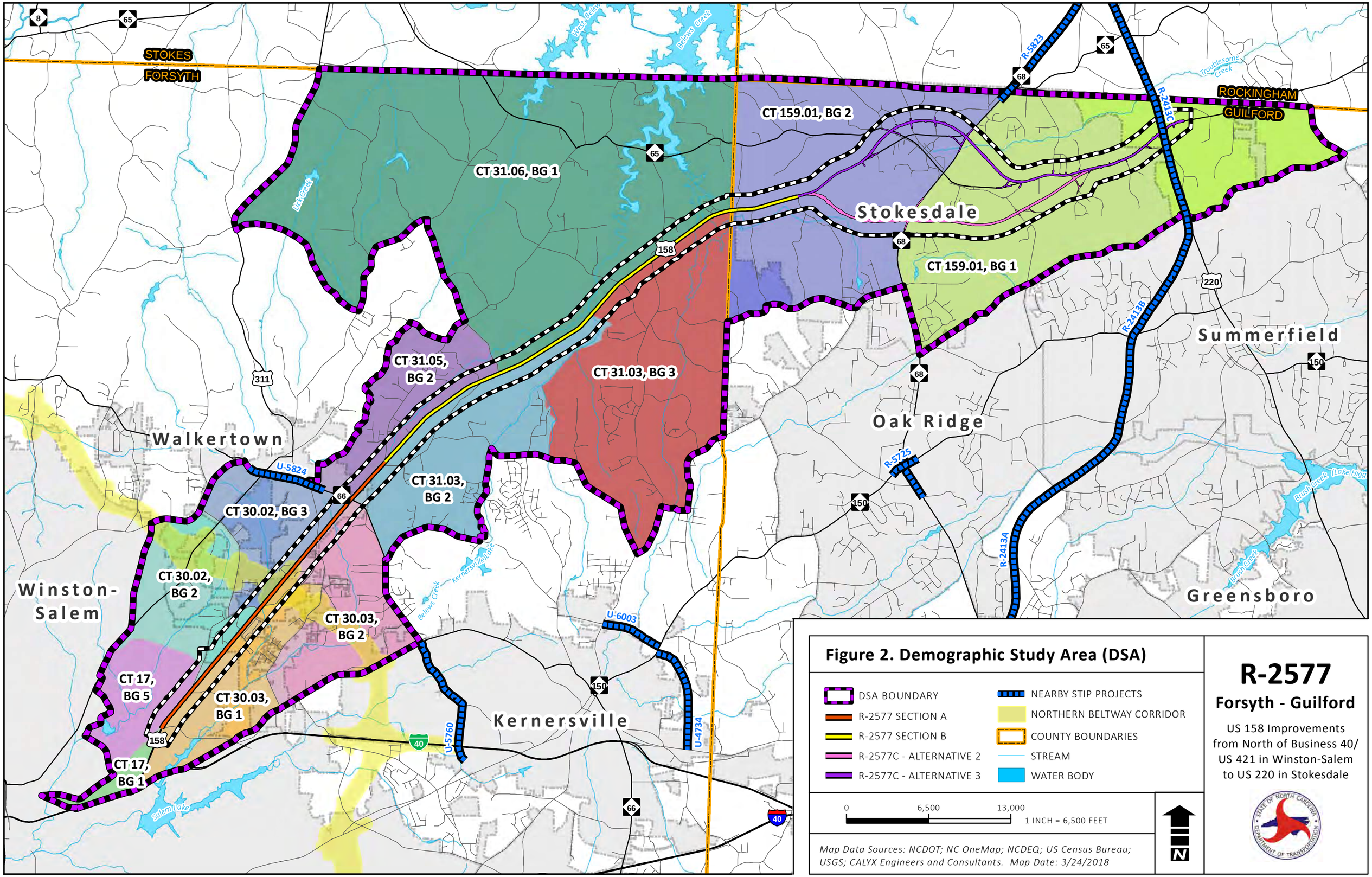


Figure 2. Demographic Study Area (DSA)

- DSA BOUNDARY
- R-2577 SECTION A
- R-2577 SECTION B
- R-2577C - ALTERNATIVE 2
- R-2577C - ALTERNATIVE 3
- NEARBY STIP PROJECTS
- NORTHERN BELTWAY CORRIDOR
- COUNTY BOUNDARIES
- STREAM
- WATER BODY

0 — 6,500 — 13,000

1 INCH = 6,500 FEET

N

Map Data Sources: NCDOT; NC OneMap; NCDEQ; US Census Bureau; USGS; CALYX Engineers and Consultants. Map Date: 3/24/2018

R-2577

Forsyth - Guilford

US 158 Improvements from North of Business 40/ US 421 in Winston-Salem to US 220 in Stokesdale

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

Figure 3. Community Context Mapbook Index Page

R-2577

Forsyth & Guilford Counties

US 158 Improvements from north of Business 40/
US 421 in Winston-Salem to US 220 in Stokesdale

DCIA
Map Grid Line
Stream
Water Body
Municipal Boundaries

Nearby STIP Projects
R-2577 Section A
R-2577 Section B
R-2577C - Alternative 2
R-2577C - Alternative 3

County Boundaries
Railroad
Northern Beltway Corridor
Parks & Protected Land
Duke Power Land Holdings

Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/ Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants.
Map Date: 3/24/2018

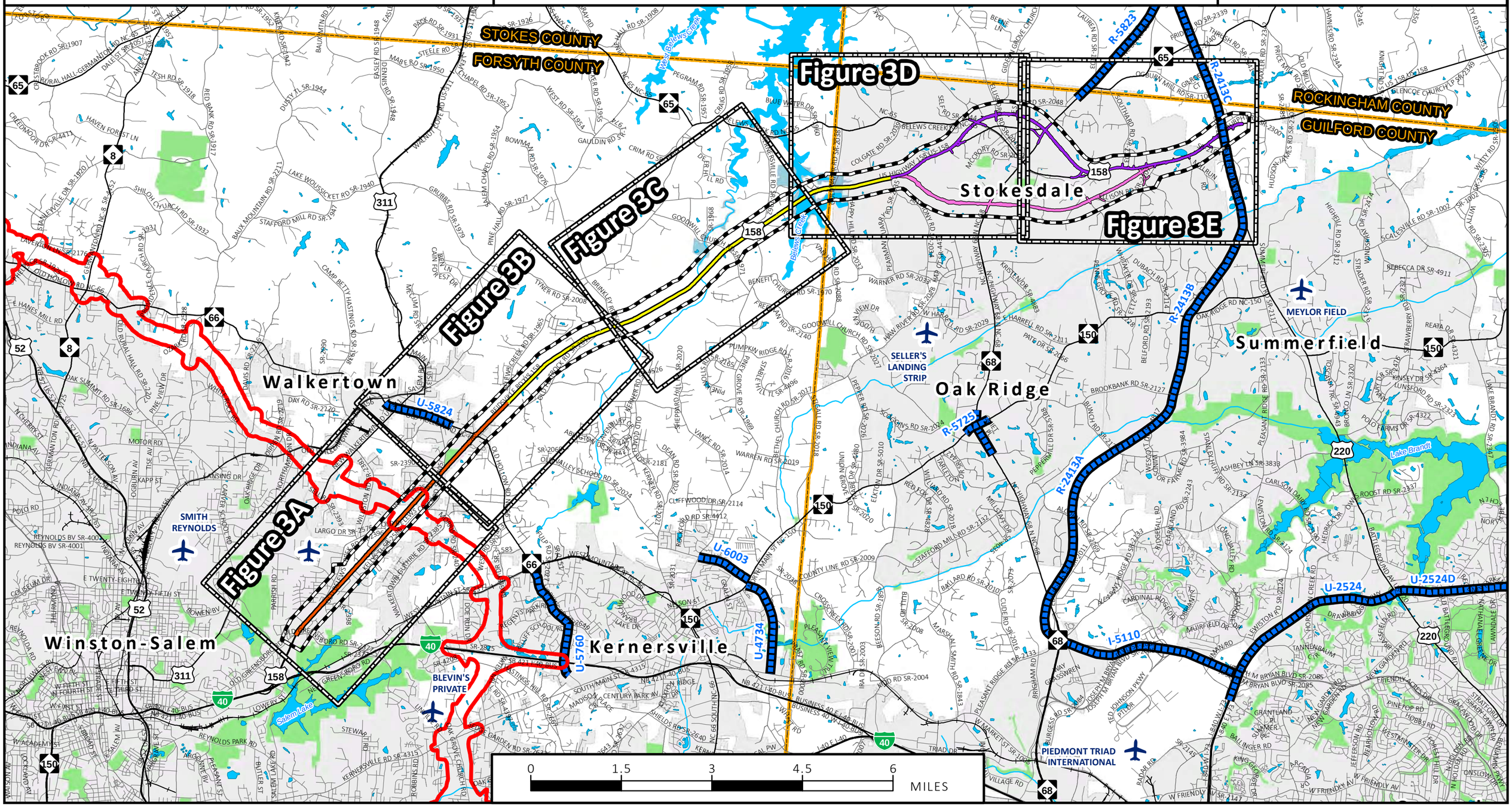
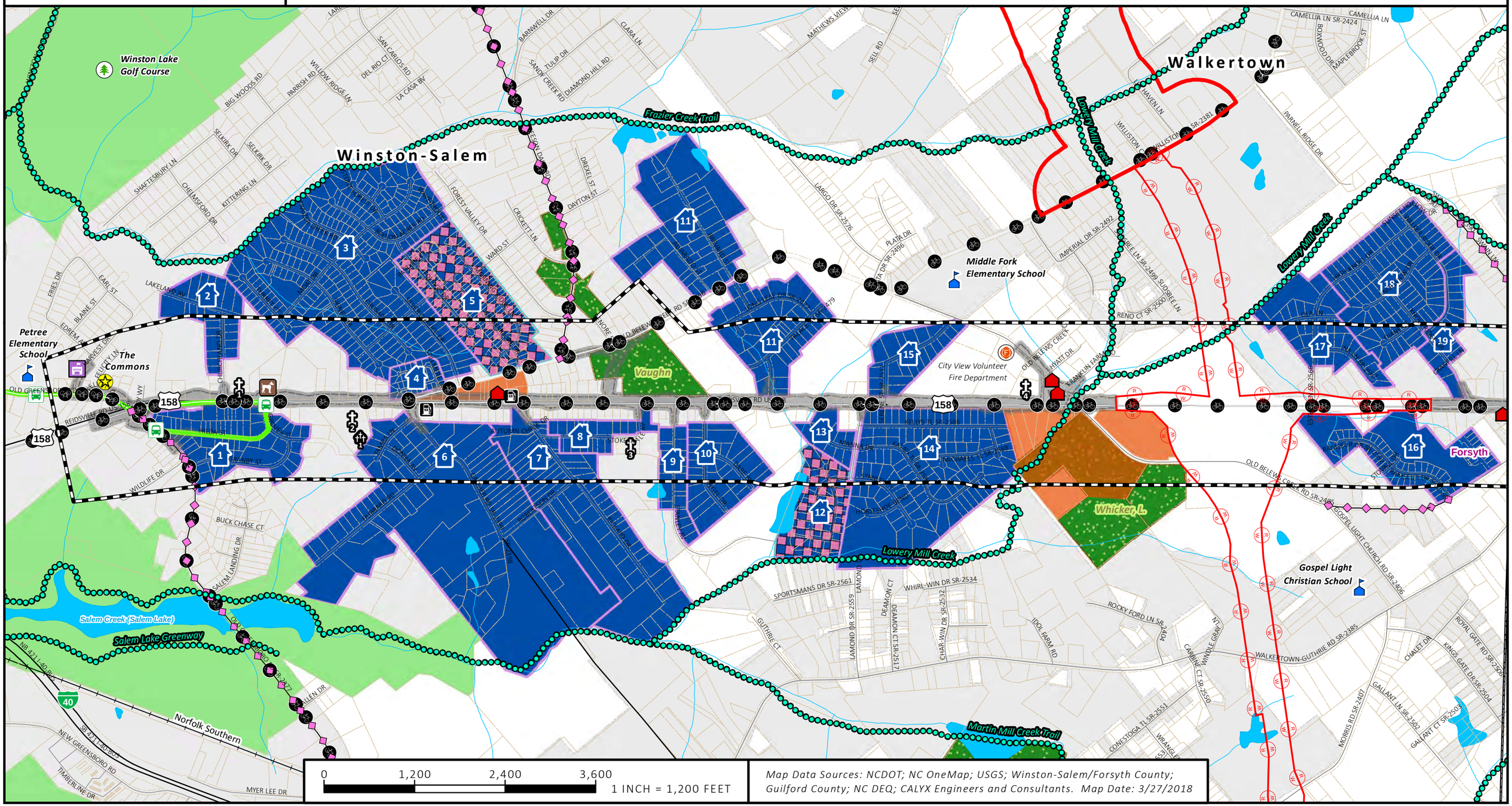


Figure 3A. Community Context

R-2577 Section A
Forsyth - Guilford
US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
- Proposed Greenway/Multi-Use Path
- Mountains-to-Sea Trail Route
- Public Park
- Duke Power Land Holdings
- Local Plan = Future Activity Center
- Residential Neighborhood
- Recent Development - Residential
- Recent Development - Commercial
- Active Farm Operation
- Voluntary Agricultural District (VAD)
- Farmland Preservation Trust Property
- School
- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



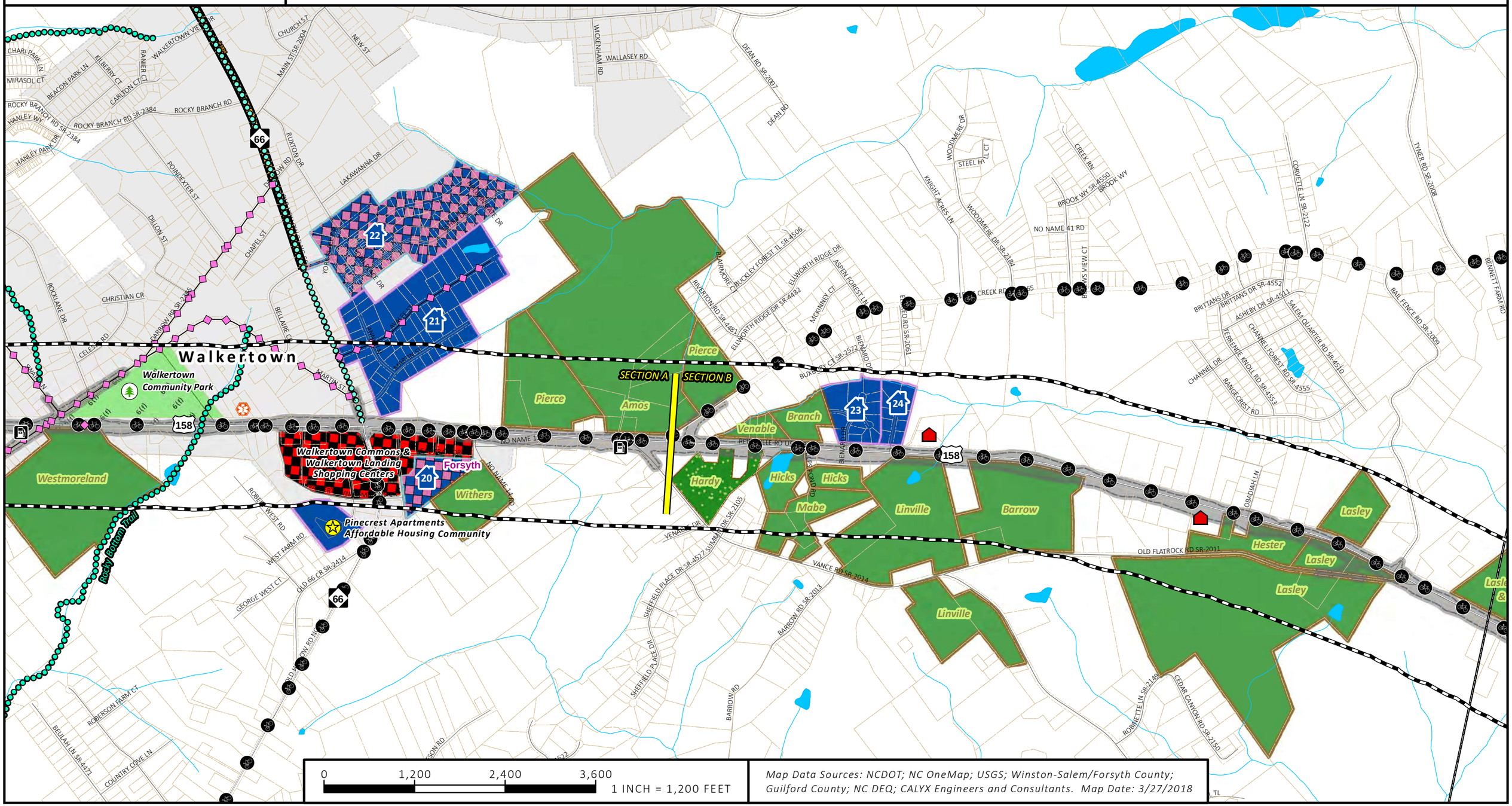
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3B. Community Context

R-2577 Section A-B
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
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- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



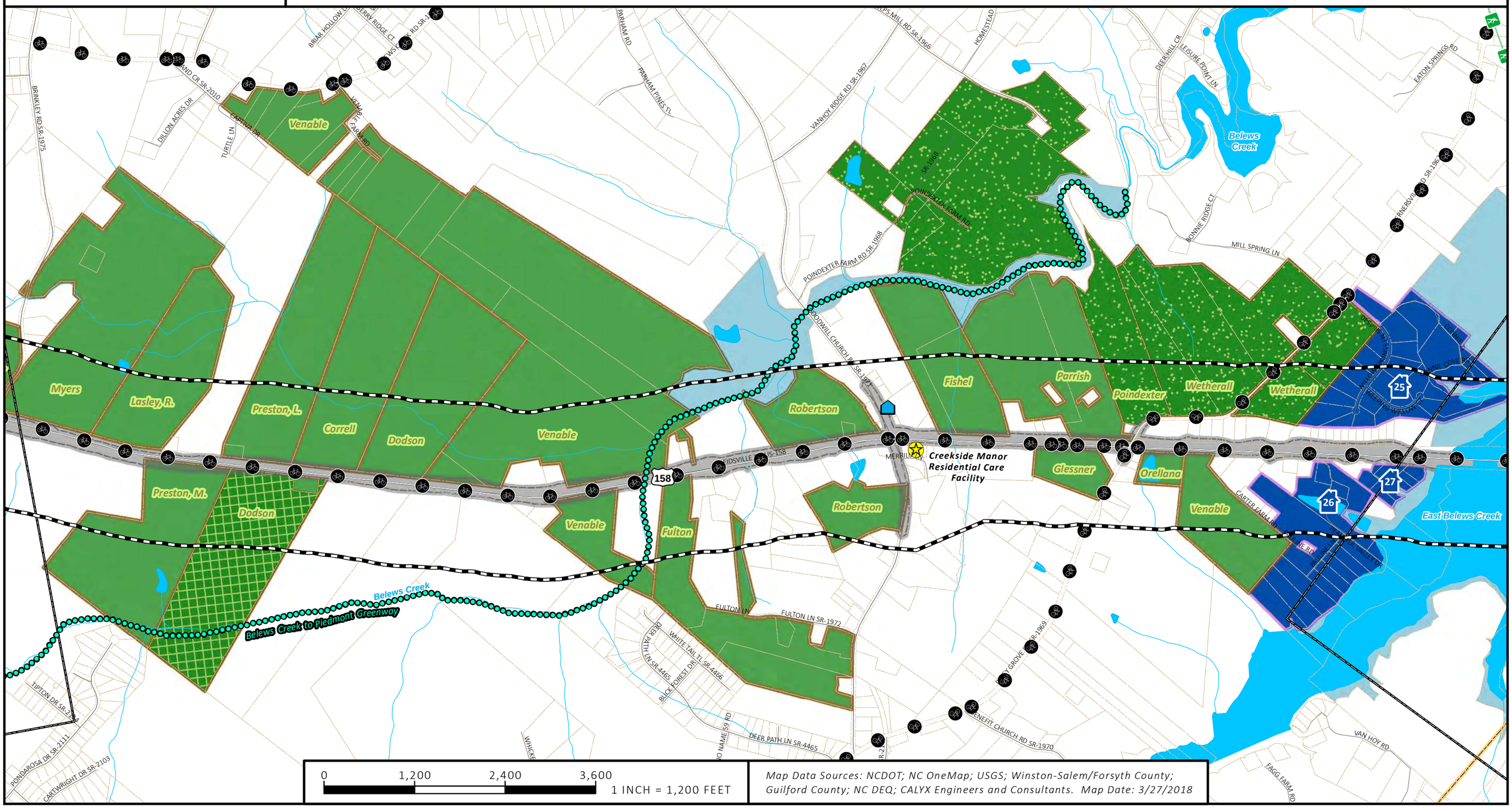
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3C. Community Context

R-2577 Section B
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
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- Business - Commercial
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- Business - Industrial
- Child Care Facility
- Pet Care Facility
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- Emergency Management Resource
- Other Community Resource



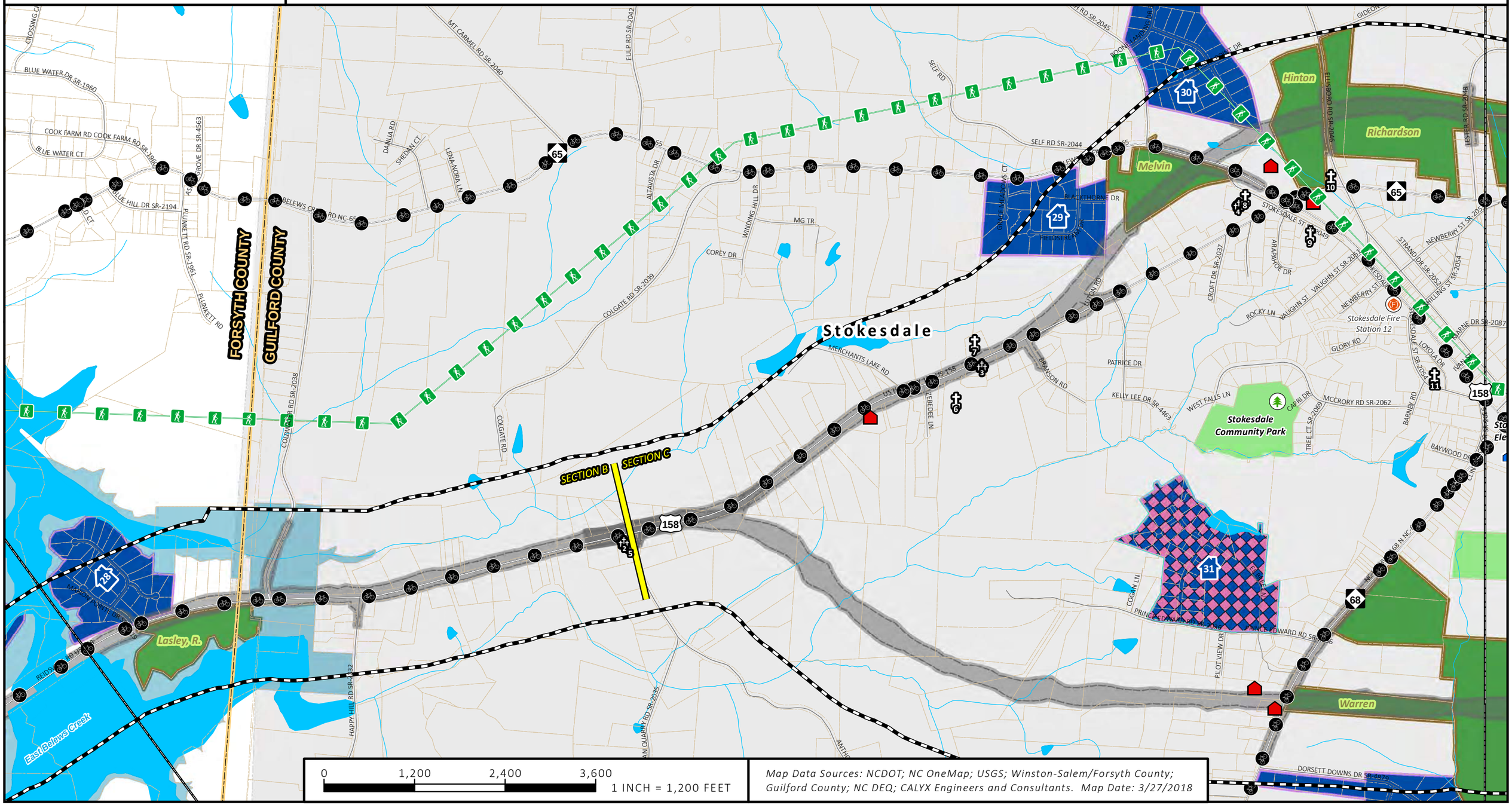
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3D. Community Context

R-2577 Section B-C
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
- Slope Stakes Line
- Slope Stakes + 40-Foot Buffer
- Winston-Salem Transit Route 94
- Locally Proposed Pedestrian Facility
- Locally Proposed Bicycle Facility
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- Cemetery
- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



0 — 1,200 — 2,400 — 3,600
1 INCH = 1,200 FEET

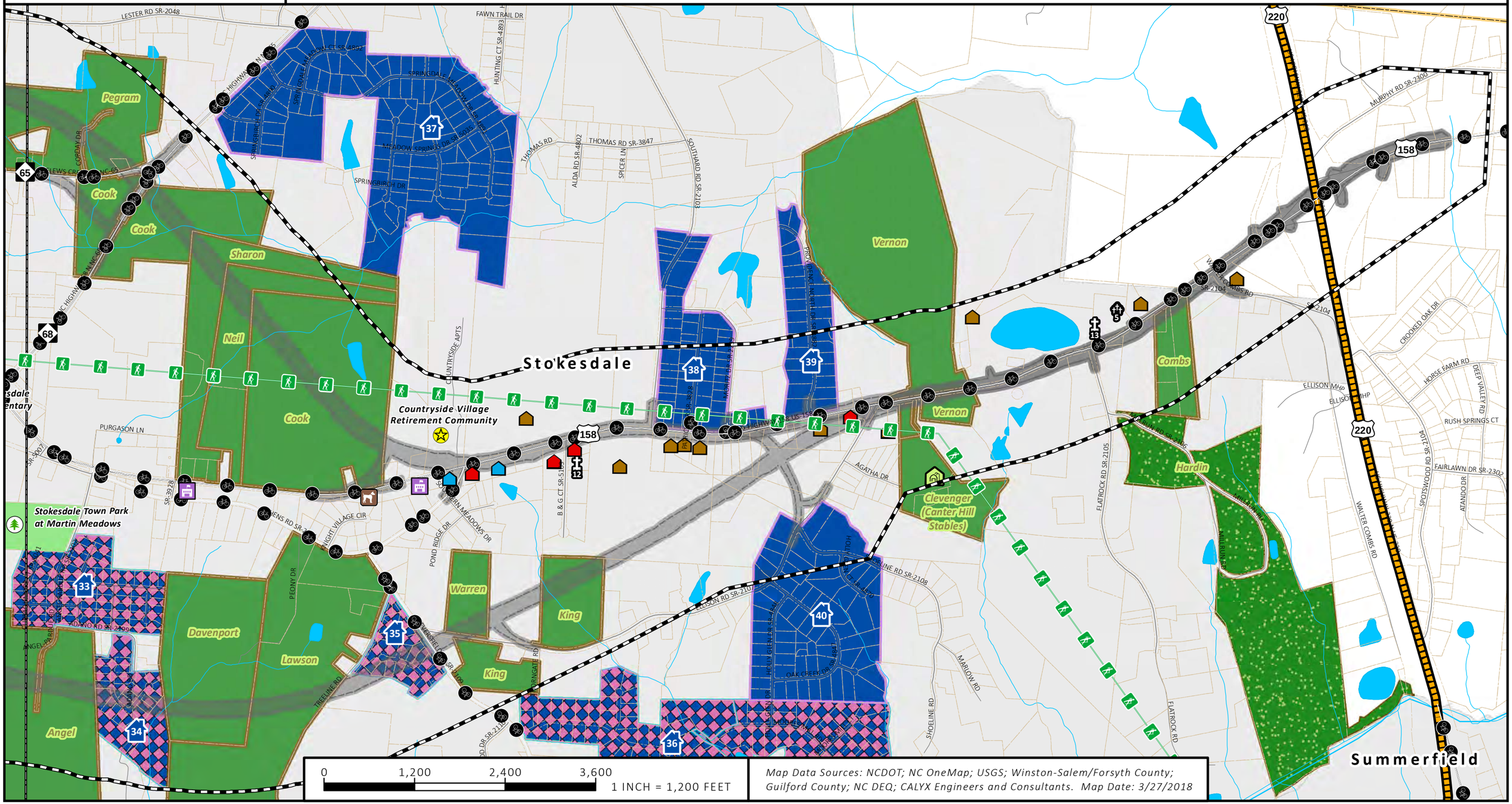
Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Figure 3E. Community Context

R-2577 Section C
Forsyth - Guilford

US 158 Improvements
From north of Business 40/US 421 in
Winston-Salem to US 220 in Stokesdale

- DCIA
- Map Grid Line
- Parcel Lines
- Stream
- Water Body
- Municipal Boundaries
- County Boundaries
- Railroad
- Nearby TIP Project
- Northern Beltway Right-of-Way
- Future Northern Beltway Corridor
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- Church
- Bus Stop
- Business - Commercial
- Business - Professional
- Business - Industrial
- Child Care Facility
- Pet Care Facility
- Gas Station
- Emergency Management Resource
- Other Community Resource



0 1,200 2,400 3,600
1 INCH = 1,200 FEET

Map Data Sources: NCDOT; NC OneMap; USGS; Winston-Salem/Forsyth County; Guilford County; NC DEQ; CALYX Engineers and Consultants. Map Date: 3/27/2018

Stormwater Management Plan

& Permit Drawings

R-2577 Section A

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

General Project Information

WBS Element:	37405.1.2	**TIP Number:**	R-2577A	**Project Type:**	Roadway Widening
Date:	3/8/2021				
NCDOT Contact:	Erik Seiler, PE	**Contractor / Designer:**	RK&K: Brent Huskey, PE		
Address:	NC Department of Transportation 1000 Birch Ridge Drive Raleigh, NC 27610	**Address:**	900 Ridgefield Drive Suite 350 Raleigh, NC 27609		
Phone:	919-707-6757	**Phone:**	919-878-9560		
Email:	epseiler@ncdot.gov	**Email:**	bhuskey@rkk.com		
City/Town:	Walkertown	**County(ies):**	Forsyth		
River Basin(s):	Yadkin-Pee Dee, Roanoke	**CAMA County?**	No		
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	5.76	**Surrounding Land Use:**	Commercial / Residential

	Proposed Project	Existing Site
Project Built-Upon Area (ac.)	66.6 ac.	34.8 ac.
Typical Cross Section Description:	The proposed typical cross section of US 158 will be a four lane divided highway with (2)-12' lanes each direction and 2'-6" curb and gutter on the outside lanes. For the majority of the roadway facility it will have a raised grass median with 1'-6" curb and gutter, protected turn lanes and turn bulbs.	The existing typical cross section for US 158 is a two lane highway with 12' lanes and 2' open shoulders.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 35,000 Year: 2040	Existing: 23,600 Year: 2017

General Project Narrative: (Description of Minimization of Water Quality Impacts)

The widening of US 158 between Old Greensboro Rd and Belews Creek Rd will involve alignment improvement, adding lanes, drainage improvements, new structures such as dual bridges and culvert extensions. The project also includes signal improvements and utility relocations . There are three major crossings on the project providing adequate cross sectional openings to allow water to travel under US 158 without impacting any structures adjacent to the project. The three major crossings consist of a set of dual bridges and two RCBC extensions. Drainage outfalls along the project have been analyzed to verify stability as well as outlet protection has been incorporated into the design for all proposed drainage improvements. Areas of the project around jurisdictional features have incorporated steeper side slopes of 2:1 to minimize impacts. The first 75 percent of the project is located in the Yadkin Pee-Dee river basin and the remaining 25 percent of the project as you travel though the NC-66 intersection transitions to the Roanoke river basin. Neither river basin adheres to buffer requirements.

Waterbody Information

Surface Water Body (1):	Lowery Mill Creek	**NCDWR Stream Index No.:**	19-94-12-3-(0.5)
NCDWR Surface Water Classification for Water Body	**Primary Classification:**	Water Supply III (WS-III)	
	Supplemental Classification:	None	
Other Stream Classification:	None		
Impairments:	None		
Aquatic T&E Species?	No	Comments:	
NRTR Stream ID:	SEW	**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)	**Dissipator Pads Provided in Buffer?** N/A
(If yes, provide justification in the General Project Narrative)			(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

Additional Waterbody Information

Surface Water Body (2):	Martin Mill Creek		**NCDWR Stream Index No.:**	12-94-12-3-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply III (WS-III)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SES			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	Left Fork Belews Creek		**NCDWR Stream Index No.:**	22-27-5		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	SEL			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: **TIP No.:** R-2577A **County(ies):** Forsyth

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
17	-L- 252+50 RT 36.1656162, -080.1370451	Lowery Mill Creek	PSH	Class 'B'	1.1	Pipe	24	5.4	0.8	No

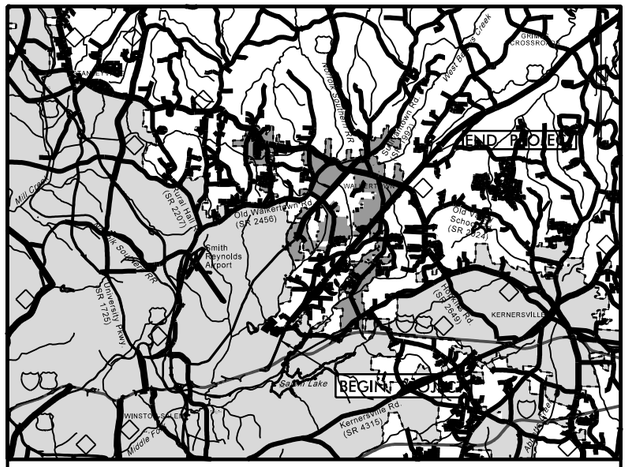
Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: R-2577A

CONTRACT:



VICINITY MAP (NTS)

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

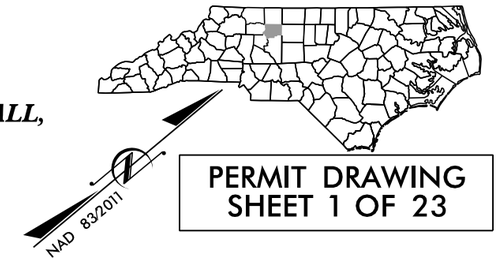
FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2577A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
37405.1.2	N/A	PE
37405.2.4	N/A	R/W
37405.3.1	N/A	CONST.

LOCATION: *US 158 (REIDSVILLE RD.) FROM NORTH OF US 421 /I-40 BUS. TO SR 1965 (BELEWS CREEK RD.)*

TYPE OF WORK: *GRADING, PAVING, WIDENING, DRAINAGE, CULVERTS, SIGNING, STRUCTURES, RETAINING WALL, SIGNALS, & UTILITIES*

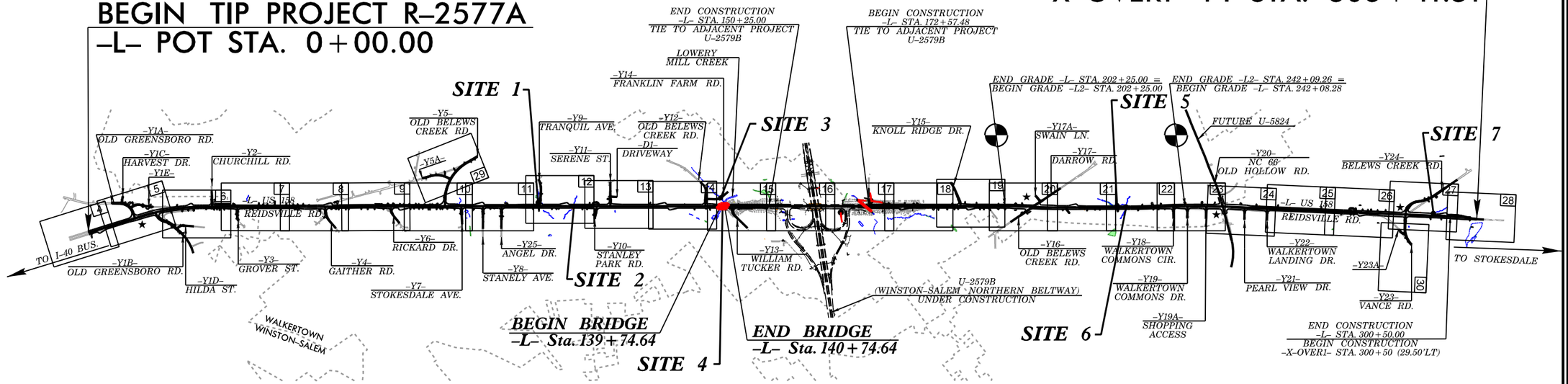


PERMIT DRAWING
SHEET 1 OF 23

STREAM AND WETLAND IMPACTS

BEGIN TIP PROJECT R-2577A
-L- POT STA. 0+00.00

END TIP PROJECT R-2577A
-X-OVER1- PT STA. 306+41.51



NOTES:
1. A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF WINSTON-SALEM AND WALKERTOWN.
2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
3. THIS PROJECT HAS PARTIAL CONTROL OF ACCESS WITH FULL CONTROL OF ACCESS AT POINTS AS SHOWN ON PLANS.

★ PROPOSED TRAFFIC SIGNAL

ENGLISH

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2017 = 23,600
ADT 2040 = 35,000
V = 50 MPH
K = 8%
D = 60%
T = 14% *
* TTST = 8% DUAL = 6%

FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2577A..... 5.349 miles

LENGTH STRUCTURE TIP PROJECT R-2577A..... 0.031 miles

TOTAL LENGTH OF PROJECT R-2577A..... 5.380 miles

PLANS PREPARED BY:
RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. F-0112
1-888-521-4455 OR 919-878-9560
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: February 26, 2021

LETTING DATE: December 19, 2023

Scott D. Blevins, PE
PROJECT ENGINEER

John R.G. Olinger, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: Connie James, PE
DIVISION 9

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

5/6/2021
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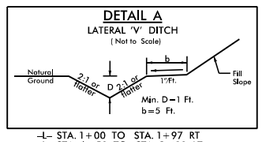
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	2D-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

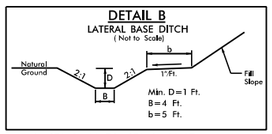
PERMIT DRAWING SHEET 2 OF 23

DETAIL A
LATERAL 'V' DITCH
(Not to Scale)



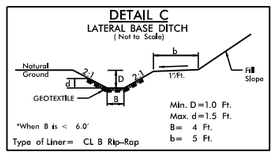
–L– STA. 1+00 TO STA. 1+97 RT
–L– STA. 6+50 TO STA. 8+00 LT
–L– STA. 11+19 TO STA. 11+44 LT
–L– STA. 12+00 TO STA. 16+00 LT
–L– STA. 16+50 TO STA. 20+50 RT
–L– STA. 22+00 TO STA. 23+24 RT
–L– STA. 25+00 TO STA. 27+50 RT
–L– STA. 35+80 TO STA. 38+00 RT
–L– STA. 41+00 TO STA. 45+50 RT
–L– STA. 47+50 TO STA. 51+50 RT
–L– STA. 59+00 TO STA. 60+50 RT
–L– STA. 62+79 TO STA. 66+50 RT
–L– STA. 67+80 TO STA. 69+00 RT
–Y1A– STA. 15+61.54 TO STA. 15+95.66 LT
–Y6– STA. 10+62 TO STA. 11+35 RT
–Y8– STA. 10+67 TO STA. 11+50 LT
–L– STA. 78+00 TO STA. 82+49 RT
–L– STA. 82+00 TO STA. 83+00 LT
–L– STA. 88+50 TO STA. 89+90 RT
–L– STA. 88+00 TO STA. 90+00 LT
–L– STA. 103+00 TO STA. 105+00 RT
–L– STA. 109+50 TO STA. 112+00 RT
–L– STA. 113+50 TO STA. 128+50 RT
–L– STA. 116+22 TO STA. 123+00 LT
–Y13– STA. 10+85 TO STA. 11+50 RT
–L– STA. 175+46 TO STA. 179+00 LT
–L– STA. 182+11 TO STA. 184+00 LT
–L– STA. 185+20 TO STA. 185+50 RT
–L– STA. 186+50 TO STA. 192+52 RT
–L– STA. 195+69 TO STA. 198+50 LT
–L– STA. 199+50 TO STA. 200+07RT
–L– STA. 242+22 TO STA. 245+50 LT
–L– STA. 228+23 TO STA. 228+69 RT
–L– STA. 284+00 TO STA. 285+22 RT
–L– STA. 286+50 TO STA. 290+10 RT
–L– STA. 291+00 TO STA. 296+00 RT, D=1.5
–L– STA. 291+50 TO STA. 294+50 LT, D=1.5
–Y24– STA. 20+00 TO STA. 22+23 RT
–Y24– STA. 23+00 TO STA. 23+63 RT
–L2– STA. 215+50 TO STA. 217+50 LT
–L2– STA. 236+00 TO STA. 238+75 RT
–L– STA. 247+11 TO STA. 250+00 RT
–L2– STA. 228+23 TO STA. 228+69 RT
–L2– STA. 229+50 TO STA. 230+00 LT
–L2– STA. 235+34 TO STA. 238+50 LT
–Y10– STA. 10+72 TO STA. 11+50 LT
–Y17A– STA. 10+50 TO STA. 11+34 LT
–Y17A– STA. 10+50 TO STA. 11+00 RT
–L– STA. 199+43 TO STA. 200+07 RT
–L– STA. 296+28 TO STA. 297+68 RT, D=2'
–L– STA. 297+68 TO STA. 298+00 RT, D=1.5'
–L– STA. 301+05 TO STA. 304+77 RT

DETAIL B
LATERAL BASE DITCH
(Not to Scale)



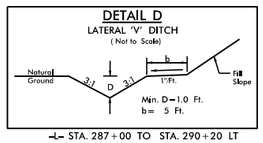
–L– STA. 2+00 TO STA. 3+00 LT
–L– STA. 35+00 TO STA. 35+80 RT, M=4
–L– STA. 129+50 TO STA. 131+75 LT
–Y9– STA. 13+50 TO STA. 14+50 LT
–Y11– STA. 12+17 TO STA. 13+00 LT
–Y11– STA. 14+00 TO STA. 14+40 LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



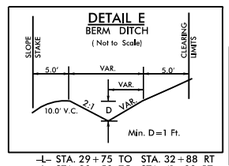
–L– STA. 98+00 TO STA. 99+71 RT
–L– STA. 100+50 TO STA. 100+92 RT
–L– STA. 101+02 TO STA. 102+00 LT
–L– STA. 106+50 TO STA. 108+50 LT
–L– STA. 113+02 TO STA. 113+50 RT
–L– STA. 140+51 TO STA. 142+00 RT
–Y9– STA. 14+50 TO STA. 15+06 LT
–L– STA. 294+50 TO STA. 297+50 LT, D=1.5, B=3, CL I RIP-RAP
–L– STA. 297+50 TO STA. 298+07 LT, M=3, D=1.5, B=3

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)



–L– STA. 287+00 TO STA. 290+20 LT

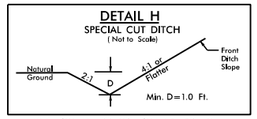
DETAIL E
BERM DITCH
(Not to Scale)



–L– STA. 29+75 TO STA. 32+88 RT
–L– STA. 38+50 TO STA. 41+00 RT
–L– STA. 83+00 TO STA. 87+28 LT
–L– STA. 94+50 TO STA. 96+50 LT
–Y3– STA. 10+91 TO STA. 11+20 RT
–L– STA. 102+50 TO STA. 106+00 LT
–L– STA. 124+50 TO STA. 128+50 LT
–L– STA. 132+50 TO STA. 135+78 LT
–L– STA. 179+50 TO STA. 182+00 LT
–L– STA. 193+19 TO STA. 195+69 LT
–L2– STA. 235+40 TO STA. 236+00 RT
–Y15– STA. 12+50 TO STA. 15+00 LT
–Y5– STA. 18+50 TO STA. 22+50 RT
–X–OER– STA. 302+46.78 TO STA. 305+62.57 RT

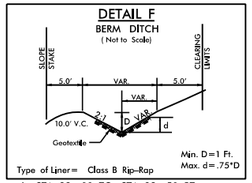
ENGLISH

DETAIL H
SPECIAL CUT DITCH
(Not to Scale)



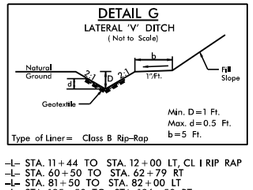
–Y1B– STA. 11+03 TO STA. 15+79 LT
–Y1B– STA. 17+50 TO STA. 18+00 LT
–Y1B– STA. 17+50 TO STA. 18+00 RT
–Y1C– STA. 10+00 TO STA. 11+00 LT
–Y1C– STA. 10+00 TO STA. 11+00 RT
–Y1D– STA. 12+00 TO STA. 12+50 LT
–Y1D– STA. 12+00 TO STA. 13+77 RT
–Y2– STA. 12+00 TO STA. 12+50 RT
–Y3– STA. 11+50 TO STA. 13+00 LT
–Y3– STA. 11+50 TO STA. 13+00 RT
–Y25– STA. 12+50 TO STA. 13+00 LT
–Y25– STA. 12+50 TO STA. 13+00 RT
–Y11– STA. 11+50 TO STA. 12+00 RT
–Y12– STA. 12+25 TO STA. 22+50 RT
–Y13– STA. 11+00 TO STA. 13+00 LT
–Y4– STA. 12+50 TO STA. 14+00 LT
–Y4– STA. 12+50 TO STA. 14+00 RT
–Y5– STA. 21+50 TO STA. 22+50 LT
–Y5– STA. 10+00 TO STA. 11+50 LT
–Y5– STA. 10+00 TO STA. 11+50 RT
–Y5– STA. 21+50 TO STA. 22+50 RT
–Y5A– STA. 10+00 TO STA. 11+00 LT
–Y5A– STA. 10+00 TO STA. 11+00 RT
–Y5A– STA. 15+50 TO STA. 16+14 RT
–Y6– STA. 11+35 TO STA. 11+85 LT
–Y6– STA. 11+35 TO STA. 11+85 RT
–Y7– STA. 10+94 TO STA. 12+00 RT
–Y8– STA. 11+78 TO STA. 12+50 LT
–Y15– STA. 11+25 TO STA. 11+50 LT
–Y15– STA. 11+25 TO STA. 12+50 RT
–Y23– STA. 15+50 TO STA. 17+00 RT
–Y23– STA. 16+00 TO STA. 17+00 LT
–Y24– STA. 13+09 TO STA. 14+00 LT
–Y24– STA. 13+09 TO STA. 15+50 RT
–Y1D– STA. 13+50 TO STA. 13+77 LT
–Y5A– STA. 15+96 TO STA. 16+10 LT
–Y5– STA. 17+50 TO STA. 17+61 RT
–X–OVER– STA. 302+46.78 TO STA. 305+62.57 RT

DETAIL F
BERM DITCH
(Not to Scale)



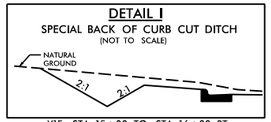
–L– STA. 38+00 TO STA. 38+50 RT
–L– STA. 83+50 TO STA. 84+50 LT
–L– STA. 87+28 TO STA. 88+00 LT
–L– STA. 94+00 TO STA. 94+50 RT
–Y12– STA. 22+00 TO STA. 23+88 RT

DETAIL G
LATERAL 'V' DITCH
(Not to Scale)



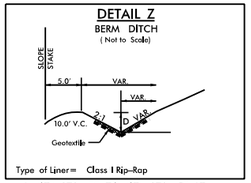
–L– STA. 11+44 TO STA. 12+00 LT, CL I RIP RAP
–L– STA. 60+50 TO STA. 62+79 RT
–L– STA. 81+50 TO STA. 82+00 LT
–L– STA. 185+50 TO STA. 186+50 RT
–Y17– STA. 14+00 TO STA. 14+50 LT, CL I RIP RAP

DETAIL I
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



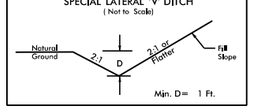
–Y1E– STA. 15+00 TO STA. 16+00 RT
–L– STA. 20+50 TO STA. 22+00 RT
–L– STA. 23+24 TO STA. 25+00 RT
–L– STA. 28+00 TO STA. 29+50 RT
–L– STA. 55+50 TO STA. 59+00 RT
–L– STA. 73+65 TO STA. 78+50 LT
–L– STA. 80+00 TO STA. 81+50 LT
–L– STA. 90+00 TO STA. 92+75 LT
–L– STA. 93+10 TO STA. 94+00 LT
–L– STA. 123+00 TO STA. 124+00 LT
–L– STA. 182+00 TO STA. 192+11 LT
–L– STA. 184+00 TO STA. 192+00 LT
–Y1A– STA. 12+50 TO STA. 14+24 LT
–Y5– STA. 22+50 TO STA. 23+31 RT

DETAIL Z
BERM DITCH
(Not to Scale)



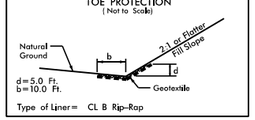
–L– STA. 179+00 TO STA. 179+50 LT

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



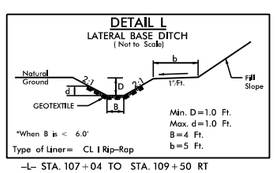
–L– STA. 0+00 TO STA. 02+00 LT
–Y1A– STA. 11+00 TO STA. 12+00 LT
–Y1E– STA. 12+00 TO STA. 15+00 RT

DETAIL K
TOE PROTECTION
(Not to Scale)



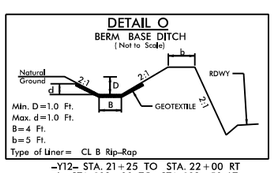
–L– STA. 2+00 TO STA. 2+50 RT
–L– STA. 3+00 TO STA. 3+60 LT
–L– STA. 4+05 TO STA. 6+00 LT
–L– STA. 7+06 TO STA. 9+45 RT
–L– STA. 8+40 TO STA. 9+86 LT
–L– STA. 22+00 TO STA. 23+00 LT
–L– STA. 37+00 TO STA. 38+00 LT
–L– STA. 95+00 TO STA. 97+50 RT
–L– STA. 98+40 TO STA. 99+54 LT
–L– STA. 101+50 TO STA. 102+62 RT
–Y14– STA. 13+22 TO STA. 13+73 RT
–L– STA. 137+50 TO STA. 139+50 LT
–L2– STA. 217+52 TO STA 218+50 LT
–L2– STA. 229+00 TO STA 230+50 RT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



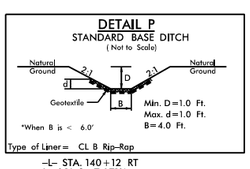
–L– STA. 107+04 TO STA. 109+50 RT

DETAIL O
BERM BASE DITCH
(Not to Scale)



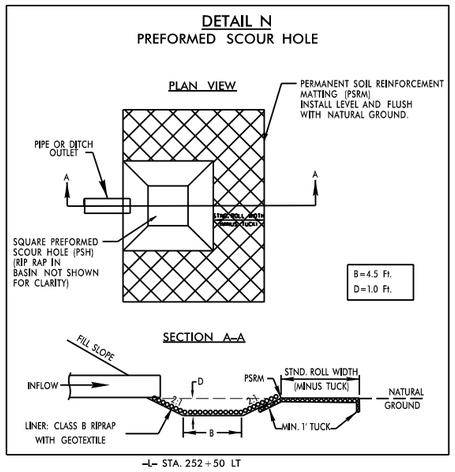
–Y12– STA. 21+25 TO STA. 22+00 RT
–L– STA. 102+00 TO STA. 102+50 LT
–L– STA. 128+50 TO STA. 129+50 LT

DETAIL P
STANDARD BASE DITCH
(Not to Scale)



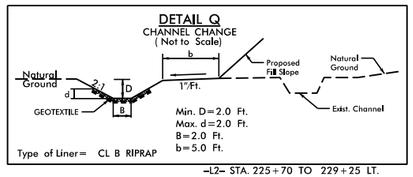
–L– STA. 140+12 RT
L=28', S=7.071%
BEG. EL=842.00', END EL=840.02'
–L– STA. 100+92 RT, MIN. D=0.5'
L=36', S=12.64%, M=3
BEG. EL=861.00', END EL=856.45'

DETAIL N
PREFORMED SCOUR HOLE



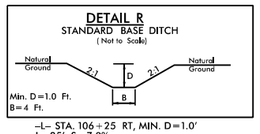
–L– STA. 252+50 LT

DETAIL Q
CHANNEL CHANGE
(Not to Scale)



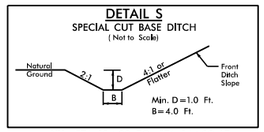
–L2– STA. 225+70 TO 229+25 LT.

DETAIL R
STANDARD BASE DITCH
(Not to Scale)



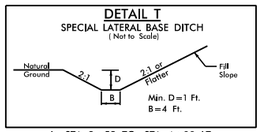
–L– STA. 106+25 RT, MIN. D=1.0'
L=25', S=7.0%
BEG. EL=863.60', END EL=861.85'
–Y4– STA. 12+50 LT, MIN D=1.5'
L=163', S=1.85%
BEG. EL=927.27', END EL=924.24'

DETAIL S
SPECIAL CUT BASE DITCH
(Not to Scale)



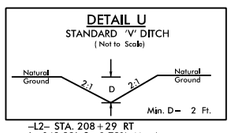
–Y11– STA. 13+00 TO STA. 14+00 LT

DETAIL T
SPECIAL LATERAL BASE DITCH
(Not to Scale)



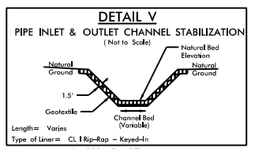
–L– STA. 3+59 TO STA. 4+00 LT

DETAIL U
STANDARD 'V' DITCH
(Not to Scale)



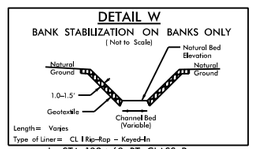
–L2– STA. 208+29 RT
L=143.89', S=0.73%, M=4
BEG. EL= 966.90', END EL. 965.85'
–L– STA. 285+22 RT
L=139', S=1.8%, M=2
BEG. EL= 963.93', END EL. 961.44'
–L2– STA. 240+47 RT
L=162', S= 0.99%, M=3.5
BEG. EL= 962.26', END EL. 963.88'
–L– STA. 242+08 RT
L=162', S= 1.08%, M=5
BEG. EL= 963.88', END EL. 963.94'
–L– STA. 243+14 RT
L=136', S= 5.38%, M=5
BEG. EL= 968.22', END EL. 975.53'

DETAIL V
PIPE INLET & OUTLET CHANNEL STABILIZATION
(Not to Scale)



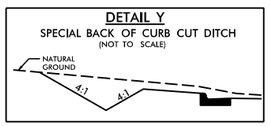
–L– 101+34 RT
–L– STA. 106+50 RT
–L– STA. 107+85 LT
–L2– STA. 228+78 RT
–L2– STA. 229+03 LT
–Y9– STA. 14+65 RT
–Y14– STA. 13+13 LT
–Y14– STA. 13+43 RT

DETAIL W
BANK STABILIZATION ON BANKS ONLY
(Not to Scale)



–L– STA. 139+63 RT; CLASS B
–L– STA. 139+86 RT
–L– STA. 140+50 LT
–L– STA. 140+75 LT; CLASS II
–L– STA. 298+07 LT

DETAIL Y
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–L– STA. 90+25 TO STA. 91+20 RT
–Y25– STA. 10+73 TO STA. 11+00 RT

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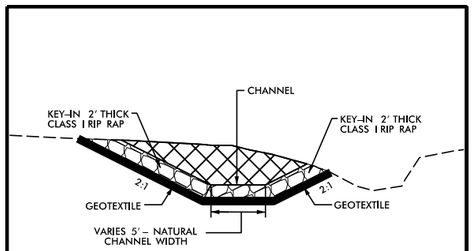
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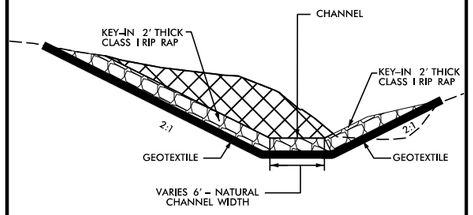
PROJECT REFERENCE NO.	SHEET NO.
R-2577A	2D-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UT LOWERY MILL CREEK DETAILS –L– 107 + 57

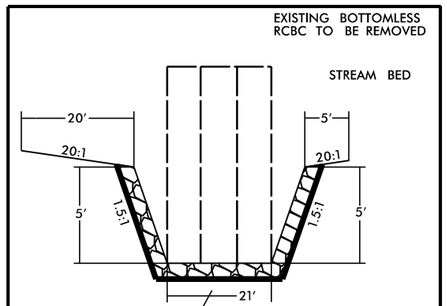


INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH = 25'



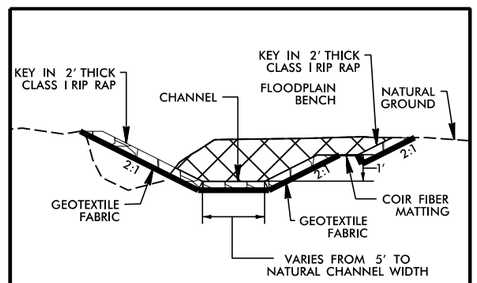
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH = 70'

LOWERY MILL CREEK DETAIL –L– 140 + 39.5

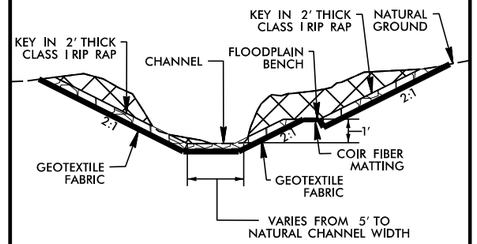


CHANNEL DETAIL
LOOKING DOWNSTREAM
LENGTH = 105', SLOPE = 1.33%
(NTS)

MARTIN MILL CREEK DETAILS –L2– 229 + 09



INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH = 30'



OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH = 35'

ENGLISH

PERMIT DRAWING
SHEET 3 OF 23

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/2011

-Y9- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y9- PC Sta. 10+35.75

-Y9- PT Sta. 12+83.63

-L- POT Sta. 100+08.10

-Y9- POT Sta. 16+03.54

SHIRLEY P MOORE
DB 1216 PG 771
PB 21PG 69

HOBART L JONES
CAROLYN G JONES
DB 2883 PG 1030
PB 21PG 69

YVETTA M GLENN
DB 3000 PG 1866
PB 21PG 69

BOBBIE H MILLER
DB 878 PG 762
DB 885 PG 1778
PB 21PG 69

CLARENCE M HOOKER
ANNE HOOKER
DB 1126 PG 282
PB 21PG 69

JOHN E BEESON
NANCY P BEESON
DB 564 PG 121

WALTER S WATLINGTON
DB 1934 PG

WALTER L HARRIS
PATRICIA HARRIS
DB 1617 PG 3940

JOHN E BEESON
NANCY BEESON
DB 855 PG 273

TRACIE B CARTER
ALEX T CARTER
DB 2859 PG 2689

JOHN E BEESON
NANCY P BEESON
DB 549 PG 1
DB 564 PG 121

DORENE T GOURLEY
DB 786 PG 455

HELMENDACH
WOOTE
PG 445

SITE 1A
SITE 1B
SITE 1C
SITE 1D
SITE 1E
SITE 2A
SITE 2B
SITE 2C
SITE 2D
SITE 2E
SFD
SFC
SFB
WJA

SEE INSET A
SEE INSET B

INSET A

INSET B

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

MATCHLINE –L– STA. 98+00 SEE SHEET 11

MATCHLINE –L– STA. 111+00 SEE SHEET 13

FOR INTERSECTION DETAILS, SEE SHEET 2B–3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 34
FOR –Y9– PROFILE SEE SHT. 45

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 4 OF 23

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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8/6/2021

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y9- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y9- PC Sta. 10+35.75

-Y9- PT Sta. 12+83.63

-Y9- POT Sta. 16+03.54
-L- POT Sta. 100+08.10

SITE 1A
SITE 1B
SITE 1C
SITE 1D
SITE 1E
SITE 2A
SITE 2B
SITE 2C
SITE 2D
SITE 2E

SFD
SFC
WJA
SFB

SEE INSET A
SEE INSET B

INSET A
INSET B

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

MATCHLINE –L– STA. 98+00 SEE SHEET 11

MATCHLINE –L– STA. 111+00 SEE SHEET 13

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING SHEET 5 OF 23

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR INTERSECTION DETAILS, SEE SHEET 2B–3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 34
FOR –Y9– PROFILE SEE SHT. 45

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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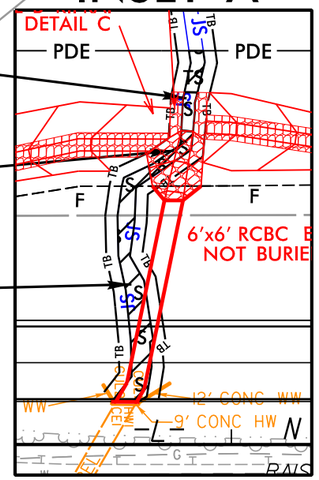
NAD 83/2011

INSET A

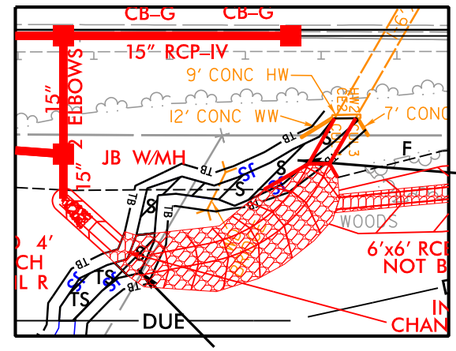
SITE 2A

SITE 2B

SITE 2C



INSET B



SITE 2D

SITE 2E

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

SHIRLEY P MOORE
DB 1216 PG 771
PB 21PG 69

HOBART L JONES
CAROLYN G JONES
DB 2883 PG 1030
PB 21PG 69

YVETTA M GLENN
DB 3000 PG 1866
PB 21PG 69

BOBBIE H MILLER
DB 878 PG 762
DB 885 PG 1778
PB 21PG 69

CLARENCE M HOOKER
ANNE HOOKER
DB 828 PG 282
PB 21PG 69

JOHN E BEESON
NANCY P BEESON
DB 564 PG 1

TRACIE B CARTER
ALEX T CARTER
DB 2859 PG 2689

JOHN E BEESON
NANCY P BEESON
DB 549 PG 1
DB 564 PG 121

WALTER S WATLINGTON
DB 1934 PG 641
PG 624
W JOHNSON

WALTER L HARRIS
PATRICIA HARRIS
DB 1617 PG 3940

JOHN E BEESON
NANCY P BEESON
DB 455 PG 273

DORENE T GOURLEY
DB 786 PG 455

HELMENDACH
WOOTE
PG 445

-Y9- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y9- PC Sta. 10+35.75

-Y9- PT Sta. 12+83.63

-Y9- POT Sta. 16+03.54=
-L- POT Sta. 100+08.10

SITE 1A

SITE 1B

SFD

WJA

SFC

SITE 1C

SITE 1D

SITE 1E

SFB

SITE 2A

SEE INSET A

SITE 2C

SITE 2B

SFB

SITE 2D

SEE INSET B

SITE 2E

SFB

SFC

FOR INTERSECTION DETAILS, SEE SHEET 2B-3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

MATCHLINE -L- STA. 98+00 SEE SHEET 11

MATCHLINE -L- STA. 111+00 SEE SHEET 13

105+00

100+00

110+00

15+00

-L- N 39° 49' 20.3" E

SCALE FOR INSET
25 0 25 50

SCALE
50 25 0 50 100

PERMIT DRAWING SHEET 6 OF 23

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR -L- PROFILE SEE SHT. 34
FOR -Y9- PROFILE SEE SHT. 45

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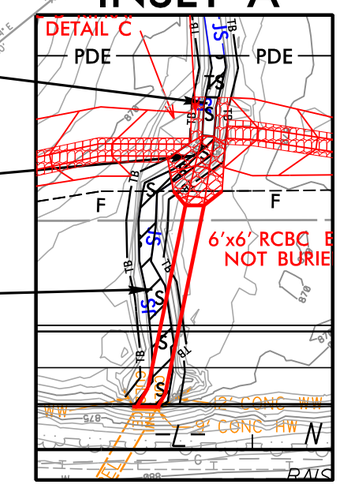
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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INSET A

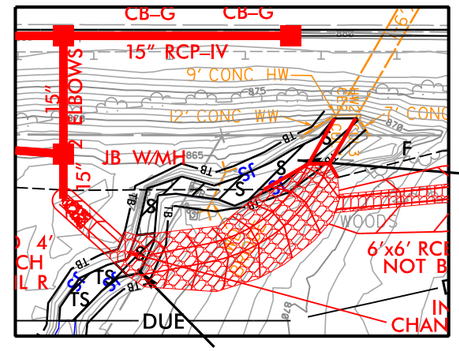


SITE 2A

SITE 2B

SITE 2C

INSET B



SITE 2D

SITE 2E

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

SITE 1A

SITE 1B

SFD

WJA

SFC

SITE 1C

SITE 1D

SITE 1E

SITE 2A

SITE 2B

SITE 2C

SITE 2D

SITE 2E

SFB

SFC

SEE INSET A

SEE INSET B

-Y9- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y9- PC Sta. 10+35.75

-Y9- PT Sta. 12+83.63

-Y9- POT Sta. 16+03.54=
-L- POT Sta.100+08.10

MATCHLINE -L- STA. 98+00 SEE SHEET 11

MATCHLINE -L- STA. 111+00 SEE SHEET 13

100+00

105+00

110+00

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

PERMIT DRAWING SHEET 7 OF 23

ENGLISH

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FOR INTERSECTION DETAILS, SEE SHEET 2B-3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHT. 34
FOR -Y9- PROFILE SEE SHT. 45

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Engineer

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 1
–L– STA. 101+02

PERMIT DRAWING
SHEET 8 OF 23

ENGLISH



TRENCHLESS INSTALLATION 72" WELDED STEEL
(length = 394')

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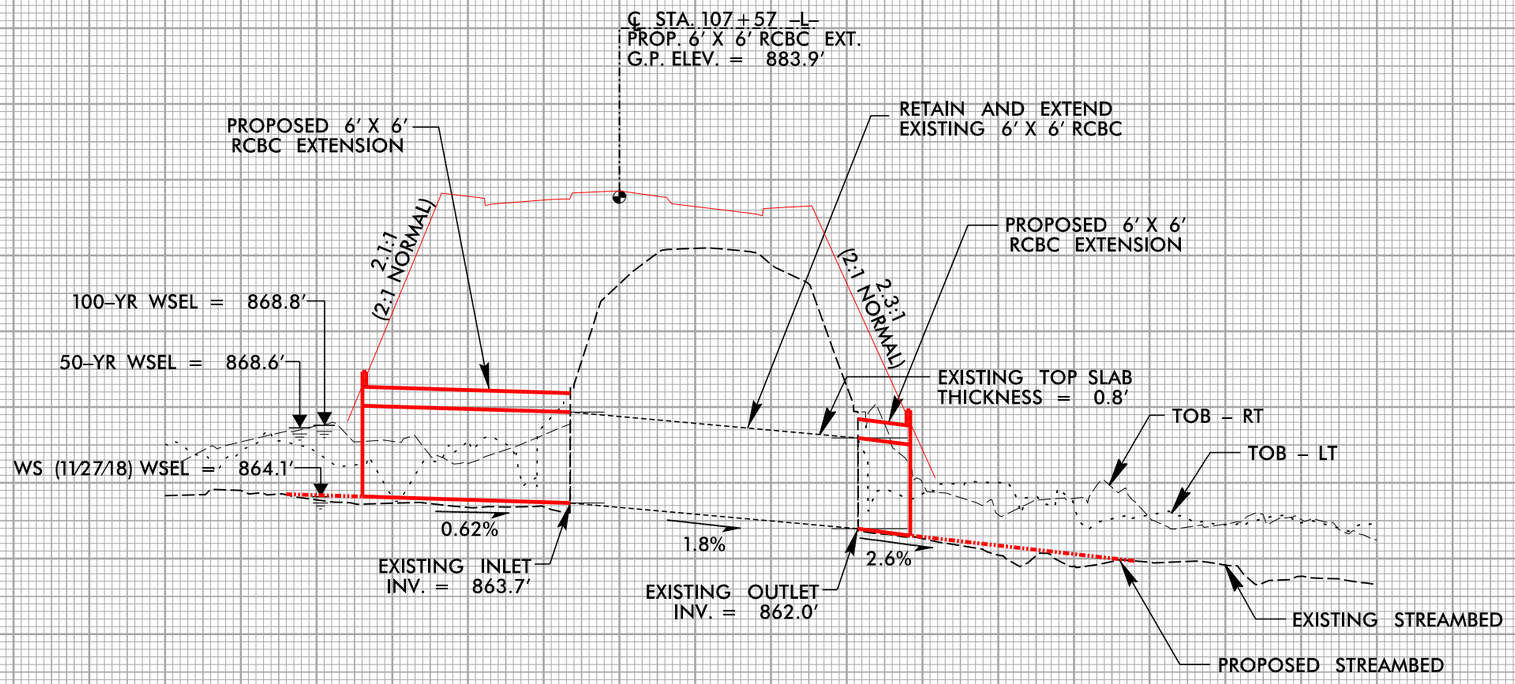
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 2
–L– STA. 107+57

PERMIT DRAWING
SHEET 9 OF 23

ENGLISH



PROPOSED 6'X6' RCBC EXTENSION (LENGTH=85')

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/2011

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 10 OF 23

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE 3A
SITE 3B
SEE INSET A
SITE 3C
SITE 3D
SITE 4A
SITE 4B
SFA
SEW
PN
WHX

MATCHLINE -Y14- STA. 11+50 SEE SHEET 14

MATCHLINE -L- STA. 138+50 SEE SHEET 14

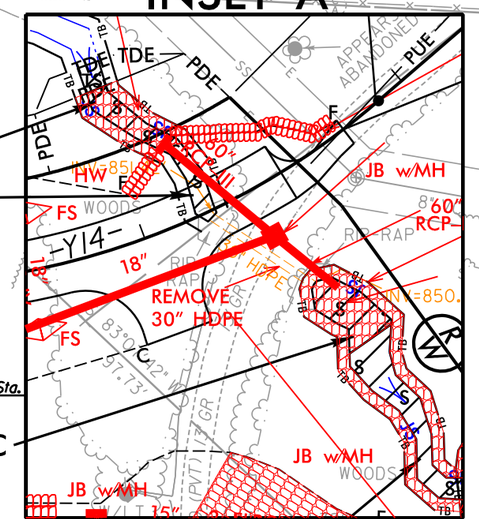
MATCHLINE -L- STA. 151+00 SEE SHEET 16

-Y14- PT Sta. 13+90.00
-Y14- PC Sta. 12+07.47
-Y14- POT Sta. 15+50.00
END CONSTRUCTION -Y14- POT Sta. 15+18.00
-Y14- POT Sta. 13+75.00
-Y13- POT Sta. 10+00.00= -L- POT Sta. 142+63.64
-Y13- PC Sta. 10+82.73
-Y13- PT Sta. 12+26.54
END CONSTRUCTION -Y13- POT Sta. 13+00.00
BEGIN BRIDGE -L- POT Sta. 139+55.88
BEGIN APPROACH SLAB -L- POT Sta. 139+27.15
END APPROACH SLAB -L- POT Sta. 141+49.87
END BRIDGE -L- POT Sta. 141+21.00
-Y13- POT Sta.

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V
TOE PROTECTION W/CL B RIPRAP SEE DETAIL K
BANK STABILIZATION ON BANKS ONLY SEE DETAIL W
REMOVE 30" HDPE
REMOVE SYSTEM

OWNERS HOLDING GROUP LLC DB 3212 PG 2698
WALDEN G. BALL BRENDA BALL
DANIEL RAY LASLEY DB 2817 PG 1752
LOUISE FRANKLIN DB 843 PG 125 DB 2686 PG 2459
PAUL JOHN SKOTCHER KATHLEEN SKOTCHER DB 2466 PG 1003
JASON K. STEWART DB 2119 PG 1046
RANDY L. DOUGLAS ANGIE L. DOUGLAS DB 2333 PG 3048
E.E. BRADLEY HEIRS DB 520 PG 97
CAROL WESTMORELAND DB 2105 PG 4144 DB 983 PG 526 DB 1809 PG 3712
JANE W WHICKER BETSY WHICKER DB 2226 PG 1305
DUKE POWER COMPANY EASEMENT AS PER P.B. 46 PG. 136

INSET A



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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/2011

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 11 OF 23

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

SITE 3A
SITE 3B
SEE INSET A
SITE 3C
SITE 3D
SITE 4A
SITE 4B
SFA
SEW
PN
WHX

MATCHLINE -Y14- STA. 11+50 SEE SHEET 14

MATCHLINE -L- STA. 138+50 SEE SHEET 14

MATCHLINE -L- STA. 151+00 SEE SHEET 16

-Y14- PT Sta. 13+90.00
-Y14- PC Sta. 12+07.47
-Y14- POT Sta. 15+50.00
END CONSTRUCTION -Y14- POT Sta. 15+18.00
-Y14- POT Sta. 13+75.00
-Y13- POT Sta. 10+00.00= -L- POT Sta.142+63.64
-Y13- PC Sta. 10+82.73
-Y13- PT Sta. 12+26.54
END CONSTRUCTION -Y13- POT Sta. 13+00.00
BEGIN BRIDGE -L- POT Sta.139+55.88
BEGIN APPROACH SLAB -L- POT Sta.139+27.15
END APPROACH SLAB -L- POT Sta. 141+49.87
END BRIDGE -L- POT Sta.141+21.00
N 83° 50' 49.6" E
S 44° 39' 09.9" E
N 39° 49' 20.3" E -L-
S 49° 59' 58.4" W
S 49° 53' 3" E

INSET A

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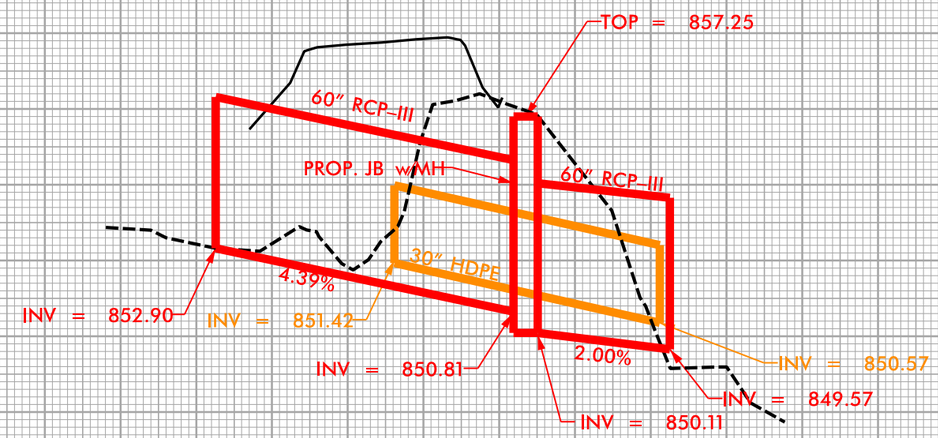
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 3
–Y14– STA. 13+25

PERMIT DRAWING
SHEET 12 OF 23

ENGLISH



860 860

850 850

840 840

250 200 150 100 50 0 50 100 150 200 250

PROPOSED 60" RCP–III
(TOTAL LENGTH=75')

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5/28/99

-L-

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 13 OF 23

ENGLISH

BM # 7
N 870883 E 1656287
-L- STA. 122+27.74 OFF 287' RT
ELEV=929.99'

PI = 124+25.00
EL = 934.20'
VC = 490'
K = 85
DS = 50 MPH

PROPOSED GRADE

(+)1.4037%

(-)14.3583%

EXISTING GROUND

(-)14.3583%

960 950 940 930 920 910 900 890 880 870

117+00 118+00 119+00 120+00 121+00 122+00 123+00 124+00 125+00 126+00 127+00 128+00 129+00 130+00 131+00

920 910 900 890 880 870 860 850 840 830

131+00 132+00 133+00 134+00 135+00 136+00 137+00 138+00 139+00 140+00 141+00 142+00 143+00 144+00 145+00

PI = 132+50.00
EL = 898.24'
VC = 600'
K = 501
DS > 80 MPH

(-)14.3583%

(-)13.1615%

30" RCP

-L- STA. 136+53.78
-Y12- STA. 24+74.20

BM # 8
N 872102 E 1657349
-L- STA. 138+44.14 OFF 325.01' RT
ELEV=837.30'

BEGIN BRIDGE
-L- STA. 139+55.88

END BRIDGE
-L- STA. 141+21.00

PROPOSED GRADE

PI = 142+70.00
EL = 866.00'
VC = 800'
K = 98
DS = 50 MPH

PI = 142+70.00
EL = 866.00'
VC = 800'
K = 98
DS = 50 MPH

MI
RS
FS
T
FS
T
RS
OVERTOPPING DISCHARGE = 32,000 CFS
OVERTOPPING ELEVATION = 873.70 FT

(-)13.1615%

(+)5.0000%

EXISTING 3-BARREL RCBC
BOTTOM ELEV.= 839.1'

-L- STA. 142+63.64
-Y13- STA. 10+00.00

EXISTING GROUND

BRIDGE HYDRAULIC DATA
-L- STA.139+54.50

DRAINAGE AREA	= 2.8	SQ MI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 1,900	CFS
DESIGN HW ELEVATION	= 848.50	FT
100 YEAR DISCHARGE	= 2,320	CFS
100 YEAR HW ELEVATION	= 849.00	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 32,000	CFS
OVERTOPPING ELEVATION	= 873.70	FT

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8/17/99

-L2-	-D3-
PI Sta 211+91.50	PI Sta 10+41.53
Δ = 2° 29' 10.3" (LT)	Δ = 38° 27' 10.1" (LT)
D = 0° 29' 53.6"	D = 143° 14' 22.0"
L = 499.01'	L = 26.85'
T = 249.55'	T = 13.95'
R = 11,500.00'	R = 40.00'
SE = NC	
DS = 50 MPH	

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L2- STA. 213+00 SEE SHEET 20

MATCHLINE -L2- STA. 226+00 SEE SHEET 22

-Y17- N 5° 52' 26.7" E

-Y17- POT Sta. 19+00.00

-L2- PT Sta. 214+40.97

-L2- POT Sta. 216+00.00=
-D3- POT Sta. 10+00.00

-L2- PC Sta. 210+27.58

-D3- PT Sta. 10+54.43

-D3- POT Sta. 11+50.00

-L2- N 39° 49' 20.3" E

-L2-
S 50° 10' 39.7" E

-BL- 128

SET

SITE 5A

SITE 5B

WHP

SEE INSET A

POSSIBLE SPRING HEAD

POSSIBLE SPRING HEAD

POSSIBLE SPRING HEAD

CHANNEL CHANGE SEE DETAIL Q

LATERAL V DITCH SEE DETAIL A

TOE PROTECTION W/CL B RIPRAP SEE DETAIL K

24" RCP-III

16" RCP-III

15" RCP-III

CB-G

CB-F

REMOVE

215+00

220+00

225+00

1'-6" CURB & GUTTER

RAISED GRASS MEDIAN

FRANCES C. SCOTT
DB 940 PG 237

JENNIFER A. KING
DB 3063 PG 376

ALMA W WATSON
DB 3350 PG 169

OIGUAN YE
YAN YING CHEN
DB 3159 PG 338
PB 19 PG 29

JACK IRIZARRY
JEANETTE E IRIZARRY
DB 1636 PG 417
PB 19 PG 29

A&C PROPERTIES OF FORSYTH, LLC
DB 2979 PG 799

CULTIVATED FIELD

WOODS

VOLLEYBALL COURT (SAND)

PLAYGROUND EQUIPMENT

WD. CANOPY OVER CONC. (PICNIC SHELTER)

HORSESHOE PIT

CONC. PICNIC TABLES

VARIOUS WIDTH SOIL/GR WALKING TRAILS

SITE 5A

CHANNEL CHANGE SEE DETAIL Q

DISAPPEARING STREAM

SITE 5B

INSET A

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 14 OF 23

ENGLISH

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHTS. 38-39
FOR -D3- PROFILE SEE SHT. 50

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8/6/2021
Richard Eng

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L2-	-D3-
PI Sta 211+91.50	PI Sta 10+41.53
Δ = 2° 29' 10.3" (LT)	Δ = 38° 27' 10.1" (LT)
D = 0° 29' 53.6"	D = 143° 14' 22.0"
L = 499.01'	L = 26.85'
T = 249.55'	T = 13.95'
R = 11,500.00'	R = 40.00'
SE = NC	
DS = 50 MPH	

NAD 83/2011

-Y17- N 5° 52' 26.7" E

-Y17- POT Sta. 19+00.00

-L2- PT Sta. 214+40.97

-L2- POT Sta. 216+00.00=
-D3- POT Sta. 10+00.00

-L2- S 50° 10' 39.7" E

PC Sta. 10+27.58

-D3- PT Sta. 10+54.43
S 88° 37' 49.8" E

-D3- POT Sta. 11+50.00

-L2- N 39° 49' 20.3" E

SET

SITE 5A

SITE 5B

WHP

SEE INSET A

POSSIBLE SPRING HEAD

POSSIBLE SPRING HEAD

POSSIBLE SPRING HEAD

CHANNEL CHANGE SEE DETAIL Q

LATERAL V DITCH SEE DETAIL A

TOE PROTECTION W/CL B RIPRAP SEE DETAIL B

REMOVE EXISTING CULVERT

MATCHLINE -L2- STA. 213+00 SEE SHEET 20

MATCHLINE -L2- STA. 226+00 SEE SHEET 22

JENNIFER A. KING DB 3063 PG 376

FRANCES C. SCOTT DB 940 PG 237

JACK IRIZARRY JEANETTE E IRIZARRY DB 1636 PG 417 PB 19 PG 29

A&C PROPERTIES OF FORSYTH, LLC DB 2979 PG 799

ALMA W WATSON DB 3350 PG 169

QIUQUAN YE YAN YING CHEN DB 3159 PG 338 PB 19 PG 29

DANIEL 094

INSET A

SCALE FOR INSET 25 0 25 50

SCALE 50 25 0 50 100

PERMIT DRAWING SHEET 15 OF 23

ENGLISH

DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHTS. 38-39
FOR -D3- PROFILE SEE SHT. 50

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Engineer

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSET C

NAD 83/2011

SITE 6C

SITE 6D

SITE 5B

WHP

SEE INSET A

SITE 5A

SEE INSET B

SITE 5C

SET

WHQ

SITE 6A

SITE 6B

-L2- N 39° 49' 20.5" E

18" 2 ELBOWS

5'x5' RCBC EXT. NOT BURIED

SP.DET.HW

CB-G

15" RCP-IV

8' CONC WW

EXIST. CAST IRON CONC. HW

SCALE FOR INSET: 25 0 25 50

SCALE: 50 25 0 50 100

PERMIT DRAWING SHEET 16 OF 23

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L2- STA. 226+00 SEE SHEET 21

MATCHLINE -L2- STA. 238+00 SEE SHEET 23

-L2- PC Sta. 230+12.51

-L2- PT Sta. 234+96.92

-L2- PC Sta. 237+24.85

-L2- N 37° 24' 31.8" E

-BL- 129 2 TONS CL B RIPRAP W/ 7 SY GEO FAB

-BL- 130

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

CHANNEL CHANGE SEE DETAIL Q

LATERAL 'V' DITCH SEE DETAIL A

RETAIN SYSTEM

REMOVE SYSTEM

REMOVE

REMOVE DI

RETAIN EX. RCBC

TOE PROTECTION W/CL B RIPRAP SEE DETAIL K

BENCHLESS INSTALLATION 48" WELDED STEEL

DISAPPEARING STREAM

RAISED GRASS MEDIAN

1'-6" CURB & GUTTER

APPROX. 25 L.F. CB-F

APPROX. 185 L.F. CB-F

230+00

235+00

INV=933.56

INV=939.83

INV=936.35

INV=936.35

15" RCP-IV

18" RCP-III

CB-F

CB-G

WOODS

PUE

EXISTING R/W

SEE INSET C

SITE 6D

SITE 6C

SES

CITY OF WINSTON SALEM DB 2249 PG 1263

ALMA W WATSON DB 3350 PG 869

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

INSET B

SET

WHQ

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

SITE 6A

-L2- PCs Sta

-BL- 129 2 TONS CL B RIPRAP W/ 7 SY GEO FAB

SITE 5A

OEP

CHANNEL CHANGE SEE DETAIL Q

DISAPPEARING STREAM

SITE 5A

15" 2 ELBOWS

SP.DET.HW

5'x5' RCBC NOT BURI

SITE 6B

8' CONC WW

6' CONC HW

CB-G

APPROX. 25 L.F. CB-F

SITE 5C

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHT. 39

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

INSET C

SITE 6C

SITE 6D

SITE 5B

WHP

SEE INSET A

SITE 5A

SEE INSET B

SITE 5C

SET

WHQ

SITE 6A

SITE 6B

-L2- N 39 49 20.3

12" CI

CAS 930 BONONG HW

E 15" RCP-IV

CB-G

8" CONC WW

18" 2 ELBOWS

5'x5' RCBC EX NOT BURIED

SP.DET.HW

EXIS

TB

S

F

RW

RTS

PUE

SF

SES

25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING SHEET 17 OF 23

ENGLISH

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE -L2- STA. 226+00 SEE SHEET 21

MATCHLINE -L2- STA. 238+00 SEE SHEET 23

-L2- PC Sta 230+12.51

-L2- PT Sta 234+96.92

-L2- PC Sta 237+24.85

-L2- N 39° 49' 20.5" E

-L2- N 37° 04' 31.8" E

230+00

235+00

-BL- 129

-BL- 130

2 TONS CL B RIPRAP W/ 7 SY GEO FAB

CHANNEL CHANGE SEE DETAIL Q

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

LATERAL V DITCH SEE DETAIL A

BERM DITCH SEE DETAIL E

DISAPPEARING STREAM

OEP

BENCHLESS INSTALLATION 48" WELDED STEEL

SP.DET.HW

5'x5' RCBC EXT NOT BURIED

RETAIN EX RCBC

REMOVE SYSTEM

1'-6" CURB & GUTTER

RAISED GRASS MEDIAN

15" RCP-IV

18" RCP-III

CB-F

CB-G

REMOVE

REMOVE DI

PLUG & FILL WELDABLE

FILL

SPLICE IN LOCATION

MILL/ADJUST DI

RETAIN SYSTEM

FOE PROTECTION W/CL B RIPRAP SEE DETAIL K

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

3 TONS CL B RIPRAP W/ 10 SY GEO FAB

18" 2 ELBOWS

5'x5' RCBC EXT NOT BURIED

SP.DET.HW

LATERAL V DITCH SEE DETAIL A

MARTIN MILL CREEK

CITY OF WINSTON SALEM DB 2249 PG 1263

ALMA W WATSON DB 3350 PG 869

EXISTING CULVERT IS NOT BURIED & PROPOSED EXTENSIONS ARE NOT TO BE BURIED

SEE INSET C

SITE 6D

SITE 6C

SES

SET

WHQ

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

SITE 6A

-L2- PC Sta

-BL- 129

2 TONS CL B RIPRAP W/ 7 SY GEO FAB

SITE 5A

OEP

CHANNEL CHANGE SEE DETAIL Q

DISAPPEARING STREAM

SITE 5A

15" 2 ELBOWS

SP.DET.HW

5'x5' RCBC NOT BURI

SITE 6B

CB-G

CB-F

SITE 5C

INSET B

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHT. 39

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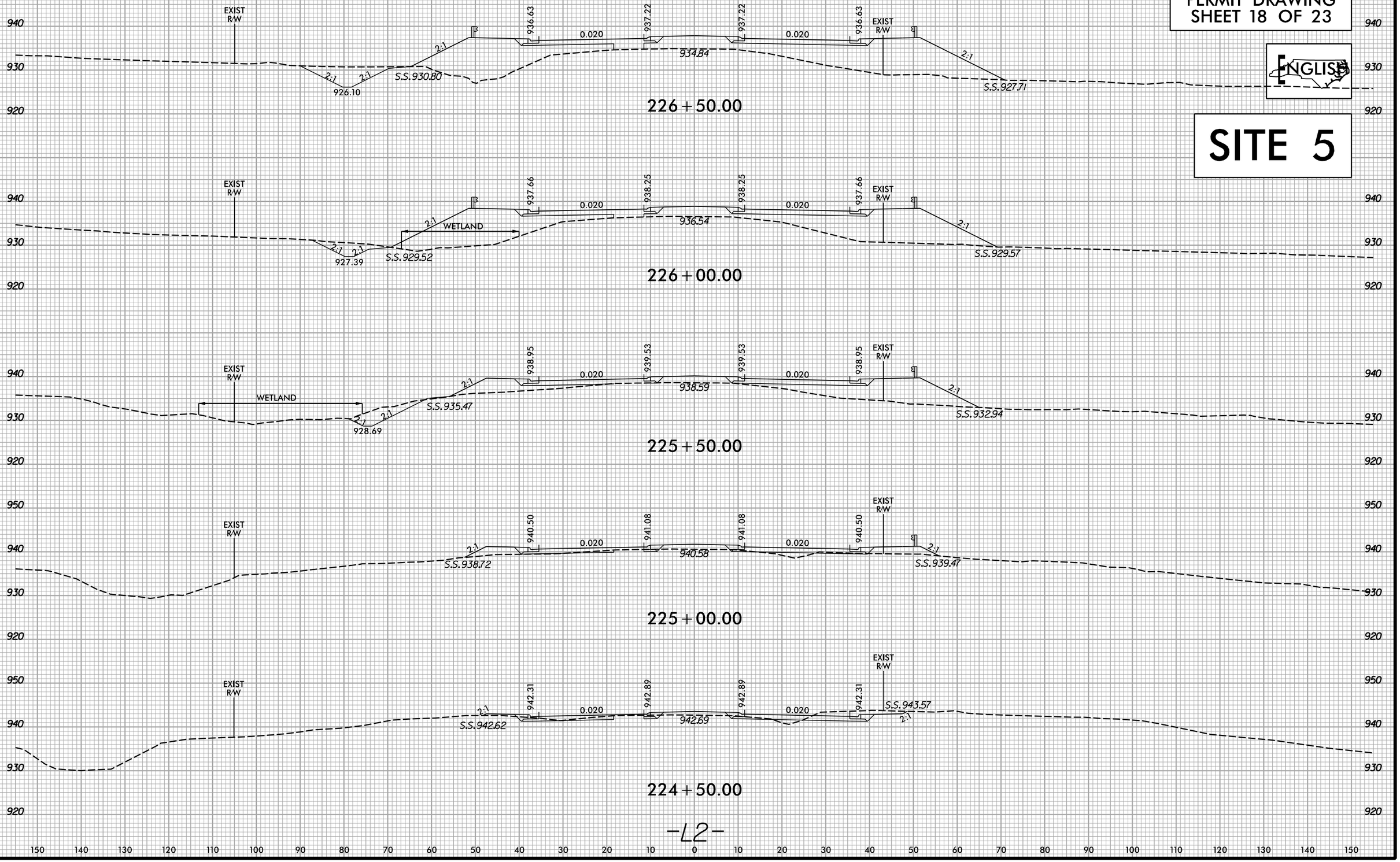
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2577A	X-195

PERMIT DRAWING
SHEET 18 OF 23

ENGLISH

SITE 5



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Keith

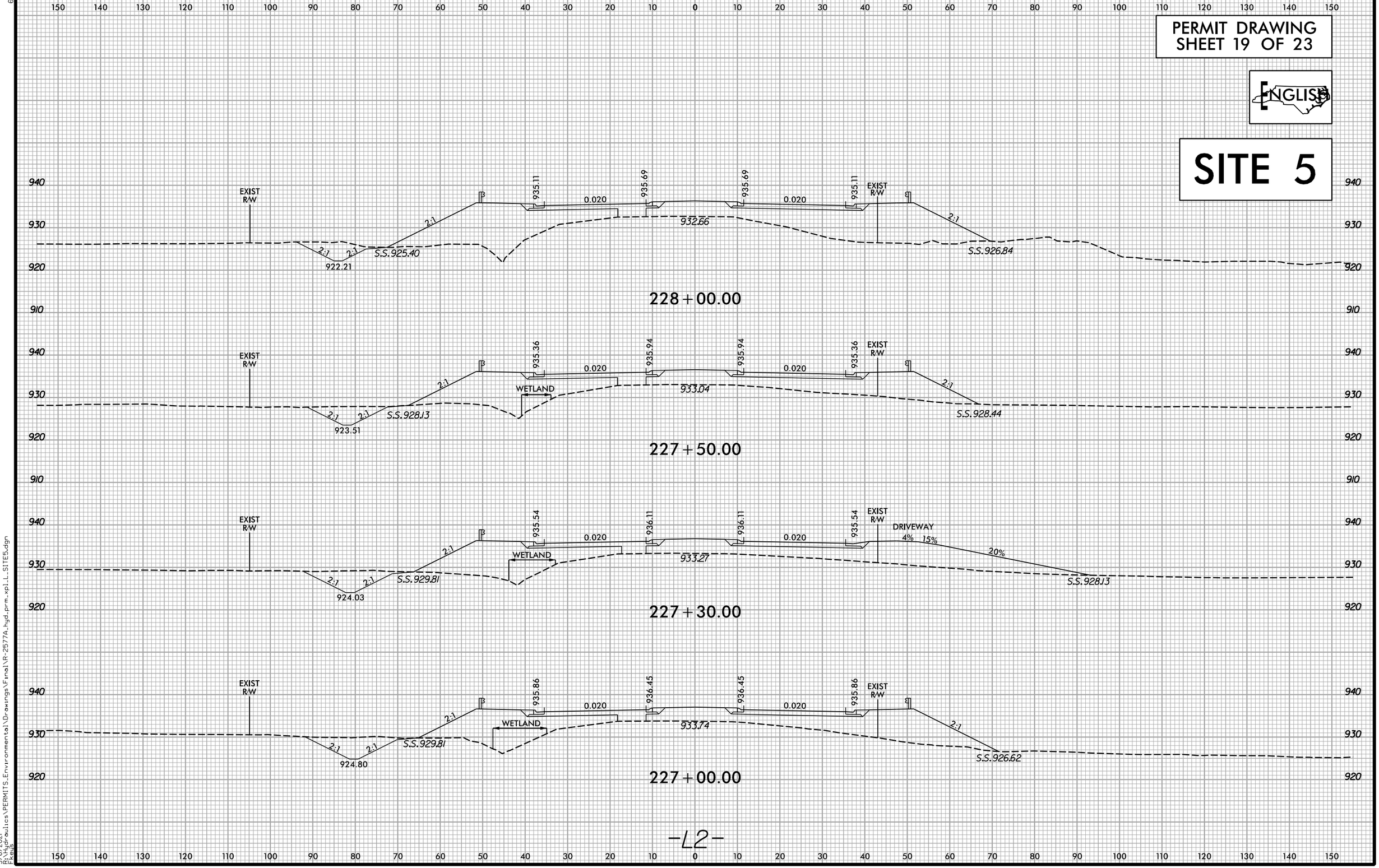
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2577A	X-196

PERMIT DRAWING
SHEET 19 OF 23

ENGLISH

SITE 5



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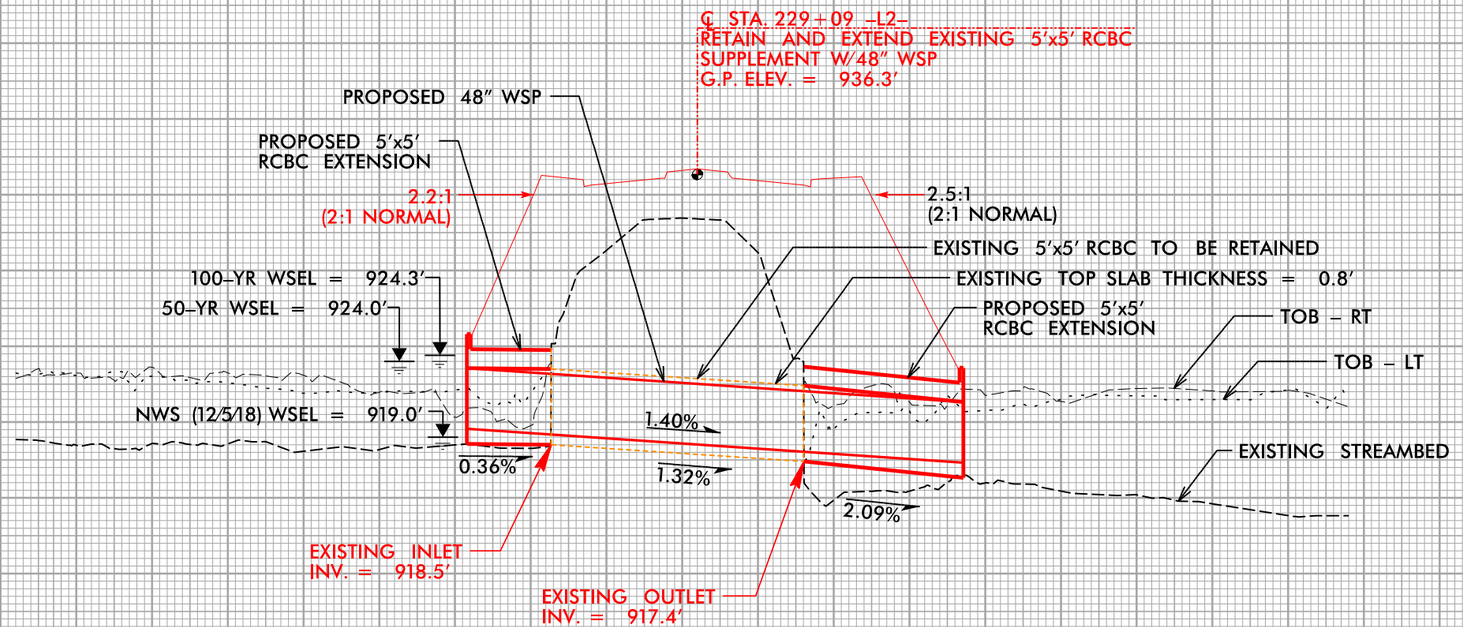
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SITE 6
–L– STA. 229+09

PERMIT DRAWING
SHEET 20 OF 23

ENGLISH



PROPOSED 5'X 5' RCBC EXTENSION (LENGTH=65')
PROPOSED 48" WS (LENGTH=142')

250 200 150 100 50 0 50 100 150 200 250

PLANS PREPARED BY :

RK&K

RUMMEL, KLEPPER & KAHL, LLP
900 RIDGEFIELD DRIVE SUITE 350
RALEIGH, NORTH CAROLINA 27609–3960
NC LICENSE NO. F–0112 • (919) 878–9560

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	27
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 21 OF 23

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

BEGIN CONSTRUCTION
-Y24- POC Sta.12+75.00

-Y24- PCC Sta. 16+08.65

-Y24- PRC Sta. 20+08.52

-Y24- PT Sta. 23+89.49

-BY- 203

-BY- 202

-BY- 200

-BL- 134

-BL- 135

-Y23- POT Sta.
-Y24- POT Sta.
-L- POT Sta.29

-Y23- PC Sta.

BEGIN CONSTRUCTION
-X-OVER- POT Sta.300+50.00=
-L- POT Sta.300+50.00 (29.50' LT)

MATCHLINE -L- STA. 287+50 SEE SHEET 26

MATCHLINE -L- STA. 301+00 SEE SHEET 28

MATCHLINE -Y23- STA. 13+00 SEE SHEET 30

NAD 83/2011

SITE 7A
SEE INSET A

SITE 7B

SEL

INSET A

CHARLES W PIERCE
JANIE L PIERCE
DB 2608 PG 2820

JERRY L AMOS
CYNTHIA M AMOS
DB 1787 PG 2753

VENABLE & SON LLC
DB 2693 PG 1732
PB 50 PG 116

K D CROUCH CONSTRUCT CO INC
DB 2686 PG 1278
PB 50 PG 116

BOBBY W HATCHER
SAMANTHA G HATCHER
DB 2829 PG 668
PB 50 PG 116

JASON THOMPSON
ASHLEY THOMPSON
DB 3000 PG 1088
PB 50 PG 116

MANSFIELD CATO INVESTMENTS LLC
DB 2737 PG 2179
PB 50 PG 116

VENABLE & SON LLC
DB 2591PG 807
PB 50 PG 116

MCKELVIN L ROB
DB 3240 PG 14
PB 50 PG 116

DAVID J HARDY
SAMANTHA Z HARDY
DB 3249 PG 2213

LINDA R HALL
DB 3284 PG 1747
PB 64 PG 159

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25 0 25 50
SCALE FOR INSET

50 25 0 50 100
SCALE

PERMIT DRAWING
SHEET 22 OF 23

ENGLISH

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

BEGIN CONSTRUCTION
-Y24- POC Sta.12+75.00

-Y24- PCC Sta. 16+08.65

-Y24- PRC Sta. 20+08.52

-Y24- PT Sta. 23+89.49

SPECIAL CUT DITCH SEE DETAIL H

LATERAL V DITCH SEE DETAIL A

2 TONS CL B RIPRAP W/7 SY GEO FAB

3 TONS CL B RIPRAP W/10 SY GEO FAB

11 TONS CL I RIPRAP W/22 SY GEO FAB

LATERAL V DITCH SEE DETAIL D

LATERAL V DITCH SEE DETAIL C

GRADE TO DRAIN

REMOVE

PLUG & FILL W/FLOWABLE FILL

CHARLES W PIERCE
JANE L PIERCE
DB 2608 PG 2820

JERRY L AMOS
CYNTHIA M AMOS
DB 1787 PG 2753

VENABLE & SON LLC
DB 2693 PG 1732
PB 50 PG 116

VENABLE & SON LLC
DB 2591 PG 807
PB 50 PG 116

MANSFIELD CATO INVESTMENTS LLC
DB 2737 PG 2179
PB 50 PG 116

JASON THOMPSON
ASHLEY THOMPSON
DB 3000 PG 1088
PB 50 PG 116

BOBBY W HATCHER
SAMANTHA G HATCHER
DB 2829 PG 668
PB 50 PG 116

K D CROUCH CONSTRUCT CO INC
DB 2686 PG 1278
PB 50 PG 116

MCKELVIN L ROBERTS
DB 3240 PG 161
PB 50 PG 116

DAVID J HARDY
SAMANTHA Z HARDY
DB 3249 PG 2213

KYLE R HALL
DB 1288 PG 1247
PB 64 PG 159

SEL

END INTERMITTENT
BEGIN PERENNIAL
JURISDICTIONAL STREAM

BEGIN INTERMITTENT
JURISDICTIONAL STREAM

BANK STABILIZATION ON BANKS ONLY SEE DETAIL W

26 TONS CL I RIPRAP W/50 SY GEO FAB ON BANKS ONLY

SITE 7A

SEE INSET A

SITE 7B

INSET A

SITE 7A

SITE 7B

48" RCP-III

JB w/MH

48" RCP-III 2 48" ELBOWS

15" RCP-III CB-G

24" RCP-III

BEGIN CONSTRUCTION
-X-OVER-I- POT Sta.300+50.00=
-L- POT Sta.300+50.00 (29.50' LT)

MATCHLINE -L- STA. 287+50 SEE SHEET 26

MATCHLINE -L- STA. 301+00 SEE SHEET 28

MATCHLINE -Y23- STA. 13+00 SEE SHEET 30

-BY- 202

-BY- 203

-BY- 200

-BI- 134

-BI- 135

20+00

15+00

290+00

295+00

300+00

2'-6 CURB & GUTTER

RAISED GRASS MEDIAN

US 158/ REIDSVILLE RD 38' BST

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WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1A	-Y9- 14+25-14+65 RT	ARMORING CHANNEL, SFC						< 0.01	< 0.01	25	22	
1B	-Y9- 14+65-15+33 RT	72" RCP,ROADWAY FILL, SFC						< 0.01		84		
1C	-L- 100+48-100+93 LT	ROADWAY FILL, SFC						< 0.01		58		
1D	-L- 100+92-101+34 RT	72" RCP,ROADWAY FILL, SFC						0.01		77		
1E	-L- 101+34-101+75 RT	ARMORING CHANNEL, SFC						< 0.01	< 0.01	24	22	
2A	-L- 107+87 LT	BANK STABILIZATION, SFB						< 0.01	< 0.01	13	14	
2B	-L- 107+87 LT	ARMORING CHANNEL BED AND BANK, SFB						< 0.01		20		
2C	-L- 107+66 LT	UPSTREAM - 1 6x6 RCBC EXTENSION NOT BURIED, CHANNEL TIE IN, SFB						0.01		81		
2D	-L- 106+50-107+20 RT	DOWNSTREAM - 1 6x6 RCBC EXTENSION NOT BURIED, CHANNEL TIE IN, SFB						0.01		86		
2E	-L- 106+25-106+50 RT	ARMORING CHANNEL BED AND BANK, SFB						< 0.01	< 0.01	15	26	
3A	-Y14- 13+03 LT	ARMORING CHANNEL, SFA						< 0.01	< 0.01	29	9	
3B	-Y14- 13+22 LT	60" RCP, ROADWAY FILL, SFA						< 0.01		30		
3C	-Y14- 13+41 RT	60" RCP OUTLET PAD, SFA						< 0.01		27		
3D	-Y14- 13+48 RT	BANK STABILIZATION, SFA						0.01		63		
4A	-L- 140+38 LT	UPSTREAM - BANK STABILIZATION, DUAL BRIDGES REPLACING (3)-7x10 RCBC, SEW						0.03	0.03	114		
4B	-L- 139+91 RT	DUAL BRIDGES REPLACING (3)-7x10 RCBC, SEW						0.02	0.03	88		
5A	-L2- 225+52-228+95 LT	ROADWAY FILL & CHANNEL CHANGE, SET						0.02	< 0.01	331	14	
5B	-L2- 225+33-226+35 LT	ROADWAY FILL & CHANNEL CHANGE, WHP	0.02		< 0.01	0.02						
5C	-L2- 228+07-228+98 LT	ROADWAY FILL & CHANNEL CHANGE, WHQ	0.02									
6A	-L2- 229+25 LT	ARMORING CHANNEL, SES						< 0.01	< 0.01	24	6	
6B	-L2- 229+10 LT	UPSTREAM - 1 5x5 RCBC EXTENSION W/ 48" WELDED STEEL PIPE, SES						< 0.01		26		
6C	-L2- 229+10 RT	DOWNSTREAM - 1 5x5 RCBC EXTENSION W/ 48" WELDED STEEL PIPE, SES						0.02		56		
6D	-L2- 228+70 RT	ARMORING CHANNEL, SES						< 0.01	< 0.01	31	10	
7A	-L- 296+40-298+03 LT	ROADWAY FILL, 48" RCP, SEL						0.01		178		
7B	-L- 298+03-298+28 LT	BANK STABILIZATION, SEL						< 0.01	< 0.01	16	13	
TOTALS*:			0.04		< 0.01	0.02		0.20	0.08	1496	136	

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
FEBRUARY 2023
FORSYTH
R-2577A

Revised 2016 09 09

Roadway Right-of-Way Plans

R-2577 Section A

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 RIGHT OF WAY REVISION 6-28-2022 - PARCEL / OWNER INFORMATION UPDATED. MAH.

GENESIS VICTORY OUTREACH CENTER
DB 1715 PG 1048
PB 16 PG 50

G L G CORPORATION
DB 1530 PG 1648

HAROLD F REESE
DB 2230 PG 5328

HOBART W TUTTLE
DB 981 PG 414
PB 7 PG 157

HOBART W TUTTLE
DB 631 PG 344

ESSIE C TUTTLE
DB 855 PG 466

ETHEL C CREWS
NO DEED FOUND

HOBART W TUTTLE
NO DEED FOUND

FIDELMAR S SUAREZ
DB 2725 PG 2739

PEAK RIDGE PROPERTIES, LLC
DB 3402 PG 3149

TYCO ELECTRONICS CORPORATION
DB 2163 PG 1687
DB 932 PG 418
DB 694 PG 335

BEGIN TIP PROJECT R-2577A
-L- STA. 0+00.00

MATCHLINE -L- STA. 4+50 SEE SHEET 5

NAD 83/2011

-BL- 102

-BL- 103

US 158/ REIDSVILLE RD 24' BST

TO I-40 BUSINESS

N 22° 29' 16.2" E

REMOVE SYSTEM

3 TONS CL B RIP RAP W/10 SY OF GEO FAB (TYP - BOTH)
+00.00 -L- 100.00' (LT) 125.00' (LT)

TOE PROTECTION W/CLASS B RIPRAP SEE DETAIL K

SP. LATERAL BASE DITCH SEE DETAIL T

SP. LATERAL 'V' DITCH SEE DETAIL J

LATERAL BASE DITCH SEE DETAIL B

LATERAL 'V' DITCH SEE DETAIL A

TRENCHLESS INSTALLATION 24" WELDED STEEL

8 TONS CL B RIP RAP W/21 SY OF GEO FAB

RETAIN

PROPOSED SIGNAL

FOR -L- PROFILE SEE SHT. 31

FOR INTERSECTION DETAILS, SEE SHEET 2B-1

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6/27/2022
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

8/17/99

REVISIONS

RIGHT OF WAY REVISION: 7-9-2021 - COMBINED PARCELS 138-140 TO BECOME PARCEL 138.NAME CHANGED ON PARCELS 131 & 138.HAT.
RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 3 OWNER INFORMATION UPDATED.MAH.
RIGHT OF WAY REVISION: 6-28-2022 - PARCELS 1,2,5,6,& 8 OWNER INFORMATION UPDATED.MAH.

MATCHLINE -L- STA. 4+50 SEE SHEET 4

MATCHLINE -L- STA. 18+00 SEE SHEET 6

MATCHLINE -Y1B- STA. 13+50 SEE SHEET 6

BEGIN CONSTRUCTION -YIC- POT Sta. 10+00.00

-YIC- PT Sta. 11+33.77

-YIC- PC Sta. 10+67.97

BEGIN CONSTRUCTION -YIA- POT Sta. 10+00.00

-YIA- PC Sta. 11+83.26

-YIC- POT Sta. 11+58.93=
-YIA- POC Sta. 12+31.33

-YIE- PT Sta. 16+18.87

-YIE- POT Sta. 16+39.29=
-YIA- POC Sta. 14+51.12

-YIA- PT Sta. 15+69.16

-YIE- PC Sta. 13+86.90

-YIE- PT Sta. 13+46.91

BEGIN CONSTRUCTION -YIE- POC Sta. 12+17.38

-YIE- PC Sta. 11+26.49

-L- PC Sta. 12+45.50

-YIB- POT Sta. 10+00.00=
-L- POC Sta. 15+34.27

-YIB- PC Sta. 10+88.97

-YIB- PRC Sta. 12+90.04

-YIA- POT Sta. 17+00.40=
-L- POT Sta. 10+71.69

PLUG AND FILL

REMOVE 66' 18" RCP PIPE

REMOVE

18' TAPER

100' TAPER

150' TAPER

TOE PROTECTION W/CLASS B RIPRAP SEE DETAIL K

LATERAL 'V' DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL J

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL G

SPECIAL CUT DITCH SEE DETAIL H

SPECIAL BACK OF CURB CUT DITCH SEE DETAIL I

REMOVE SYSTEM

GRADE TO DRAIN

18" RCP-III

24" RCP-III

30" RCP-III

GREU TYPE TL-3

OEP

BDO

JB w/MH

SP DET.

2 TONS CL B RIP RAP W/ 5Y OF GEO FAB

8 TONS CL B RIP RAP W/21 SY OF GEO FAB

2 ELBOWS

TRENCH RESTORATION 30" WELDED STEEL

1'-6" CURB & GUTTER

TRAFFIC DIAGRAM

-Y1A- OLD GREENSBORO RD.

ADT 2017
ADT 2040

2,850 / 4,400	6,300 / 8,800	2,300 / 3,550
2,300 / 3,550		1,800 / 1,450
20,200 / 25,800	-L- US 158	-L- US 158 / 23,600 / 27,900
550 / 850		2,250 / 3,100
2,250 / 3,100		4,050 / 4,550
	8,300 / 9,100	

-Y1B- OLD GREENSBORO RD.

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

PROPOSED SIGNAL

BM # 2
N 862560 E 1649507
-L- STA. 14+13.23 OFF 253.63' RT
ELEV = 884.50'

-L-	-Y1A-	-Y1B-	-Y1B-	-Y1C-	-Y1E-	-Y1E-
PI Sta 19+25.29	PI Sta 14+08.11	PI Sta 11+95.30	PI Sta 13+94.41	PI Sta 11+01.02	PI Sta 12+37.01	PI Sta 15+11.99
Δ = 17° 22' 15.0" (RT)	Δ = 73° 42' 06.9" (RT)	Δ = 46° 04' 59.4" (LT)	Δ = 26° 06' 55.3" (RT)	Δ = 13° 39' 37.6" (LT)	Δ = 10° 31' 27.5" (RT)	Δ = 53° 09' 44.5" (LT)
D = 1° 17' 15.2"	D = 19° 05' 54.9"	D = 22° 55' 05.9"	D = 12° 43' 56.6"	D = 20° 45' 42.2"	D = 4° 46' 28.7"	D = 22° 55' 05.9"
L = 1,349.14'	L = 385.90'	L = 201.08'	L = 205.11'	L = 65.80'	L = 220.42'	L = 231.96'
T = 679.79'	T = 224.85'	T = 106.33'	T = 104.37'	T = 33.05'	T = 110.52'	T = 125.09'
R = 4,450.00'	R = 300.00'	R = 250.00'	R = 450.00'	R = 275.97'	R = 1,200.00'	R = 250.00'
SE = 0.03	SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04
DS = 50 MPH	DS = 30 MPH	DS = 30 MPH	DS = 35 MPH	DS = 30 MPH	DS = 40 MPH	DS = 30 MPH

FOR INTERSECTION DETAILS, SEE SHEET 2B-1

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHT. 31
FOR -Y1A- PROFILE SEE SHT. 42
FOR -Y1B- PROFILE SEE SHT. 42
FOR -Y1C- PROFILE SEE SHT. 42
FOR -Y1E- PROFILE SEE SHT. 43

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BL7_GPS_R2577A_4

-L-	-Y1B-	-Y1D-	-Y2-
PI Sta 19+25.29	PI Sta 13+94.41	PI Sta 19+64.82	PI Sta 13+09.91	PI Sta 12+10.92
Δ = 17° 22' 15.0" (RT)	Δ = 26° 06' 55.3" (RT)	Δ = 31° 29' 26.0" (RT)	Δ = 54° 53' 57.8" (LT)	Δ = 0° 33' 26.9" (RT)
D = 1° 17' 15.2"	D = 12° 43' 56.6"	D = 6° 03' 10.0"	D = 32° 44' 25.6"	D = 0° 14' 36.8"
L = 1,349.14'	L = 205.11'	L = 520.27'	L = 167.68'	L = 228.90'
T = 679.79'	T = 104.37'	T = 266.89'	T = 90.90'	T = 114.45'
R = 4,450.00'	R = 450.00'	R = 946.60'	R = 175.00'	R = 23,525.00'
SE = 0.03	SE = 0.04	SE = 0.04	SE = 0.04	SE = NC
DS = 50 MPH	DS = 35 MPH	DS = 50 MPH	DS = 25 MPH	DS = 40 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83\2011

REVISIONS

8/17/99

RIGHT OF WAY REVISION:7-9-2021 - COMBINED PARCELS 138-140 TO BECOME PARCEL 138.COMBINED PARCELS 145 & 146 TO BECOME PARCEL 145.NAME CHANGED ON PARCELS 138,141,145 & 146B.HAT.
RIGHT OF WAY REVISION:10-14-2021 - UPDATED PARCEL OWNER AND DEED INFORMATION FOR PARCEL 134.MAH.

MATCHLINE -L- STA. 31+00 SEE SHEET 7

MATCHLINE -L- STA. 18+00 SEE SHEET 5

MATCHLINE -L- STA. 13+50 SEE SHEET 5

-Y2- POT Sta. 10+90.00
-Y2- PC Sta. 10+96.47
BEGIN CONSTRUCTION
-Y2- POC Sta. 12+00.00
SPECIAL CUT DITCH SEE DETAIL H
-Y2- PT Sta. 13+25.37
200' MEDIAN TAPER
-L- PT Sta. 25+94.65
-Y2-
-L-
-Y1B-
-Y1D-
-BL- 101
-BL- 105
-BY- 143
-BY- 147
-BY- 148
-BY- 150
-BY- 151
-BY- 152
-BY- 153
-BY- 154
-BY- 155
-BY- 156
RETAINING WALL 1
BEGIN RETAINING WALL 1
-L- STA 28+43.47
END RETAINING WALL 1
-L- STA 30+50.47
RAISED GRASS MEDIAN
1'-6" CURB & GUTTER
N 39° 51' 31.2" E
S 52° 06' 52.5" E
S 33° 25' 25.5" E
S 44° 46' 57.8" W
S 79° 58' 02.0" E
S 10° 07' 00.0" E
20+00
25+00
30+00
150' TAPER
300' MEDIAN TAPER
REMOVE SYSTEM
REMOVE
GRADE TO DRAIN
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL I
SPECIAL CUT DITCH SEE DETAIL H
LATERAL 'V' DITCH SEE DETAIL A
LATERAL V DITCH SEE DETAIL A
-YIB- PT Sta. 14+95.5
-YID- POT Sta. 14+08.53=
-YIB- POT Sta. 16+16.74
-YIB- PC Sta. 16+97.93
-YID- PC Sta. 12+19.00
BEGIN CONSTRUCTION
-YID- POT Sta. 12+00.00
-YID- POT Sta. 10+00.00
-Y2- POT Sta. 14+47.04=
-L- POT Sta. 27+99.66
END CONSTRUCTION
-YIB- POC Sta. 18+00.00
INSET A -YIB- STA. 18+50.00
INSET A -YIB- STA. 18+50.00

KATHARINE EVANS DB 3240 PG 1402
DONALD G SAPP JANET S LANGHAM DB 2477 PG 1629 PB 7 PG 156
MARK P GOULDING DB 1898 PB 1369
THE COMMONS OF FORSYTH COUNTY INC DB 3227 PG 2332 CONDO PLAT 6 PG 136
WILLIE L CUMMINGS VIVIAN CUMMINGS DB 1783 PG 2148 PB 7 PG 156
VIVIAN CUMMINGS DB 1222 PG 209 PB 7 PG 156
EDGEWOOD BAPTIST CHURCH DB 725 PG 179 PB 18 PG 180
JONATHAN ISAI BENITEZ PARRAS & OSCAR NOE MONTANO BENITEZ DB 3492 PG 2802 PB 8 PG 162
JOSEPH D GOODE DB 2630 PG 1837 PB 8 PG 162
JAMES RICHARD PAYNE HEIRS DB 760 PG 355 PB 8 PG 162
RAY J KLINE DB 2818 PG 230 PB 8 PG 162
CARL E HOUSTON DB 2505 PG 3625 PB 8 PG 162
RAYMOND T HEDRICK DB 1651 PG 3070 PB 8 PG 162
DIANE A TATE JESSE L TATE DB 2933 PG 704 PB 8 PG 162
CHRIS H CREWS LISA A CREWS DB 1854 PG 842
THOMAS O CREWS CHRISTINE CREWS DB 1143 PG 104
ALVAHAL PROPERTIES, LLC DB 2865 PG 194
MICHAEL E HALEY GLORIA E. ALVARENGA-HALEY DB 3176 PG. 351
MICHAEL E HALEY GLORIA E ALVARENGA-HALEY DB 3176 PG 3536
JAME E CONNOR GEORGIA CONNOR DB 1200 PG 190
DONEA DAVIS DB 2975 PG 4207 PB 8 PG 162
KELLY S LARRIMORE DB 2983 PG 154 PB 8 PG 162
KELLY S LARRIMORE DB 2983 PG 151 PB 8 PG 162
KELLY S LARRIMORE DB 2983 PG 148 PB 8 PG 162
KYLE R KRETCHMAN DB 2698 PG 1038 PB 8 PG 162
CITY OF WINSTON-SALEM DB 949 PG 368 PB 8 PG 161
DAVID COHEN AND SPOUSE LINDA COHEN DB 3578 PG 1660
BOBBY W PARKER LINDA PARKER DB 1724 PG 2149
MAURO ACOSTA DB 1913 PG 27 PB 8 PG 161
VICKY J ACOSTA DB 2989 PG 3644 PB 8 PG 161
GEORGE W SPARKS CONSTRUCTION CO INC DB 1679 PG 1873 PB 13 PG 159
JOE CLARK, JR. DB 3623 PG 0793
LEONARDO FRANCO KARLA V ARDON DB 3290 PG 35 PB 11 PG 139
PATRICK R GLENN DB 2418 PG 4491 PB 11 PG 139
MATTHEW A & KATE M HOWARD DB 3330 PG 3654 PB 8 PG 139
DARRYLE V BROOKS MELODY BROOKS DB 1782 PG 2898 PB 8 PG 161
KASSIE LYNN CADLE DB 3533 PG 3292 PB 8 PG 161

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

REMOVAL OF EXISTING PAVEMENT

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHTS. 31-32
FOR -Y1B- PROFILE SEE SHT. 42
FOR -Y1D- PROFILE SEE SHT. 43
FOR -Y2- PROFILE SEE SHT. 43
SEE SHEET 2B-1 FOR RETAINING WALL TYPICAL.

PROPOSED TRAFFIC SIGNAL

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83(2011)

-Y3-
PI Sta 12+33.01
△ = 22° 00' 11.7" (LT)
D = 16° 51' 06.1"
L = 130.57'
T = 66.10'
R = 340.00'
SE = 0.04
DS = 30 MPH

BM # 3
N 864683 E 1650366
-L- STA. 36+73.37 OFF 300.02' RT
ELEV = 888.50'

REVISIONS

RIGHT OF WAY REVISION:7-9-2021 - NAME CHANGED ON PARCEL 164.HAT.

8/17/99

MATCHLINE -L- STA. 31+00 SEE SHEET 6

MATCHLINE -L- STA. 44+00 SEE SHEET 8

EDGEWOOD BAPTIST CHURCH OF WINSTON-SALEM INC
DB 1660 PG 2931
PB 7 PG 158

20 THE NEIGHBORHOOD VET HOSPITAL PC
DB 3241 PG 4259

21 WHICKER BROTHERS FAMILY LIMITED PARTNERSHIP
DB 2747 PG 569

CITY OF WINSTON SALEM
DB 1125 PG 1514

22 ADRIEN E WYKE
MAYAN M ANTHONY-WYKE
DB 3371 PG 3799

23 ANN W VANHOY
DB 2055 PG 3113

24 ELIZABETH P WHICKER
DB 684 PG 506

17 | 18 | 19

END RETAINING WALL 1
-L- STA 32+00.00

RETAINING WALL 1

-Y3- POT Sta. 10+00.00=
-L- POT Sta.33+55.00

TOE PROTECTION W/CLASS B RIPRAP SEE DETAIL K

SP. DET. JB

DO NOT DISTURB

35+00

40+00

N 39° 51' 31.2" E

-L-

RAISED GRASS MEDIAN

REMOVE SYSTEM

1'-6 CURB & GUTTER

24" RCP-III

18" RCP-III

30" RCP-III

15" RCP-III

GREU TYPE TL-3

REMOVE

BERM DITCH SEE DETAIL E

LATERAL 'V' DITCH SEE DETAIL A

LATERAL 4' BASE DITCH SEE DETAIL B

LATERAL 'V' DITCH SEE DETAIL A

BERM DITCH W/CL B RIPRAP SEE DETAIL F

SPECIAL CUT DITCH (BOTH SIDES) SEE DETAIL H

-Y3- PC Sta. 11+66.91

END CONSTRUCTION
-Y3- PT Sta.12+97.48

-Y3- POT Sta. 13+17.86

156 JAME E CONNOR
GEORGIA CONNOR
DB 1200 PG 1190

157 ROBERT W MEEKS
DB 1806 PG 3141
PB 16 PG 60

158 THOMAS F HOVORKA
THOMAS C HOVORKA
DB 3091 PG 1172
PB 16 PG 60

159 SOUPHAB DAOHEANG
DB 2241 PG 835
PB 16 PG 60

160 BRUCE E WILLIAMS
DB 1819 PG 1868
PB 16 PG 60

161 ERIC R HAUBERT
DB 2526 PG 4068
PB 16 PG 60

162 BRENDA V CHARLES
MARION R CHARLES
DB 1417 PG 468
PB 16 PG 60

163 XIRONG ZHANG
DB 3249 PG 133
PB 16 PG 60

164 KIMBRA ANN COBY-HUTSON
DB 3442 PG 1808

165 CREWS METHODIST CHURCH
DB 361 PG 287
PB 7 PG 156

CARLTON E MCDONALD
DONNA P MCDONALD
DB 2924 PG 2517
PB 16 PG 60

CHRISTOPHER E DAVIS
DB 2923 PG 2109
PB 16 PG 60

ANA MERINO
ESTEBAN MERINO
DB 3366 PG 1414
PB 16 PG 60

-BY- 152 | -BY- 153 | -BY- 154

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHT. 32
FOR -Y3- PROFILE SEE SHT. 43

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7/7/2021
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default

-L-	-Y4-
PI Sta 49+97.76	PI Sta 12+06.84
△ = 0° 40' 31.3" (LT)	△ = 40° 52' 42.3" (LT)
D = 0° 17' 11.3"	D = 14° 19' 26.2"
L = 235.74'	L = 285.39'
T = 117.87'	T = 149.07'
R = 20,000.00'	R = 400.00'
SE = NC	SE = 0.04
DS = 50 MPH	DS = 30 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

RIGHT OF WAY REVISION: 7-9-2021 - REVISED PUE ON PARCELS 34A,35,35A,36,173,175 & 176.REVISED TCE ON PARCEL 36.ADDED PDE & TCE ON PARCEL 173.
COMBINED PARCELS 166 & 167 TO BECOME PARCEL 166.COMBINED PARCELS 168 & 169 TO BECOME PARCEL 168.HAT.
RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 28 OWNER INFORMATION UPDATED.MAH.
RIGHT OF WAY REVISION: 3-29-2022 - PARCEL 173 ADDED DO NOT DISTURB ON LIGHT POLE.JRGO.

MATCHLINE -L- STA. 44+00 SEE SHEET 7

MATCHLINE -L- STA. 57+00 SEE SHEET 9

NAD 83/2011

-L- PT Sta. 5|+|5.63

-L- PC Sta. 48+79.89

-L- PT Sta. 51+89.21

-Y4- POT Sta. 10+00.00=

-Y4- PC Sta. 10+57.77

-Y4- PT Sta. 13+43.15

END CONSTRUCTION
-Y4- POT Sta. 14+00.00
-Y4- POT Sta. 15+50.00

-BY- 158

-Y4- GAITHER RD.

TRAFFIC DIAGRAM

ADT 2017
ADT 2040

23,600 / 27,900 -L- US 158 17,500 / 23,100

200 / 250 200 / 250

400 / 500

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHTS. 32-33
FOR -Y4- PROFILE SEE SHT. 44

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

RIGHT OF WAY REVISION:7-9-2021 - REVISED PUE ON PARCELS 176 & 177.HAT.

8/17/99

MATCHLINE -L- STA. 57+00 SEE SHEET 8

MATCHLINE -L- STA. 71+00 SEE SHEET 10

NAD 83/2011

-BY- 159

-BY- 160

-BY- 165

-Y6- POT Sta. 10+00.00=
-L- POT Sta.67+32.41

-L- PC Sta. 61+45.71

-L- PT Sta. 63+68.76

-Y6- PC Sta. 10+39.47

-Y6- PT Sta. 12+26.34

END CONSTRUCTION
-Y6- POT Sta. 12+35.27

-Y6- POT Sta. 14+35.27

-L-	-Y6-
PI Sta 62+57.24	PI Sta 11+36.54
△ = 0° 38' 20.4" (RT)	△ = 38° 14' 22.7" (LT)
D = 0° 17' 11.3"	D = 20° 27' 46.0"
L = 223.05'	L = 186.87'
T = 111.53'	T = 97.07'
R = 20,000.00'	R = 280.00'
SE= NC	SE= 0.04
DS= 50 MPH	DS= 30 MPH

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHT. 33
FOR -Y6- PROFILE SEE SHT. 45

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7/1/2021
R:\Projects\Roadway\R-2577A_rdy.psh09.dgn
default

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

RIGHT OF WAY REVISION: 10-14-2021 - ADJUSTED PUE ON PARCEL 53 AND RIGHT OF WAY REVISION: 11-23-2021 - ADDED NOTE FOR DRIVEWAY AT -L- STA. 71+62.00 RT ON PARCEL 190. MAH.

RIGHT OF WAY REVISION: 10-14-2021 - ADJUSTED PUE FROM PARCEL 54. ADJUSTED PUE AND TCE ON PARCELS 196 AND 197. MAH.

8/17/99

MATCHLINE -L- STA. 71+00 SEE SHEET 9

MATCHLINE -Y5- STA. 19+75 SEE SHEET 29

MATCHLINE -L- STA. 84+50 SEE SHEET 11

NAD 83/2011

BIBIANA RANGEL
DB 3283 PG 1425
PB 10 PG 117

COURTNEY R LILL
DB 3245 PG 4202
PB 10 PG 117

EULA F SMITH
DB 1250 PG 450
PB 10 PG 117

HUBERT FOWLER
DB 3308 PG 3800
PB 10 PG 117

CHARLIE J TILLEY
NANCY J TILLEY
DB 683 PG 370
PB 10 PG 117

DANNY L MCMULLAN
DB 2117 PG 1652
PB 10 PG 117

VITALINO AGUILAR
DB 2074 PG 3859
PB 10 PG 117

LEWIS E PEACOCK
DB 854 PG 316
PB 10 PG 117

EUGENE P HUDSON
JUANITA L HUDSON
DB 2447 PG 2737
PB 10 PG 117

SANDRA L SPENCER
DB 3241 PG 2910
PB 10 PG 117

CARLA ALFORD
DB 3316 PG 4294
PB 10 PG 117

WILLIAM R VAUGHN
DB 1840 PG 708
PB 10 PG 117

KENNETH L SHORES
CHERYL J SHORES
DB 2931 PG 2413
PB 10 PG 117

CARLTON R COLE
BATINA S COLE
DB 1926 PG 915
PB 10 PG 117

WILLIAM R VAUGHN
MARIE T VAUGHN
DB 2067 PG 141
PB 10 PG 117

WILLIAM R VAUGHN
DB 1840 PG 708
PB 10 PG 117

BERM DITCH SEE DETAIL E

SPECIAL CUT DITCH SEE DETAIL H

SPECIAL BACK OF CURB DITCH SEE DETAIL I

SPECIAL BACK OF CURB DITCH-SEE DETAIL I

LATERAL 'V' DITCH SEE DETAIL A

LATERAL 'V' DITCH W/CLASS B RIP RAP SEE DETAIL G

LATERAL 'V' DITCH C SEE DETAIL C

-Y5- PT Sta. 22+71.59

-Y7- POT Sta. 10+00.00=
-L- POT Sta. 82+79.17

100' TAPER

150' TAPER

-BL- 167

-L- N 39° 49' 20.3" E OSVILLE RD 28' BST

-Y5- Sta. 24+04.15=
-L- POT Sta. 79+25.00

-Y7- S 53° 19' 37.2" E

END CONSTRUCTION
-Y7- POT Sta. 13+99.02

-BL- GPS R2577-5

DO NOT DISTURB

REMOVE

REPLACE CONCRETE DRIVE AS NEEDED TO MATCH EXISTING PATTERN

SHERRON A BROOKS
DB 3319 PG 4063
PB 12 PG 14

MARGARET B TURPIN
DB 2244 PG 3787
PB 12 PG 14

BRYAN W LARRIMORE
DB 3210 PG 3448
PB 12 PG 14

FRANCES W CONRAD
DB 1853 PG 3756
PB 12 PG 14

JACK CARNEY
CHERYL A CARNEY
DB 1898 PG 490
PB 12 PG 14

AMBER POPE
DB 2635 PG 1366
PB 12 PG 14

KARL F BOING
DB 2105 PG 1872
PB 12 PG 14

KAREN L DESHA
DB 3356 PG 2885
PB 12 PG 14

MEGAN D MONROY
ORLIN J MONROY
DB 3347 PG 1148

BETTY L NANNEY
DB 1286 PG 1632

ROY M LITTLE
GRACE LITTLE
DB 1621 PG 557

GARY K DAVIS
DENISA F WATKINS
DB 3084 PG 57

KIMBERLY J BEAN
DB 2578 PG 3302

DEUTSCHE BANK NATIONAL TRUST COMPANY
DB 3262 PG 66

VIRGINIA F TAYLOR
DB 2295 PG 1510

SUE P REEVES
DB 1560 PG 1416

SAUNDERS PROPERTIES LLC
DB 3154 PG 2214

JACK R WHITTINGTON
RUBY R WHITTINGTON
DB 2978 PG 539
PB 12 PG 14

JACK R WHITTINGTON
RUBY R WHITTINGTON
DB 1710 PG 1270

SUE G LITTLE
DB 1024 PG 352
PB 10 PG 153

MANNA BAPTIST CHURCH
DB 1636 PG 1729

MEDINA O NAVA
RODOLFO R NAVA
DB 3174 PG 1650
PB 12 PG 14

SHARON C POPE
DB 1458 PG 218
PB 12 PG 14

JOHN D STUCKEY
MELISSA C STUCKEY
DB 2249 PG 4262
PB 12 PG 14

FAYE C THOMAS
DB 3186 PG 4312
PB 12 PG 14

-Y5-
PI Sta 18+25.56
Δ = 59° 56' 31.1" (LT)
D = 6° 01' 52.1"
L = 993.88'
T = 547.84'
R = 950.00'
SE = 0.04
DS = 35 MPH

TRAFFIC DIAGRAM
-Y5- OLD BELEWS CREEK RD.
ADT 2017
ADT 2040
-L- US 158 23,600 / 27,900
-L- US 158 18,600 / 24,700
6,100 / 5,100
3,050 / 2,550
2,950 / 2,350
100 / 200

BM # 5
N 867531 E 1653703
-L- STA. 79+98.04 OFF 416.92' RT
ELEV = 916.16'

FOR INTERSECTION DETAILS, SEE SHEET 2B-2

PROPOSED TRAFFIC SIGNAL

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHTS. 33-34
FOR -Y5- PROFILE SEE SHT. 44
FOR -Y7- PROFILE SEE SHT. 45

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11/23/2021
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jdupree

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

MATCHLINE –L– STA. 84+50 SEE SHEET 10

MATCHLINE –L– STA. 98+00 SEE SHEET 12

61
WILLIAM R VAUGHN
DB 1840 PG 708
PB 10 PG 117

64
JERRY W BECK
DB 3269 PG 605

65
EDNA B HOWARD
DB 953 PG 352

202 PAMELA S PICKLE DB 1691PG 3225

203 ROBERT L LAPOINTE MARGARET F LAPOINTE DB 3039 PG 4240 PB 10 PG158 W

204 LARRY E MACKIE DB 2375 PG 3088 PB 10 PG 153

205 STEPHEN N CLARK DB 2931PG 934 PB 10 PG 153

206 JOAN L CLARKE DB 3345 PG 3853 PB 10 PG 153

206A EDDIE L PHELPS DB 2263 PG 1354 PB 17 PG 81

208 DANIEL G CHILDRESS TERRI S CHILDRESS DB 1601PG 1694 PB 17 PG 81

209 MEID KING ASTON S KING DB 2082 PG 3775 PB 17 PG 81

210 DAVID W HUTTON DB 2861PG 1268 PB 17 PG 81

211 JASON B LINCOLN SUZANNE LINCOLN DB 3356 PG 2625 PB 17 PG 81

212 JOHN E BEESON NANCY P BEESON DB 564 PG 121

213 TRACIE B CARTER ALEX T CARTER DB 2859 PG 2689

201 DEUTSCHE BANK NATIONAL TRUST COMPANY DB 3262 PG 66

SUE G LITTLE DB 1024 PG 352 PB 10 PG 153

ROGER W MACKIE LARRY E MACKIE DB 552 PG 449 PB 10 PG 153

SUE G LITTLE

THOMAS W PALMER CONNIE J PALMER DB 2321PG 1205 PB 10 PG 153

CARROLL FIELDFORD DB 2856 PG 1934 PB 10 PG 153

SANDRA R PARKER DB 885 PG 490 PB 17 PG 81

JUDITH C PIERCE DB 2115 PG 3350 PB 17 PG 81

BENITA M BOWMAN DB 3368 PG 1080 PB 17 PG 81

DOYLE L MURRAY PAMELA S MURRAY DB 2106 PG 186 PB 17 PG 81

-L- N 39° 49' 20.3" E

-Y8- POT Sta. 10+00.00= -L- POT Sta. 87+58.96

-Y25- POT Sta. 10+00.00= -L- POT Sta. 91+66.72

-BL- GPS R2577-6

-BL- I70

-BY- I73

END CONSTRUCTION -Y8- POT Sta. 12+58.00

END CONSTRUCTION -Y25- POT Sta. 13+00.00

-Y8- POT Sta. 15+00.00

-Y25- POT Sta. 15+00.00

S 50°03'33.4" E

S 49°58'05.9" E

85+00

90+00

95+00

BERM DITCH SEE DETAIL E

BERM DITCH W/CL B RIPRAP SEE DETAIL F

LATERAL 'V' DITCH SEE DETAIL A

SPECIAL BACK OF CURB DITCH SEE DETAIL I

SPECIAL CUT DITCH SEE DETAIL H

8 TONS CL B RIP RAP W/ 21 SY OF GEO FAB

22 TONS CL I RIP RAP W/30 SY OF GEO FAB

1 TON CL B RIPRAP W/5 SY GEOTEXTILE

TOE PROTECTION W/CL B RIPRAP SEE DETAIL K

200' MEDIAN TAPER LT & RT

REMOVE & REPLACE

REMOVE SYSTEM

PLUG & FILL W/ FLOWABLE FILL

RAISED GRASS MEDIAN

US 158/ REIDSVILLE RD 28 BST

FOR INTERSECTION DETAILS, SEE SHEET 2B-3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 34
FOR –Y8– PROFILE SEE SHT. 45
FOR –Y25– PROFILE SEE SHT. 49

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4/1/2021
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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y9-
PI Sta 11+62.09
△ = 27° 18' 44.3" (RT)
D = 11° 01' 06.3"
L = 247.88'
T = 126.34'
R = 520.00'
SE = 0.04
DS = 35 MPH

REVISIONS
8/17/99
RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 68 OWNER INFORMATION UPDATED. MAH.
RIGHT OF WAY REVISION: 03-08-2022 - ADDED DRIVEWAY ACCESS FOR PARCEL 213. BVE.

MATCHLINE -L- STA. 98+00 SEE SHEET 11

MATCHLINE -L- STA. 111+00 SEE SHEET 13

-Y9- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y9- PC Sta. 10+35.75

-Y9- PT Sta. 12+83.63

-Y9- POT Sta. 16+03.54
-L- POT Sta.100+08.10

BM # 6
N 869487 E 1654353
-L- STA. 99+17.13 OFF 289.79' LT
ELEV = 878.38'

SHIRLEY P MOORE
DB 1216 PG 771
PB 21PG 69

HOBART L JONES
CAROLYN G JONES
DB 2883 PG 1030
PB 21PG 69

EDWARD C THOMPSON
DB 1703 PG 418
PB 21PG 69

EDNA B HOWARD
DB 953 PG 352

YVETTA M GLENN
DB 3000 PG 1866
PB 21PG 69

BOBBIE H MILLER
DB 1178 PG 762
DB 1185 PG 1778
PB 21PG 69

MICHAEL LOVE &
SHANNON WRIGHT LOVE
DB 3400 PG 1339

WENDY W HELMENDACH
SIDNEY C WOOTEN
DB 2859 PG 4455

DORENE T GOURLEY
DB 786 PG 455

JOHN E BEESON
NANCY P BEESON
DB 564 PG 121

WALTER S WATLINGTON
DB 1934 PG 1191
EARLINE W JOHNSON
DB 1041 PG 620

WALTER L HARRIS
PATRICIA HARRIS
DB 1617 PG 3940

JOHN E BEESON
NANCY BEESON
DB 1155 PG 273

TERESA PEDRAZA
ANTONIO P GONZALEZ-MARCO
DB 3291 PG 2225
PB 21PG 21

LEONARD J THREADGILL
MARY D THREADGILL
DB 2847 PG 359
PB 21PG 21

BOBBY H DISHMAN
PATTY L DISHMAN

TRACIE B CARTER
ALEX T CARTER
DB 2859 PG 2689

FOR INTERSECTION DETAILS, SEE SHEET 2B-3

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHT. 34
FOR -Y9- PROFILE SEE SHT. 45

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3/1/2022
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mhouser

-D2-	
PI Sta 10+88.86	PI Sta 11+89.34
△ = 75° 58' 23.7" (RT)	△ = 79° 13' 36.7" (RT)
D = 114° 35' 29.6"	D = 136° 25' 06.7"
L = 66.30'	L = 58.08'
T = 39.05'	T = 34.76'
R = 50.00'	R = 42.00'

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-Y11- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y11- POT Sta. 11+30.00

BEGIN WIDENING
TIE TO EXISTING
-Y11- POT Sta. 12+00.00

-D1- POT Sta. 11+50.00

-Y11- POT Sta.13+18.59 =
-D1- POT Sta. 10+00.00

-D2- POT Sta. 10+00.00
-L- POT Sta. 111+60.09

-D2- PC Sta. 10+49.81
-D2- PT Sta. 11+16.11
-D2- PC Sta. 11+54.58
-D2- PT Sta. 12+12.65

-D2- POT Sta. 12+63.51
-L- POT Sta. 113+10.00

-Y10- POT Sta. 10+00.00=
-L- POT Sta.112+63.73

-Y11- POT Sta. 15+30.91=
-L- POT Sta.115+60.12

END CONSTRUCTION
TIE TO EXISTING
-Y10- POT Sta. 12+77.76

MATCHLINE -L- STA. 111+00 SEE SHEET 12

MATCHLINE -L- STA. 124+50 SEE SHEET 14

BM # 7
N 870883 E 1656287
-L- STA. 122+27.74 OFF 287' RT
ELEV = 929.99'

FOR INTERSECTION DETAILS, SEE SHEET 2B-3

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHTS. 34-35
FOR -Y10- PROFILE SEE SHT. 45
FOR -Y11- PROFILE SEE SHT. 46
FOR -D1- PROFILE SEE SHT. 46
FOR -D2- PROFILE SEE SHT. 49

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REVISIONS
8/17/99 RIGHT OF WAY REVISION: 10-25-2021 - UPDATED PROPERTY OWNER INFORMATION AND ADDED DO NOT DISTURB TO POND FOR PARCEL NO.226. BVE

10/25/2021
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dlopez

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y12-
PI Sta 20+65.53
△ = 49° 29' 20.2" (RT)
D = 28° 38' 52.4"
L = 172.75'
T = 92.18'
R = 200.00'
SE = EXIST.
DS = EXIST

NAD 83/2011

MATCHLINE -L- STA. 124+50 SEE SHEET 13

MATCHLINE -L- STA. 138+50 SEE SHEET 15

MATCHLINE -Y14- STA. 11+50 SEE SHEET 15

-Y12- POT Sta. 19+00.00
-Y12- PC Sta. 19+73.36
BEGIN CONSTRUCTION
-Y12- POC Sta. 21+23.00
-Y12- PT Sta. 21+46.10
-Y12- POT Sta. 22+00.00
-Y14- POT Sta. 10+00.00=
-Y12- POT Sta. 23+15.95
-Y12- POT Sta. 24+74.20=
-L- POT Sta. 136+53.78

80 MICHAEL C PARKER, LISA M PARKER, DB 2205 PG 808
81 MICHAEL C. PARKER, LISA M. PARKER, DB 2233 PG 1881
82 HARVEST BAPTIST CHURCH
83 CITY VIEW VOLUNTEER FIRE DEPARTMENT, INC., DB 1702 PG 3126
84 WALDEN G. BALL, BRENDA BALL, DB 1215 PG 654
85 DANIEL RAY LASLEY, DB 2817 PG 1752
234 RANDY C HACKADAY, LYNNE D HACKADAY, DB 2580 PG 3823, PB 47 PG 101
235 MARQUESE D SAMUELS, DB 2818 PG 3518, PB 47 PG 101
236 HILBERT D BROWN, LEILA C WALL-BROWN, DB 2599 PG 696, PB 47 PG 101
237 TERRY WILLIAMS, LINDA P WILLIAMS, DB 2709 PG 1868, PB 47 PG 101
238 DENNIS M MORIARTY, WENDY MORIARTY, DB 3287 PG 1601, PB 47 PG 101
239 X000081405 MORRIS FARMS, FORSYTH KELLYS TRAIL FAMILY TRUST, DB 3191 PG 900, PB 47 PG 101
240 TERRENCE S BROOKS & EBONID BROOKS, DB 2856 PG 4160, PB 47 PG 101
241 CHARLES E ROBERTSON, SIN C ROBERTSON, DB 1671 PG 207
242 CHARLES E ROBERTSON, SIN ROBERTSON, B 1562 PG 1589
243 CHARLES E ROBERTSON, SIN C ROBERTSON, DB 2245 PG 721
244 JAMES G. MACHADO & MONIQUE RENEE PERRIN MACHADO, DB 2953 PG 1387
245 JASON A. STEWART, DB 2589 PG 4046

JOHN M. HERNON, SAUNDRA L. HERNON, DB 2141 PG 4164

TOWN OF WALKERTOWN
FORSYTH COUNTY

-BY- 180
-BL- 115
-BL- 116

TRAFFIC DIAGRAM
-Y12- OLD BELEWS CREEK RD.
-L- US 158
ADT 2017 / ADT 2040
1,500 / 2,200
750 / 1,100
675 / 990
750 / 1,100
17,500 / 23,100
18,600 / 24,700
100 / 200

FOR INTERSECTION DETAILS, SEE SHEET 2B-3 & 2B-4

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHT. 35
FOR -Y12 PROFILE SEE SHT. 46
FOR -Y14- PROFILE SEE SHT. 46

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REVISIONS
8/17/99
RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 82 OWNER INFORMATION UPDATED.MAH.

12/16/2021
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-Y13-	-Y14-	-D6-
PI Sta 11+59.90	PI Sta 13+03.02	PI Sta 10+81.94
Δ = 51° 30' 00.6" (LT)	Δ = 41° 49' 51.77" (LT)	Δ = 70° 13' 04.0" (RT)
D = 35° 48' 35.5"	D = 22° 55' 05.9"	D = 114° 35' 29.6"
L = 143.82'	L = 182.52'	L = 61.28'
T = 77.18'	T = 95.54'	T = 35.15'
R = 160.00'	R = 250.00'	R = 50.00'
SE= 0.04	SE= 0.03	SE= 0.03
DS= 25 MPH	DS= 20 MPH	DS= 15 MPH

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

RIGHT OF WAY REVISION:12-16-2021 - PARCELS 87 & 89 OWNER INFORMATION UPDATED.MAH.
RIGHT OF WAY REVISION:1-25-2022 - ADJUSTED PUE ON PARCEL 88 AND ADDED TCE FOR D6 ON PARCEL 89.MAH.

MATCHLINE -Y14- STA. 11+50 SEE SHEET 14

MATCHLINE -L- STA. 138+50 SEE SHEET 14

MATCHLINE -L- STA. 151+00 SEE SHEET 16

MARY MYERS HOLDING GROUP LLC
DB 3212 PG 2698

WALDEN G. BALL
BRENDA BALL
DB 1215 PG 654

DANIEL RAY LASLEY
DB 2817 PG 1752

DANIEL LASLEY
DB 3427 PG 1202

MIKAEL ANTONNI MIKKOLA
DB 3521PG 2337

PAUL JOHN SKOTCHER
KATHLEEN SKOTCHER
DB 2466 PG 1003

JANE W. WHICKER
REVOCABLE TRUST
DB 3589 PG 2330

JASON A. STEWART
DB 2589 PG 4046

RANDY L. DOUGLAS
ANGIE L. DOUGLAS
DB 2333 PG 3048

E.E. BRADLEY HEIRS
DB 520 PG 97

JANE W WHICKER
BETSY WHICKER
DB 2226 PG 1305

CAROL WESTMORELAND
DB 2105 PG 4144
DB 983 PG 526
DB 1809 PG 3712

-Y14- PT Sta. 13+90.00
-Y14- PC Sta. 12+07.47
-Y14- POT Sta. 15+50.00
END CONSTRUCTION
-Y14- POT Sta. 15+18.00
-Y14- POT Sta. 13+75.00
-D6- PT Sta. 11+08.06
-D6- PC Sta. 10+46.79
END CONSTRUCTION
-D6- POT Sta. 11+40.00
-D6- POT Sta. 12+13.39
-Y13- POT Sta. 10+00.00=
-L- POT Sta.142+63.64
-D6- POT Sta. 10+00.00
-Y13- PT Sta. 12+26.54
-Y13- PC Sta. 10+82.73
END CONSTRUCTION
-Y13- POT Sta. 13+00.00
-Y13- POT Sta. 16+13.06
BEGIN BRIDGE
-L- POT Sta.139+55.88
BEGIN APPROACH SLAB
-L- POT Sta. 139+27.15
END APPROACH SLAB
-L- POT Sta. 141+49.87
END BRIDGE
-L- POT Sta.141+21.00

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V
TOE PROTECTION W/CL B RIPRAP SEE DETAIL K
BANK STABILIZATION ON BANKS ONLY SEE DETAIL W
30 TON CL B RIPRAP W/74 SY GEOTEXTILE
REMOVE 30" HDPE
REMOVE SYSTEM
ADJUST AND RESET EXISTING GUARDRAIL
ATTENUATOR
LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL C
STANDARD 4' BASE DITCH SEE DETAIL P
LATERAL V DITCH SEE DETAIL A
8 TON CL B RIPRAP W/21 SY GEOTEXTILE
SPECIAL CUT DITCH SEE DETAIL H
REMOVE
TIE TO U-2579B
ST A.150+25.00

BM # 8
N 872102 E 1657349
-L- STA. 138+44.14 OFF 325.01' RT
ELEV = 837.30'

CULVERT #2
THREE BARRELS

	NORTH	EAST	ELEV.
CUL1	872486.24	1657220.51	839.78
CUL2	872479.94	1657215.29	839.50
CUL3	872479.10	1657214.59	839.47

TRAFFIC DIAGRAM

ADT 2017
ADT 2040

18,600 / 24,700 -L- US 158 18,600 / 24,700
50 / 100 50 / 100
100 / 200
-Y13- OLD BELEWS CREEK RD.

FOR -L- PROFILE SEE SHTS. 35-36
FOR -Y13- PROFILE SEE SHT. 46
FOR -Y14- PROFILE SEE SHT. 46
FOR -D6- PROFILE SEE SHT. 50

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1/25/2022
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(d1)DGN

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

REVISIONS

8/17/99 RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 89 OWNER INFORMATION UPDATED.MAH.

12/16/2021
R:\Roadway\Proj\R-2577A_rdy.psh16.dgn
pwinder

TRAFFIC DIAGRAM

ADT 2017
ADT 2040

I-74 WSNB

	NA / 60,500	
NA / 3,700		NA / 10,000
18,600 / 24,700		18,600 / 35,000
NA / 2,600		NA / 6,600
	NA / 56,000	

I-74 WSNB

NO DRAINAGE ON THIS PLANSHEET
THIS IS THE U-2579B PROJECT

BM # 9
N 873960 E 1658408
-L- STA. 159+49.40 OFF 51.58' LT
ELEV = 909.53'

89
JANE W. WHICKER
REVOCABLE TRUST
DB 3589 PG 2330

JANE W. WHICKER
REVOCABLE TRUST
DB 3589 PG 2330

JANE W. WHICKER
REVOCABLE TRUST
DB 3589 PG 2330

MATCHLINE -L- STA. 151+00 SEE SHEET 15

MATCHLINE -L- STA. 164+00 SEE SHEET 17

CAROL WESTMORELAND
DB 2105 PG 4144
DB 983 PG 526
DB 1809 PG 3712

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

TRAFFIC DIAGRAM

ADT 2017
ADT 2040

I-74 WSNB

NA / 60,500

NA / 3,700 | NA / 10,000

18,600 / 24,700 | 18,600 / 35,000

NA / 2,600 | NA / 6,600

NA / 56,000

I-74 WSNB

MATCHLINE –L– STA. 164+00 SEE SHEET 16

MATCHLINE –L– STA. 177+00 SEE SHEET 18

DARRELL T WESTMORELAND
DB 3233 PG 395

TERRY K. CUSTER
JACQUELINE CUSTER
DB 2487 PG 3598
PB 33 PG 197

BARRY R HARDY
DB 2261 PG 3390

MARSHALL S. BROWN
DB 2390 PG 4804

NCDOT
DB 3179 PG 334

TOWN OF WALKERTOWN
FORSYTH COUNTY

FORSYTH COUNTY
TOWN OF WALKERTOWN

ROBINS WALK SUBDIVISION
HOMEOWNERS ASSOCIATION INC.
DB 3033 PG 1533

WADE JURNEY HOMES, INC.
DB 3092 PG 527
PB 59 PG 82

WADE JURNEY HOMES, INC.
DB 3076 PG 529
PB 59 PG 82

WADE JURNEY HOMES, INC.
DB 3067 PG 2901
PB 59 PG 82

WADE JURNEY HOMES, INC.
DB 3076 PG 529
PB

-BL- 121

-BL- 122

-L- N 39° 49' 20.3" E

165+00

170+00

175+00

BEGIN 1.5" MILL AND RESURFACE
TIE TO U-2579B
STA.172+57.48

TIE TO EXIST. GUARDRAIL

TIE TO EXIST. RAISED MEDIAN (BOTH SIDES)

TIE TO EXISTING SBG TRANSITION TO PROPOSED 2'-6" CURB AND GUTTER

2 TONS CL B RIPRAP W/7 SY GEO FAB

LATERAL V DITCH SEE DETAIL A

100' TAPER

15:1 TAPER

GREU TYPE TL-3 CB-E

CB-G

CB-E

15" RCP-III

15" - 2 ELBOWS ROD & LUG

1'-6" CURB & GUTTER

REMOVE

APPEARS ABANDONED

SCATTERED TREES

MTL BRIDGE RUINS

WELL

SIGNAL POLE W/ BASE

THERE IS A 30' STREAM BUFFER DRAINAGE ESMT FROM EACH SIDE OF TOB PB 59 PG 82

FOR –L– PROFILE SEE SHT. 36–37

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4/1/2021
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def pu14

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 90 OWNER INFORMATION UPDATED.MAH.
RIGHT OF WAY REVISION: 3-8-2022 - ADDED NEW PARCEL 90A.ADDED ROW ON PARCEL 90A DUE TO FINAL SURVEY CHANGE.MAH.

MATCHLINE –L– STA. 177+00 SEE SHEET 17

MATCHLINE –L– STA. 190+00 SEE SHEET 19

NAD 83/2011

N 00°35'20" E 188.59'

N 89°26'07" W 120.71'

JUNE C MORTON
DB 971 PG 512
DB 1824 PG 2996
PB 4 PG 143

91

90

SANTOS MARTINEZ,
YOSELIN CRUZ MARTINEZ,
CARLOS RODRIGUEZ
DB 3606 PG 3396

WAYNE E. PHILLIPS, JR.
MARY ANN PHILLIPS
DB 1953 PG 2287
PB 31PG 167

DARREN K FREEMAN
DB 2075 PG 1238

JAMES R. MYERS III &
MARY B. MYERS
DB 1585 PG 1013
PB 27 PG 138
PB 31PG 167

KRYSTAL R. WOOD
DB 2899 PG 1798

90A

MATTRESS FACTORY INC.
DB 3056 PG 2199

NCDOT
DB 3169 PG 2009

TOWN OF WALKERTOWN
FORSYTH COUNTY

-BL- 123

LATERAL V DITCH SEE DETAIL A

BERM DITCH SEE DETAIL Z

BERM DITCH SEE DETAIL E

SP. BACK OF CURB DITCH SEE DETAIL I

150' TAPER

LATERAL V DITCH SEE DETAIL G

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL G

RAISED GRASS MEDIAN

-BL- 12

REMOVE SYSTEM

BM # 10
N 875520 E 1660195
–L– STA. 182+91.04 OFF 321.72' RT
ELEV = 923.01'

NCDOT
DB 3179 PG 1793
PB 55 PG 5

NCDOT
DB 3173 PG 4166
PB 55 PG 5

NCDOT
DB 3176 PG 1439
PB 55 PG 5

NCDOT
DB 3172 PG 4237
PB 55 PG 5

SMI PROPERTIES LLC
DB 3357 PG 4417

ROBINS WALK SUBDIVISION HOMEOWNERS ASSOCIATION INC,
DB 3033 PG 1533

ROBERT REYNOLDS
DB 2787 PG 3772
PB 52 PG 98

WADE JURNEY HOMES, INC.
DB 3076 PG 529
PB 59 PG 82

SONNY BOUTDAVONG
DB 3083 PG 3647
PB 59 PG 82

DAHYABHAI PATEL
DB 3094 PG 1350
PB 59 PG 82

KENNETH L. FORE
DB 1328 PG 457

KENNETH EUGENE LANE, SR.
HILDA L. LANE
DB 1726 PG 2948

LILLIAN PEGRAM HODGE
DB 1529 PG 1331

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 37

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3/7/2022
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mhunter

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

RIGHT OF WAY REVISION: 11-23-2021 - ADDED DRIVEWAY CONNECTION FOR PARCEL 257 AT -L- STA.190+10 RT.MAH.
RIGHT OF WAY REVISION: 3-8-2022 - ADDED NEW PARCEL 90A.ADJUSTED ROW ON PARCEL 90A & 91 DUE TO FINAL SURVEY CHANGE.MAH.
RIGHT OF WAY REVISION: 5-19-2022 - ADJUSTED TCE ON PARCEL 262.MAH.

-Y15-

PI Sta 11+00.54	PI Sta 15+13.77
△ = 17° 10' 07.9" (RT)	△ = 23° 48' 26.50" (RT)
D = 11° 01' 06.3"	D = 19° 05' 54.9"
L = 155.82'	L = 124.66'
T = 78.50'	T = 63.24'
R = 520.00'	R = 300.00'
SE = 0.04	SE = 0.04
DS = 35 MPH	DS = 30 MPH

NAD 83/2011

-Y15- POT Sta. 10+00.00
-Y15- PC Sta. 10+22.04
BEGIN CONSTRUCTION -Y15- POC Sta. 11+25.00
-Y15- PT Sta. 11+77.86
-Y15- PC Sta. 14+50.53
-Y15- PT Sta. 15+75.19=
-L- POT Sta.192+66.63

MATCHLINE -L- STA. 190+00 SEE SHEET 18

MATCHLINE -L- STA. 200+00 SEE SHEET 20

91 JUNE C MORTON DB 971PG 512 DB 1824 PG 2996 PB 4 PG 143

90A MATTRESS FACTORY INC. DB 3056 PG 2199

92

93 STEVEN P PEGRAM DEBORAH PEGRAM DB 1979 PG 2154 DB 1276 PG 662

MICHAEL W THOMPSON TAMARA S THOMPSON DB 2781PG 851 PB 48 PG 86

94 JOE G ANGEL DB 915 PG 673

95 DEBORAH A PEGRAM DENISE A VERDINEX DB 1979 PG 2150

96 JOYCE A LARRIMORE DB 2058 PG 3600

96A WALLACE L LARRIMORE JOYCE LARRIMORE DB 1952 PG 437 DB 1338 PG 1219

96B BIG SKY DEVELOPERS, LLC DB 2655 PG 2857 DB 702 PG 287

255 KENNETH EUGENE LANE, SR HILDA L. LANE DB 1726 PG 2948

257 JEWEL G PRATER DB 1442 PG 378

258 BETTY G CAPERTON DB 1442 PG 376

259 WILLIAM R VAUGHN DB 2535 PG 3619

260 JAMES V TURNER DB 1015 PG 840

261 WILLIAM R VAUGHN DB 1780 PG 325

262 WILLIAM RONALD VAUGHN DB 1166 PG 437

MICHAEL R MYERS DB 2813 PG 3329

SYLVIA E TRUELOVE DB 3288 PG 2617

EVELYN WALKER HELEN WALKER DB 1854 PG 2142

JAMES V TURNER NO DEED FOUND

200' TAPER
300' TAPER
150' TAPER
BERM DITCH SEE DETAIL E
SPECIAL CUT DITCH SEE DETAIL H
LATERAL V DITCH SEE DETAIL A
SP. BACK OF CURB CUT DITCH SEE DETAIL I
REMOVE SYSTEM
PLUG & FILL W/FLOWABLE FILL
5 TONS CL B RIPRAP W/14 SY GEO FAB
RAISED GRASS MEDIAN 1'-6" CURB & GUTTER

★ PROPOSED TRAFFIC SIGNAL

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHTS. 37–38
FOR -Y15- PROFILE SEE SHT. 47

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5/19/2022
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mhauser

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TRAFFIC DIAGRAM

ADT 2017
ADT 2040

–Y17– DARROW RD.
6,500 / 9,500
3,250 / 4,750 (EB)
3,250 / 4,750 (WB)
1,850 / 1,650
18,500 / 35,000
–L– US 158
–L– US 158
14,900 / 28,000
1,300 / 1,600
1,300 / 1,600
1,900 / 2,050
3,900 / 4,100
–Y16– OLD BELEWS CREEK RD.

–L2–	–L2–
PI Sta 205+00.00	PI Sta 211+91.50
Δ = 2° 29' 10.3" (RT)	Δ = 2° 29' 10.3" (LT)
D = 0° 29' 53.6"	D = 0° 29' 53.6"
L = 499.01'	L = 499.01'
T = 249.55'	T = 249.55'
R = 11,500.00'	R = 11,500.00'
SE = NC	SE = NC
DS = 50 MPH	DS = 50 MPH

NAD 83(2011)

MATCHLINE –L– STA. 200+00 SEE SHEET 19

MATCHLINE –L2– STA. 213+00 SEE SHEET 21

MARI-LU INVESTMENTS, LLC
DB 3182 PG 1845
DB 702 PG 282

96B BIG SKY DEVELOPERS, LLC
DB 2655 PG 2857
DB 702 PG 287

96D MARI-LU INVESTMENTS, LLC
DB 3182 PG 1845
DB 702 PG 282

96C NC STATE HWY COMMISSION
DB 734 PG 497
PB 16 PG 112, 005

JEAN V TAYLOR
DB 1292 PG 702
PB 16 PG 112

98 DAVID C. LEWELLYN
CAMILLA V. LEWELLYN
DB 3608 PG 4310

BETSY LIVENGOOD WILSON
DB 3562 PG 1032

263 WILLIAM RONALD VAUGHN
DB 2012 PG 223

262 WILLIAM RONALD VAUGHN
DB 1166 PG 437

264 BEN R. HILL, TRUSTEE
DB 2193 PG 1936

265 LAXMI FOOD MART, INC.
DB 2568 PG 1318

JOE R. LUNSFORD
BARBARA M. LUNSFORD
DB 1709 PG 2126

JONATHAN C. LARRIMORE
DB 2748 PG 2311

WILLIAM RONALD VAUGHN
DB 1349 PG 748

RAYMOND TODD HEDRICK
DB 1937 PG 551

SYLVIA E TRUELOVE
DB 3288 PG 2617

BURNISE BROWN
VIVIAN BROWN
DB 2218 PG 3542

DON JOHNSON
MAREN D. JOHNSON
DB 2943 PG 4319

CAROL M. WESTMORELAND
DB 1349 PG 1229

H.M. WATSON
DB 842 PG 294

JEAN S. LEONARD
DB 1179 PG 1256

CAROL M. WESTMORELAND
DB 349 PG 91
DB 877 PG 5

–L– PC Sta. 202+25.00= –L2– PC Sta. 202+25.00

–L2– PC Sta. 202+50.45

–L2– PT Sta. 207+49.46

BEGIN CONSTRUCTION –Y17A– Sta. 10+50.00

–Y17A– POT Sta. 10+00.00

END CONSTRUCTION –Y17– Sta. 16+94.00

–Y17A– POT Sta. 11+78.84= –Y17– POT Sta. 13+65.80

–L2– PC Sta. 209+41.95

–L2– POT Sta. 208+57.41= –Y16– POT Sta. 15+92.36 = –Y17– POT Sta. 11+57.96

END OVERLAY –Y16– POT Sta. 12+75.00

BEGIN OVERLAY –Y16– POT Sta. 11+00.00

–Y16– POT Sta. 10+00.00

BEGIN CONSTRUCTION –Y16– POT Sta. 12+20.24

150' TAPER

100' TAPER

46' TAPER

DO NOT DISTURB

REMOVE OTCB

RETAIN DI & REMAINING SYSTEM

LATERAL 'V' DITCH SEE DETAIL A

LATERAL 'V' DITCH SEE DETAIL G

STANDARD 'V' DITCH SEE DETAIL U

3 TONS CL B RIPRAP W/10 SY GEO FAB

2 TONS CL B RIPRAP W/7 SY GEO FAB

GRADE TO DRAIN

RETAIN SYSTEM

BL– GPS R2577–7

BM # 11
N 877561 E 1661943
–L2– STA. 209+92.62 OFF 336.21' RT
ELEV = 966.51'

★ PROPOSED TRAFFIC SIGNAL

FOR INTERSECTION DETAILS, SEE SHEET 2B–4

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 38
FOR –L2– PROFILE SEE SHT. 38
FOR –Y16– PROFILE SEE SHT. 47
FOR –Y17– PROFILE SEE SHT. 47
FOR –Y17A– PROFILE SEE SHT. 47

REVISIONS

8/17/99 RIGHT OF WAY REVISION: 8-13-2021 – REVISED PUE ON PARCEL 265 TO MISS FUEL PUMP. DO NOT DISTURB NOTE ADDED FOR THIS FUEL PUMP. MAH.
RIGHT OF WAY REVISION: 12-16-2021 – PARCEL 97 OWNER INFORMATION UPDATED. REMOVED TCE. PARCELS 98 & 99 COMBINED AS 98 AND UPDATED OWNER INFORMATION. MAH.
RIGHT OF WAY REVISION: 6-28-2022 – REMOVED TCE CLAIM FROM PARCEL 264. MAH.

6/28/2022
R:\2577A_Darrow\Proj\R-2577A_rdy_esh20.dgn
dlopez

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

-L2-	-D3-
PI Sta 211+91.50	PI Sta 10+41.53
Δ = 2° 29' 10.3" (LT)	Δ = 38° 27' 10.1" (LT)
D = 0° 29' 53.6"	D = 143° 14' 22.0"
L = 499.01'	L = 26.85'
T = 249.55'	T = 13.95'
R = 11,500.00'	R = 40.00'
SE = NC	
DS = 50 MPH	

REVISIONS

ROW REV. - 5/10/2021 - REVISED PDE AND TCE ALONG PARCEL 268 & 269 APPROXIMATE -L2- STA.216+00 RT. JRCO
ROW REV. - 3/29/2022 - REVISED ROW & TCE ON PARCEL 270. DO NOT DISTURB NOTE ADDED FOR PORCH, MAH.

8/17/99

3/29/2022
R:\2577A_Proj\Proj\R-2577A_rdy_psh21.dgn
mhouser

MATCHLINE -L2- STA. 213+00 SEE SHEET 20

MATCHLINE -L2- STA. 226+00 SEE SHEET 22

-Y17- N 5° 52' 26.7" E

-Y17- POT Sta. 19+00.00

JENNIFER A. KING
DB 3063 PG 376

FRANCES C. SCOTT
DB 940 PG 237

SR 2365/DARROW RD 22' BST

TO DEAD END

ROCK LN DR 20' BST

-L2- PT Sta. 214+40.97

150' TAPER

100' TAPER

LATERAL V DITCH SEE DETAIL A

+49.34 44.67' LT

-L2- POT Sta. 216+00.00=
-D3- POT Sta. 10+00.00

+89.29 78.72' LT

+44.32 R4 42.35' LT

TOE PROTECTION W/CL B RIPRAP SEE DETAIL K

24" RCP-III

15" RCP-IV

200' MEDIAN TAPER

-BL- 128

CHANNEL CHANGE SEE DETAIL Q

POSSIBLE SPRING HEAD

VARIOUS WIDTH SOIL/GR WALKING TRAILS

-L2- N 39° 49' 20.3" E

1'-6" CURB & GUTTER

RAISED GRASS MEDIAN

-D3- PC Sta. 10+27.58

-D3- PT Sta. 10+54.43

S 88° 37' 49.8" E

-D3- POT Sta. 11+50.00

S 50° 10' 39.7" E

215+00

220+00

225+00

GREU TYPE TL-3

2 TONS CL B RIPRAP W/7 SY GEO FAB

8 TONS CL B RIPRAP W/21 SY GEO FAB

SP. LATERAL 'V' DITCH SEE DETAIL J

DO NOT DISTURB

CULTIVATED FIELD

WOODS

ISBK

ISFD (DILAPIDATED)

SEPTIC PUMP

WELL

268 CAROL M. WESTMORELAND
DB 349 PG 91
DB 877 PG 5

269 A&C PROPERTIES OF FORSYTH, LLC
DB 2979 PG 799

270 JACK IRIZARRY
JEANETTE E IRIZARRY
DB 1636 PG 417
PB 19 PG 29

271 CHARLES E MCDANIEL
FRANCES H MCDANIEL
DB 1390 PG 367
PB 19 PG 29

272 QIGUAN YE
YAN YING CHEN
DB 3159 PG 338
PB 19 PG 29

273 FRANCES H MCDANIEL
DB 2374 PG 2094
PB 19 PG 29

274 ALMA W WATSON
DB 3350 PG 1169

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHTS. 38–39
FOR -D3- PROFILE SEE SHT. 50

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L2-	-L2-
PI Sta 232+54.75	PI Sta 239+67.09
Δ = 2° 24' 48.5" (LT)	Δ = 2° 24' 48.5" (RT)
D = 0° 29' 53.6"	D = 0° 29' 53.6"
L = 484.41'	L = 484.41'
T = 242.24'	T = 242.24'
R = 11,500.00'	R = 11,500.00'
SE = NC	SE = NC
DS = 50 MPH	DS = 50 MPH

BM # 12
N 879406 E 1662693
-L2- STA. 228+76.41 OFF 278.63 LT
ELEV = 935.26'

NAD 83/2011

REVISIONS
8/17/99
RIGHT OF WAY REVISION: 05-19-2022 - ADDED CURB CUT FOR FUTURE DRIVEWAY ACCESS ON PARCEL 276. MAH.

MATCHLINE -L2- STA. 226+00 SEE SHEET 21

MATCHLINE -L2- STA. 238+00 SEE SHEET 23

100 ROGER L SHARRON, KAY SHARRON, DB 1273 PG 1451, PB 10 PG 22

PATRICIA S FULP, DB 2330 PG 2198, PB 10 PG 22

101 OCULUS PARTNERS II LLC, DB 2929 PG 1747, PB 10 PG 22

DOROTHY C BROWN, DB 2553 PG 2998

103 FRED MARTIN, MARILYN F MARTIN, DB 1879 PG 3360

275 CITY OF WINSTON SALEM, DB 2249 PG 1263

274 ALMA W WATSON, DB 3350 PG 1169

276 FEDERAL NATIONAL MORTGAGE ASSOCIATION, DB 3345 PG 195, PB 10 PG 22

277 VANCO PROPERTIES LLC, DB 2427 PG 1635

278 VANCO PROPERTIES LLC, DB 2427 PG 1635

279 MARK T DUDLEY, DB 3071 PG 1241

-L2- PC Sta. 230+12.51

-L2- PT Sta. 234+96.92

-L2- PC Sta. 237+24.85

-L2- N 39° 49' 20.3" E

-L2- N 37° 24' 31.8" E

-BL- 129 2 TONS CL B RIPRAP W/ 7 SY GEO FAB

-BL- 130

INLET & OUTLET CHANNEL STABILIZATION SEE DETAIL V

CHANNEL CHANGE SEE DETAIL Q

LATERAL 'V' DITCH SEE DETAIL A

TRENCHLESS INSTALLATION 48" WELDED STEEL

SP.DET.HW 5'x5' RCBC EXT. NOT BURIED

GREU TYPE TL-3

RETAIN EX. RCBC

REMOVE SYSTEM

RETAIN SYSTEM

REMOVE

REMOVE CB-F

REMOVE DI

PLUG & FILL W/FLOWABLE FILL

3 TONS CL B RIPRAP W/10 SY GEO FAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL K

ADJUST DI

BERM DITCH SEE DETAIL E

200' MEDIAN TAPER

1'-6" CURB & GUTTER

RAISED GRASS MEDIAN

15" RCP-IV

18" RCP-III

18" RCP 18" RCP-IV

PUE

RW

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

FOR -L2- PROFILE SEE SHT. 39

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5/18/2022
R:\Projects\Roadway\Proj\R-2577A_rdy_psh22.dgn
mhouser

-L2-	-L-
PI Sta 239+67.09	PI Sta 249+17.35
Δ = 2° 24' 48.5" (RT)	Δ = 2° 31' 18.0" (RT)
D = 0° 29' 53.6"	D = 0° 29' 53.6"
L = 484.41'	L = 506.13'
T = 242.24'	T = 253.11'
R = 11,500.00'	R = 11,500.00'
SE= NC	SE = NC
DS= 50 MPH	DS = 50 MPH

PARCELS WITH U-5824 TIP NUMBER (84) WAS ACQUIRED UNDER THAT PROJECT; NO CLAIM ON R-2577A. EASEMENTS THAT ARE SHOWN BUT NOT FLAGGED WERE PURCHASED UNDER U-5824.

MATCHLINE -L2- STA. 238+00 SEE SHEET 22

MATCHLINE -L- STA. 248+00 SEE SHEET 24

103 FRED MARTIN MARILYN F MARTIN DB 1879 PG 3360

104 BUTTONWOOD FAMILY LLC DB 3197 PG 3704 PB 10 PG 22

105 TWP PROPERTIES LLC DB 2422 PG 2443

106 PHYLLIS C WILLIAMS ROBERT E WILLIAMS DB 2208 PG 2751 PW PROPERTIES LLC DB 2138 PG 3587

106A PHYLLIS C WILLIAMS DB 2208 PG 2751

106B PHYLLIS C WILLIAMS DB 2208 PG 2751

279 MARK T DUDLEY DB 3071PG 1241

280 GLENWOOD WALKERTOWN CO LLC DB 2345 PG 3181 PB 52 PG 28

281 JUDY N BULLOCK DB 2544 PG 84 PB 47 PG 127

282 A C T PROPERTIES WALKERTOWN LLC DB 2720 PG 4044 PB 45 PG 156

283 BCP SPEEKS DRIVE LLC DB 2794 PG 3983 PB 52 PG 28

U-5824 84

-L- POT Sta. 242+08.28= -L2- PT Sta. 242+09.26

-Y18- POT Sta. 10+02.87= -L2- POC Sta. 239+52.19

-Y19- POT Sta. 10+00.00= -L- POT Sta.242+63.32

-Y19A- POT Sta. 10+00.00= -L- POT Sta.246+72.18

-L- PC Sta. 246+64.24

END CONSTRUCTION -Y18- POT Sta. 11+23.00

END CONSTRUCTION -Y19- POT Sta. 11+20.00

END CONSTRUCTION -Y19A- POT Sta. 11+40.00

-Y18- POT Sta. 12+74.43

-Y19- POT Sta. 12+74.39

-Y19A- POT Sta. 12+80.84

S 50° 54' 46.6" E

S 49° 18' 50.8" E

S 49° 16' 23.5" E

N 39° 49' 20.3" E

240+00

245+00

200' TAPER

161' TAPER

100' TAPER

GRADE TO DRAIN

DO NOT DISTURB

REMOVE SIGN

REMOVE

RETAIN

RETAIN SYSTEM

STANDARD V DITCH SEE DETAIL U

LATERAL V DITCH SEE DETAIL A

GRADE TO DRAIN STANDARD V DITCH SEE DETAIL U

2 TONS CL B RIPRAP W/7 SY GEO FAB

3 TONS CL B RIPRAP W/10 SY GEO FAB

5 TONS CL B RIPRAP W/14 SY GEO. FAB

GREUTYPE TL-3

CONCRETE ISLAND

MONOLITHIC CONC ISLAND

US-158 / REIDSVILLE RD / SR 64 / RT 1

BROKEN-UP BST

TICKET BOOTH U/MTL CANOPY

MTL MOVIE SCREEN

BLDG

WOODS

PUE

DUE

PDE

HPB

RIGHT OF WAY REVISION: 8-13-2021 - 'REMOVE SIGN' NOTE ADDED ON PARCEL 281. 'DO NOT DISTURB' NOTE ADDED FOR TWO SIGNS AND LIGHT POLE ON PARCEL 280. RIGHT OF WAY REVISION: 10-14-2021 - ADDED DUE & PDE ON PARCEL U-5824 86 LIGHT POLE ON PARCEL 282. NOTE ADDED REGARDING U-5824 PARCELS FOR WHICH NO CLAIM WAS MADE ON R-2577A.MAH. RIGHT OF WAY REVISION: 11-23-2021 - ADDED CURB CUT FOR PARCELS 103 & 106.JRGO. RIGHT OF WAY REVISION: 01-05-2022 - CHANGED PARCEL U-5824 86 TO PARCEL 283.JRGO. RIGHT OF WAY REVISION: 01-25-2022 - ADDED FLAGS FOR TCE AND AUE ON PARCEL 283.MAH.

REVISIONS

8/17/99

1/25/2022
R:\2577A_Design\Proj\R-2577A_rdy_psh23.dgn
jrgoger

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHT. 39
FOR -L2- PROFILE SEE SHT. 39
FOR -Y18- PROFILE SEE SHT. 47
FOR -Y19- PROFILE SEE SHT. 47
FOR -Y19A- PROFILE SEE SHT. 48

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

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-L-	-Y20-	
PI Sta 249+17.35	PI Sta 95+14.03	PI Sta 105+62.01
△ = 2° 31' 18.0" (RT)	△ = 7° 38' 49.5" (RT)	△ = 2° 34' 55.7" (RT)
D = 0° 29' 53.6"	D = 1° 38' 13.3"	D = 1° 14' 58.7"
L = 506.13'	L = 467.13'	L = 206.63'
T = 253.11'	T = 233.91'	T = 103.33'
R = 11,500.00'	R = 3,500.00'	R = 4,585.00'
SE = NC	SE = 0.03	SE = 0.03
DS = 50 MPH	DS = 50 MPH	DS = 50 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PARCELS WITH U-5824 TIP NUMBER (82, 83, 84, 85, 87, 92) WERE ACQUIRED UNDER THAT PROJECT; NO CLAIM ON R-2577A. EASEMENTS THAT ARE SHOWN BUT NOT FLAGGED WERE PURCHASED UNDER U-5824.

NAD 83/2011

REVISIONS

8/17/99

RIGHT OF WAY REVISION: 8-13-2021 - 'DO NOT DISTURB' NOTE ADDED FOR LIGHT POLE ON PARCEL 302 ALONG -Y21-.
'DO NOT DISTURB' NOTE ADDED FOR 2 LIGHT POLES, PANEL, AND SIGN ON PARCEL 302 ALONG -Y22-.
NOTE ADDED REGARDING U-5824 PARCELS FOR WHICH NO CLAIM WAS MADE ON R-2577A.MAH.
RIGHT OF WAY REVISION: 10-14-2021 - ADJUSTED PUE AND ADDED DUE ON PARCELS 106A AND 106B. ADJUSTED TCE ON PARCELS 303 & 109 TO REFLECT U-5824 PURCHASE. MAH.
RIGHT OF WAY REVISION: 01-05-2022 - CHANGED PARCEL U-5824_86 TO PARCEL 283. JRG.
RIGHT OF WAY REVISION: 01-25-2022 - ADDED TCE, AUE FLAGS ON PARCEL 283. ADDED 'DO NOT DISTURB' NOTE FOR PARCEL 283 SIGN. PARCEL U-5824 92 OWNERS UPDATED. MAH.

MATCHLINE -L- STA. 248+00 SEE SHEET 23

MATCHLINE -L- STA. 261+00 SEE SHEET 25

BEGIN CONSTRUCTION TIE TO ADJACENT PROJECT U-5824 -Y20- STA 96+40.00

-Y20- PT Sta. 97+47.25

-Y20- POT Sta. 98+68.84= -L- POT Sta.250+40.52

-L- PT Sta. 251+70.38

-Y20- PC Sta. 104+58.68

-Y21- POT Sta. 10+00.00= -L- POT Sta.255+23.74

-Y22- POT Sta. 10+00.00= -L- POT Sta.260+20.07

-Y21- POT Sta. 12+73.07

-Y22- POT Sta. 12+73.17

END CONSTRUCTION TIE TO ADJACENT PROJECT U-5824 -Y20- STA. 100+30.63

END CONSTRUCTION -Y21- POT Sta. 11+45.00

END CONSTRUCTION -Y22- POT Sta. 11+30.00

100' TAPER

450' RIGHT TURN

150' TAPER

100' TAPER

300' RIGHT TURN

CONCRETE ISLAND

RAISED GRASS MEDIAN

-L- REMOVE N 42° 20' 38.3" E

S 65° 06' 39.8" E

S 48° 19' 35.4" E

S 47° 59' 59.9" E

BM # 13
N 880558 E 1664454
-L- STA. 248+95.97 OFF 363.68 RT
ELEV = 973.41'

JEFFREY A MIDKIFF DB 2943 PG 2943

JAMES G HOLT DB 2022 PG 3391

ROBERT L BUTLER PATRICIA BUTLER DB 3053 PG 3978 PB 21PG 84

C L GRACE PB 21PG 84

PAUL L ROBERTS SHIRLEY W ROBERTS DB 1939 PG 1477 PB 21PG 84

FRANCIS READ ADER HAMMACK DB 3063 PG 3940 PB 21PG 84

WALTER H NEAL JEANETTE B NEAL DB 2263 PG 1230

HARVEY B DILLON KAREN DILLON DB 1125 PG 166

PHYLLIS C WILLIAMS DB 2208 PG 2751

PW PROPERTIES LLC DB 2138 PG 3587

REP PROPERTY, LLC DB 3088 PG 2875 PB 45 PG 156

ARC CVWKTNCOOI, LLC DB 2925 PG 2401 PB 55 PG 79

WALKERTOWN LANDING LLC DB 3167 PG 2828 PB 55 PG 78

GOODWILL INDUSTRIES OF NORTHWEST NC INC DB 3023 PG 861 PB 55 PG 78

BCP SPEEKS DRIVE LLC DB 2794 PG 3983 PB 52 PG 28

OLD SCHOOL VENTURES LLC DB 2729 PG 1463 PB 51PG 87

RESTAURANT PROPERTY INVESTORS II LLC DB 3167 PG 2823 PB 55 PG 78

MCDONALDS REAL ESTATE COMPANY DB 2854 PG 2778 PB 55 PG 78

WAFFLE HOUSE INC DB 2994 PG 214 PB 58 PG 115

ADT 2017 / ADT 2040	TRAFFIC DIAGRAM

NOTE THAT TRAFFIC FORECAST HAS BEEN REVISED TO ACCOUNT FOR ADDITIONAL TRAFFIC THAT WILL UTILIZE THE LEFT TURN-LANE AT NC 66 RATHER THAN U-TURN AT DARROW ROAD.

-Y20- OLD HOLLOW RD. 17,300 / 16,100

-L- US 158: 1,080 / 2,760 ; 3,390 / 6,365 ; 5,200 / 4,100 ; 14,900 / 28,000 ; 19,000 / 26,700 ; 2,400 / 3,400 ; 3,100 / 2,600

-Y20- OLD HOLLOW RD. 15,800 / 13,400

★ PROPOSED TRAFFIC SIGNAL

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHTS. 39-40
FOR -Y20- PROFILE SEE SHT. 48
FOR -Y21- PROFILE SEE SHT. 48
FOR -Y22- PROFILE SEE SHT. 48

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jrgoode

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

MATCHLINE –L– STA. 261+00 SEE SHEET 24

MATCHLINE –L– STA. 274+00 SEE SHEET 26

109
HARVEY B DILLON
KAREN DILLON
DB 1125 PG 166

110
KAREN B DILLON
DB 3211 PG 4251

111
CHARLES W PIERCE
JANIE L PIERCE
DB 2608 PG 2820

112
JANIE L PIERCE
NANCY L CARMICHAEL
DB 2244 PG 2437

285
TONY S VERNON
CHRISTA V NORRELL
DB 780 PG 244

WALKERTOWN LANDING LLC
DB 3207 PG 3276
PB 62 PG 120

WAFFLE HOUSE INC
DB 2994 PG 214
PB 58 PG 115

FRIENDLY CAR CARE INC
DB 3191 PG 2552
PB 58 PG 115

WALKERTOWN LANDING LLC
DB 3167 PG 2828
PB 55 PG 78
301A

KEYSTONE AT WALKERTOWN LANDING LLC
DB 3189 PG 1456
PB 62 PG 120

KEYSTONE AT WALKERTOWN LANDING LLC
DB 3192 PG 795

-L- N 42° 20' 38.3" E

265+00

270+00

-BL- GPS R2577-9

-BL- GPS R2577-10

BM # 14
N 882167 E 1665833
–L– STA. 270+22.52 OFF 302.91 RT
ELEV = 979.15'

REMOVAL OF EXISTING PAVEMENT

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR –L– PROFILE SEE SHT. 40

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2/7/2022
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(c) Inpher

-D4-	
PI Sta 10+89.36	PI Sta 11+74.45
△ = 80° 00' 00.0" (RT)	△ = 80° 00' 00.0" (RT)
D = 143° 14' 22.0"	D = 143° 14' 22.0"
L = 55.85'	L = 55.85'
T = 33.56'	T = 33.56'
R = 40.00'	R = 40.00'

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83-2011

REVISIONS

8/17/99 RIGHT OF WAY REVISION:10-25-2021 - ADDED DRIVEWAY AT -L- STA. 274+30 RT TO PROVIDE ACCESS FOR ADJACENT PROPERTY. BVE
RIGHT OF WAY REVISION:12-16-2021 - PARCEL 113 OWNER INFORMATION UPDATED.MAH.
RIGHT OF WAY REVISION:3-8-2022 - PARCEL 117A ADDED.JRGO.

MATCHLINE -L- STA. 274+00 SEE SHEET 25

MATCHLINE -L- STA. 287+50 SEE SHEET 27

112 JANIE L PIERCE, NANCY L CARMICHAEL, DB 2244 PG 2437

113 MICHAEL T. MATTHEWS, DB 3537 PG 113

114 MATTRESS FACTORY INC, DB 2958 PG 1261

115 RAYMOND H NEAL, DB 662 PG 382

116 ALMA D AMOS, DB 2656 PG 4327

117 ALMA D AMOS, DB 2990 PG 343

117A ALMA D AMOS, DB 2990 PG 343

118 JERRY L AMOS, CYNTHIA M AMOS, DB 1787 PG 2753

285 KEYSTONE AT WALKERTOWN LANDING LLC, DB 3189 PG 1456, PB 62 PG 120

287 TONY S VERNON, CHRISTA V NORRELL, DB 1855 PG 1266

288 RICHARD V LINVILLE, DB 2026 PG 2816

289 MARTY C CHAMBERS, TERESA A CHAMBERS, DB 1650 PG 1318

291 QUALITY OIL COMPANY LLC, DB 1966 PG 2784

292 LINDA R HALL, DB 3284 PG 1747, PB 64 PG 159

RICHARD V LINVILLE, DB 2026 PG 2813

TONY S VERNON, CHRISTA V NORRELL, DB 780 PG 244

KEYSTONE AT WALKERTOWN LANDING LLC, DB 3192 PG 795

VELDA M WALSH REVOCABLE TRUST, DB 3117 PG 1886

-D4- PC Sta. 10+55.79

-D4- PC Sta. 11+40.88

-D4- PT Sta. 11+11.64

-D4- PT Sta. 11+96.73

-D4- POT Sta. 10+00.00= -L- POT Sta. 278+14.91

-D4- POT Sta. 12+52.53= -L- POT Sta. 279+42.31

200' MEDIAN TAPER

150' TAPER

N 37° 39' 21.7" W

N 42° 20' 38.3" E

S 57° 39' 21.7" E

CN 42°20'38.3" E

-L-

RAISED GRASS MEDIAN

GRADE DITCH

RETAIN

REMOVE

DO NOT DISTURB

STANDARD 'V' DITCH SEE DETAIL U

LATERAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL D

GRADE TO DRAIN

GREU TYPE III

3 TONS CL B RIPRAP W/10 SY GEO FAB

2 TONS CL B RIPRAP W/7 SY GEO FAB

275+00

280+00

285+00

FOR INTERSECTION DETAILS, SEE SHEET 2B-4

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

REMOVAL OF EXISTING PAVEMENT

BM # 15
N 883107 E 1666974
-L- STA. 284+85.96 OFF 512.40 RT
ELEV = 932.74'

BMI5

FOR -L- PROFILE SEE SHTS. 40-41
FOR -D4- PROFILE SEE SHT. 50

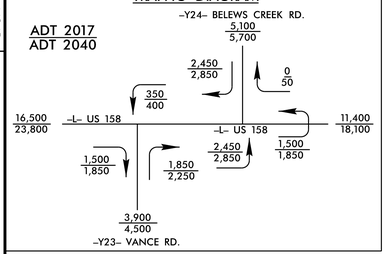
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3/7/2022
R:\Roadway\Proj\R-2577A_rdy_psh26.dgn
mhouser

8/17/99

TRAFFIC DIAGRAM

ADT 2017
ADT 2040



-Y23-	-Y24-		-D5-	
PI Sta 14+77.82	PI Sta 13+04.32	PI Sta 18+12.85	PI Sta 22+29.54	PI Sta 11+10.20	PI Sta 13+79.63
△ = 42° 08' 08.4" (LT)	△ = 0° 17' 21.9" (RT)	△ = 28° 38' 20.09" (RT)	△ = 72° 45' 32.8" (LT)	△ = 90° 00' 00.0" (LT)	△ = 89° 37' 55.7" (RT)
D = 11° 27' 33.0"	D = 0° 02' 51.2"	D = 7° 09' 43.1"	D = 19° 05' 54.9"	D = 136° 25' 06.7"	D = 136° 25' 06.7"
L = 367.70'	L = 608.65'	L = 399.87'	L = 380.97'	L = 65.97'	L = 65.70'
T = 192.61'	T = 304.32'	T = 204.21'	T = 221.01'	T = 42.00'	T = 41.73'
R = 500.00'	R = 120,490.00'	R = 800.00'	R = 300.00'	R = 42.00'	R = 42.00'
SE = 0.04	SE = NC	SE = 0.06	SE = 0.06	SE = 0.02	SE = 0.02
DS = 35 MPH	DS = 55 MPH	DS = 45 MPH	DS = 30 MPH	DS = 15 MPH	DS = 15 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS
RIGHT OF WAY REVISION: 7-9-2021 - NAME CHANGED ON PARCELS 121,122,124,127 & 127A.HAT.
RIGHT OF WAY REVISION: 10-14-2021 - TCE ADDED ON PARCEL 296 FOR DRIVEWAY.MAH.

10/14/2021
R:\R-2577A_Rdy\Proj\R-2577A_rdy_psh27.dgn
jmcgee

BEGIN CONSTRUCTION
-Y24- POC Sta.12+75.00

-Y24- PCC Sta. 16+08.65

-Y24- PRC Sta. 20+08.52

-Y24- PT Sta. 23+89.49

-Y23- POT Sta. 10+00.00=
-Y24- POT Sta. 24+35.99=
-L- POT Sta.290+62.72

-Y23- PC Sta. 12+85.21

-D5- POT Sta. 10+00.00

-D5- PC Sta. 10+68.20

-D5- PT Sta. 11+34.17

-D5- PC Sta. 13+37.90

-D5- PT Sta. 14+03.60

-D5- POT Sta. 14+39.35

BEGIN CONSTRUCTION
-X-OVER1- POT Sta. 300+50.00=
-L- POT Sta.300+50.00 (29.50' LT)

MATCHLINE -L- STA. 287+50 SEE SHEET 26

MATCHLINE -L- STA. 301+00 SEE SHEET 28

MATCHLINE -Y23- STA. 13+00 SEE SHEET 30

NAD 83/2011

118 JERRY L AMOS, CYNTHIA M AMOS, DB 1787 PG 2753

119 CHARLES W PIERCE, JANIE L PIERCE, DB 2608 PG 2820

120 VENABLE & SON LLC, DB 2693 PG 1732, PB 50 PG 116

121 ALVIN FREEMAN JR. & WIFE, JAMEELAH NEWTON FREEMAN, DB 3375 PG 3780, PB 50 PG 116

122 CONSTANCE C LOWERY, DB 3464 PG 2363, PB 50 PG 116

123 MCKELVIN L ROBERTS, DB 3240 PG 1408, PB 50 PG 116

124 GREGORY BOCK AND WIFE, KAYLA LOMBARDI, DB 3470 PG 1598, PB 50 PG 116

125 VENABLE & SON LLC, DB 2591PG 807, PB 50 PG 116

126 MANSFIELD CATO INVESTMENTS LLC, DB 2737 PG 2179, PB 50 PG 116

127 JULIO SANDOVAL GARCIA & ANGELES PAULINA SANDOVAL, DB 3603 PG 4291, PB 50 PG 116

127A ANGELES RANGEL SANDOVAL & JULIO SANDOVAL GARCIA, DB 3475 PG 3436, PB 50 PG 116

292 LINDA R HALL, DB 3284 PG 1747, PB 64 PG 159

292A

294A NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, DB 2780 PG 2035

295 JENNIFER PAWLEY, DB 3317 PG 3258

296 DAVID J HARDY, SAMANTHA Z HARDY, DB 3249 PG 2213

FOR INTERSECTION DETAILS, SEE SHEET 2B-4

NOTE: ALL DRIVEWAYS ARE 18' UNLESS OTHERWISE NOTED

★ PROPOSED TRAFFIC SIGNAL

REMOVAL OF EXISTING PAVEMENT

FOR -L- PROFILE SEE SHT. 41
FOR -X-OVER1- PROFILE SEE SHT. 42
FOR -Y23- PROFILE SEE SHT. 48
FOR -Y24- PROFILE SEE SHT. 49
FOR -D5- PROFILE SEE SHT. 50

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PROJECT REFERENCE NO.	SHEET NO.
R-2577A	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

REVISIONS

8/17/99

RIGHT OF WAY REVISION: 7-9-2021 - NAME CHANGED ON PARCELS 127 & 127A,HAT.
RIGHT OF WAY REVISION: 10-14-2021 - TCE ADDED ON PARCEL 296 FOR DRIVEWAY. MAH.

10/14/2021
RK&K (Scotland)\Projects\R-2577A_rdy_psh28.dgn
jcooper

MATCHLINE -L- STA. 301+00 SEE SHEET 27

-X-OVER1-
PI Sta 302+70.55 | PI Sta 305+18.26
△ = 14° 55' 29.3" (RT) | △ = 14° 57' 10.9" (LT)
D = 6° 01' 52.1" | D = 6° 01' 52.1"
L = 247.46' | L = 247.93'
T = 124.44' | T = 124.67'
R = 950.00' | R = 950.00'
SE = 0.04 | SE = 0.04
DS = 50 MPH | DS = 50 MPH

END TIP PROJECT R-2577A
-X-OVER1- PT STA. 306+41.51

-X-OVER1- PC Sta. 301+46.12

-X-OVER1- PRC Sta. 303+93.58

-L- PT Sta. 305+01.64

-X-OVER1- POT Sta. 308+00.00

-X-OVER1-
N 42° 18' 56.7" E

-L- N 42° 20' 38.3" E

N 42° 20' 38.3" E

-BL- 136

-BL- 137

-BL- 138

BM # 16
N 885084 E 1668230
-X-OVER1- STA. 307+98.66
OFF 75.14' RT ELEV=926.44'

JAMES O BILLOCK
REBEKAH L BILLOCK
DB 3318 PG 3368

MICHAEL G SHELTON
NICOLE L SHELTON
DB 2697 PG 1812
PB 50 PG 116

ANGELES RANGEL SANDOVAL
& JULIO SANDOVAL GARCIA
DB 3475 PG 3436
PB 50 PG 116

JULIO SANDOVAL
GARCIA & ANGELES
PAULINA SANDOVAL
DB 3603 PG 4291
PB 64 PG 159

VENABLE & SON LLC
DB 2693 PG 1732
PB 50 PG 116

DAVID J HARDY
SAMANTHA Z HARDY
DB 3249 PG 2213

ADAM W JONES
ELIZABETH M JONES
DB 2965 PG 2695

2 TONS CL B RIPRAP
W/7 SY GEO FAB

GREU TYPE TL-3

SPECIAL CUT DITCH
SEE DETAIL H

LATERAL V DITCH
SEE DETAIL A

15" RCP-III

REMOVE 24" DUCTILE IRON

DO NOT
DISTURB

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

FOR -L- PROFILE SEE SHT. 41
FOR -X-OVER1- PROFILE SEE SHT. 42
FOR -D5- PROFILE SEE SHT. 50

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-Y5-	-Y5A-
PI Sta 18+25.56	PI Sta 14+03.88
Δ = 59° 56' 31.1" (LT)	Δ = 44° 22' 01.8" (RT)
D = 6° 01' 52.1"	D = 11° 27' 33.0"
L = 993.88'	L = 387.18'
T = 547.84'	T = 203.88'
R = 950.00'	R = 500.00'
SE = 0.03	SE = 0.04
DS = 35 MPH	DS = 35 MPH

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

REVISIONS
8/17/99
RIGHT OF WAY REVISION: 12-16-2021 - PARCEL 60 OWNER INFORMATION UPDATED.MAH.

BOBBY BREWER
PAMELA P BREWER
DB 1908 PG 3481

BOBBIE H MILLER
DB 3133 PG 728
PB 8 PG 216

56
EDNA B HOWARD
DB 2740 PG 3508
PB 8 PG 216

LOUISE BEESON
DB 2530 PG 2460
PB 8 PG 216

ALLISON L
WESTMORELAND
DB 2798 PG 3559

SHERI RANDAZZO
DB 3335 PG 1825

JOSE A HERNANDEZ
ERIKA R HERNANDEZ
DB 3155 PG 589

58
EARL WATKINS
DB 3340 PG 1649

59
THELMA E ESQUIVEL
DB 2993 PG 3402

60
BRAYAN ELIACIT ALBERTO ALVAREZ
& JESSICA ALBERTO
DB 3650 PG 1073

52
EUGENE P HUDSON
JUANITA L HUDSON
DB 2447 PG 2737
PB 10 PG 117

61
WILLIAM R VAUGHN
DB 1840 PG 708
PB 10 PG 117

COURTNEY R LILLY
DB 3245 PG 4202
PB 10 PG 117

62
BOBBY A WOLFINGTON
ROBIN V WOLFINGTON
DB 2084 PG 449
PB 8 PG 216

63
TIMOTHY O CREWS
KIMBERLY CREWS
DB 2995 PG 1713

BEGIN CONSTRUCTION
-Y5A- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y5- POT Sta.10+15.00

-Y5- POT Sta. 10+00.00

-Y5A- PC Sta. 12+00.00

-Y5A- PT Sta. 15+87.18

-Y5- PC Sta. 12+77.72

-Y5A- POT Sta. 16+44.00=
-Y5- POC Sta.17+90.00

MATCHLINE -Y5- STA. 19+75 SEE SHEET 10

N 24° 30' 02.4" E

S 9° 45' 51.4" E

N 68° 52' 04.2" E

SPECIAL CUT DITCH SEE DETAIL H

BERM DITCH SEE DETAIL E

REMOVE

2GIA-NSS

24" RCP-III CLASS III

NOTE: ALL DRIVES ARE 18' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

REMOVAL OF EXISTING PAVEMENT

FOR -Y5- PROFILE SEE SHT. 44
FOR -Y5A- PROFILE SEE SHT. 44

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

12/16/2021
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(plunder)

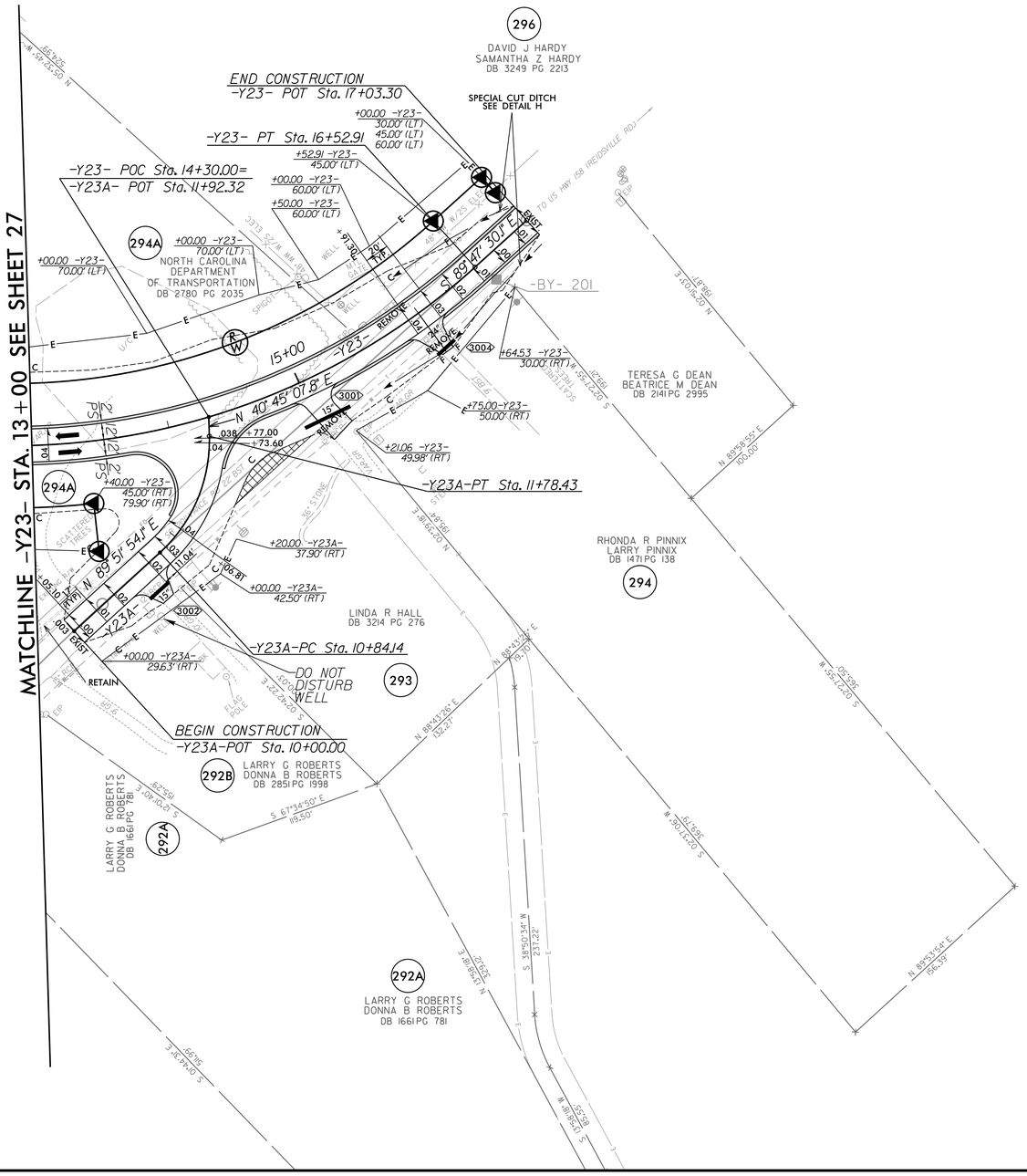
8/17/99

-Y23-	-Y23A-
PI Sta 14+77.82	PI Sta 11+34.41
△ = 42° 08' 08.4" (LT)	△ = 49° 06' 46.3" (LT)
D = 11° 27' 33.0"	D = 52° 05' 13.5"
L = 367.70'	L = 94.29'
T = 192.61'	T = 50.26'
R = 500.00'	R = 110.00'
SE = 0.04	SE = 0.04
DS = 35 MPH	DS = 20 MPH

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-2577A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



REMOVAL OF EXISTING PAVEMENT

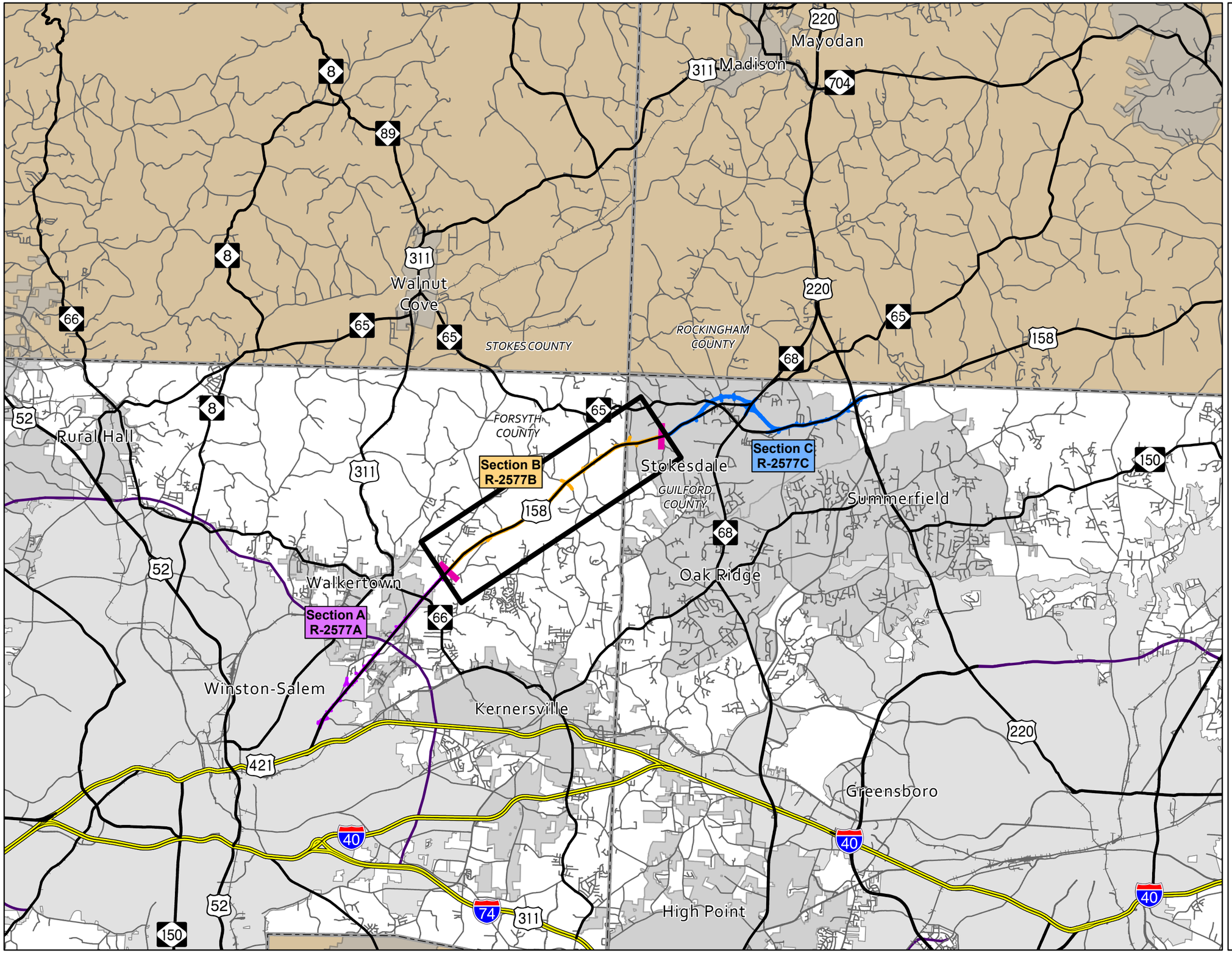
FOR -Y23- PROFILE SEE SHT. 48
FOR -Y23A- PROFILE SEE SHT. 49

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4/1/2021
R:\Projects\Proj\R-2577A_rdy_pshi30.dgn
default

Preliminary Sections Permit Maps

R-2577 Sections B & C



N

0 2 4 Miles

Legend

Preferred Alternatives

- Project R-2577A
- Project R-2577B
- Project R-2577C
- R-2577 Section Break
- Interstate
- US Routes
- NC Route
- Secondary Road
- Proposed/Under Construction
- RailroadTrack
- County Line

STIP PROJECT: R-2577

WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS SECTION B: CORRIDOR CONTEXT

FORSYTH AND GUILFORD COUNTIES

Section B

N

0 0.5 1 Miles

Legend

- R-2577B
- R-2577C
- R-2577 Section Break
- Section Map Sheets
- Interstate
- US Routes
- NC Route
- Secondary Road
- Other Existing Road

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

MASTER SHEET
SECTION B



Yorkwood Dr

Bienard Dr

Reidsville Rd

SEM

PAQ

WHM

Fulps Pond Rd

N

0 100 200 US Feet

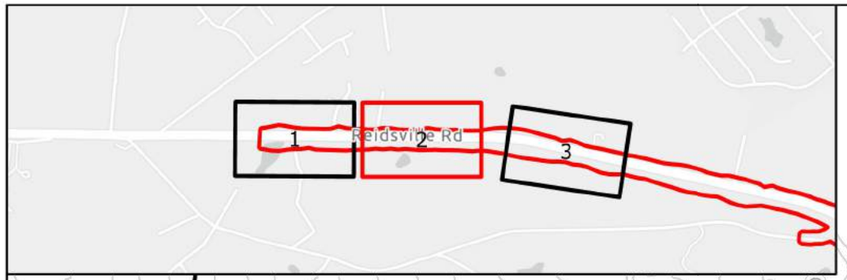
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 1 OF 11



Kitty Ln

Reidsville Rd

SEK

WHL

SEK

N

0 100 200 US Feet

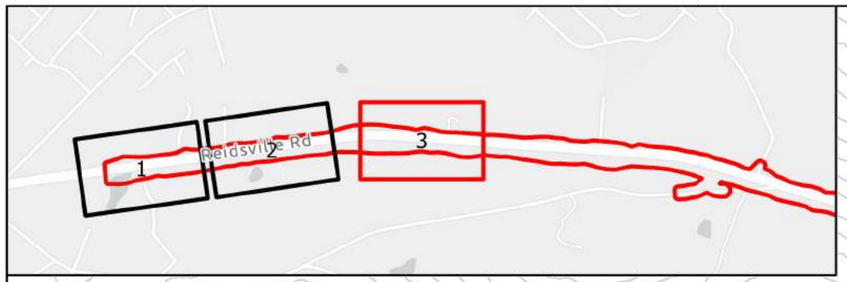
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 2 OF 11



N

0 100 200 US Feet

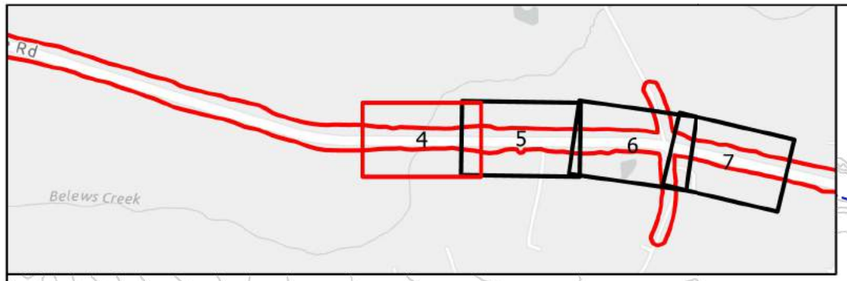
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 3 OF 11



Reidsville Rd

SDR

N

0 100 200 US Feet

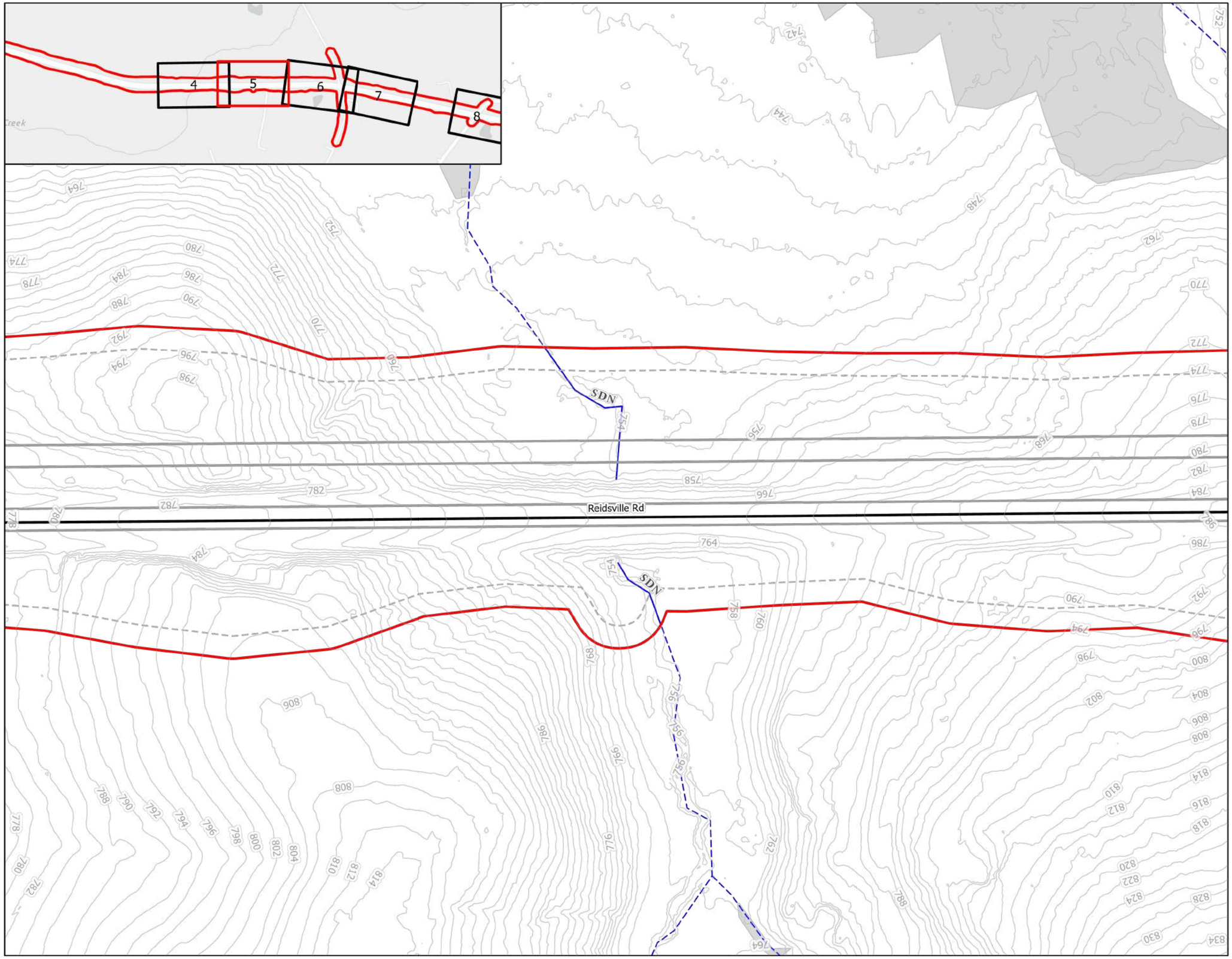
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 4 OF 11



N

0 100 200 US Feet

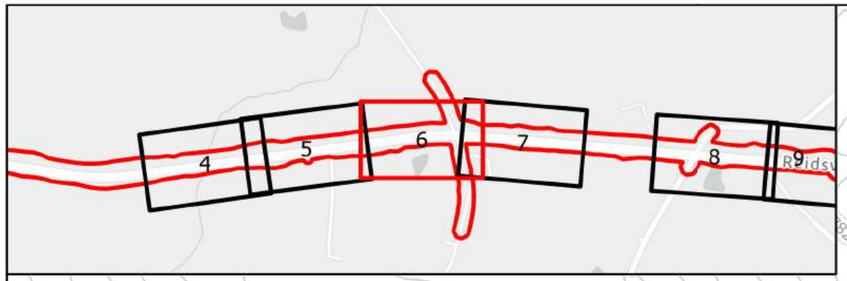
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 5 OF 11



SDP

WGR

Reidsville Rd

Goodwill Church Rd

Merrilu Ln

N

0 100 200 US Feet

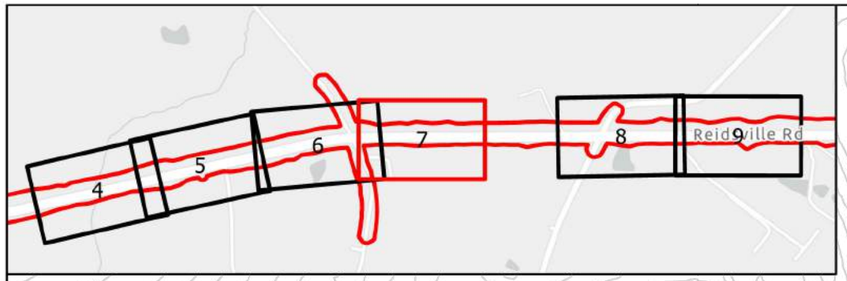
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 6 OF 11



N

0 100 200 US Feet

SDL
WGQ
SDL
Reidsville Rd
SDL
Goodwill Church Rd
Merrilu Ln

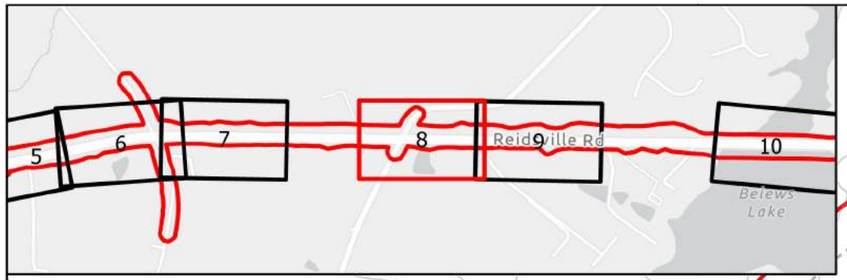
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 7 OF 11



N

0 100 200 US Feet

Kernersville Rd

Reidsville Rd

Piney Grove Rd

SCW

WFO

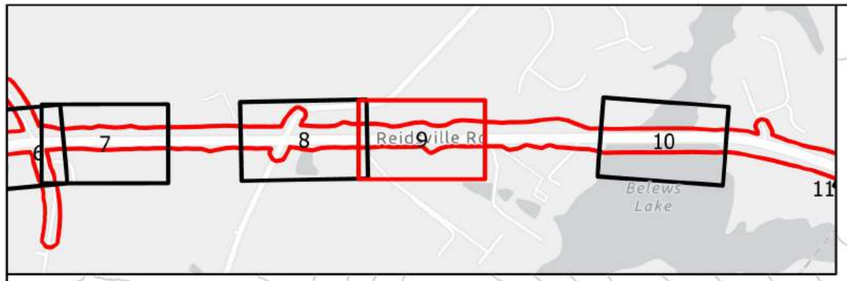
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 8 OF 11



N

0 100 200 US Feet

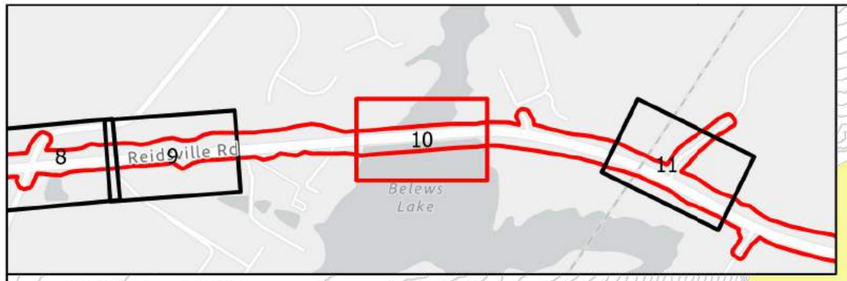
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 9 OF 11



WFN

PAI

Reidsville Rd

N

0 100 200 US Feet

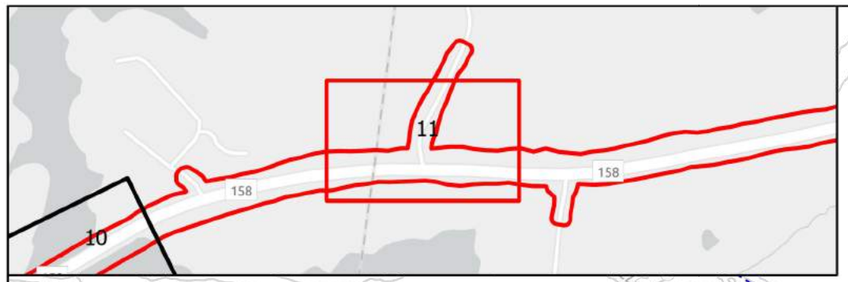
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 10 OF 11



N

0 100 200 US Feet

SCL
SCL
Goldwater Rd
WGD
Reidsville Rd
US Highway 158

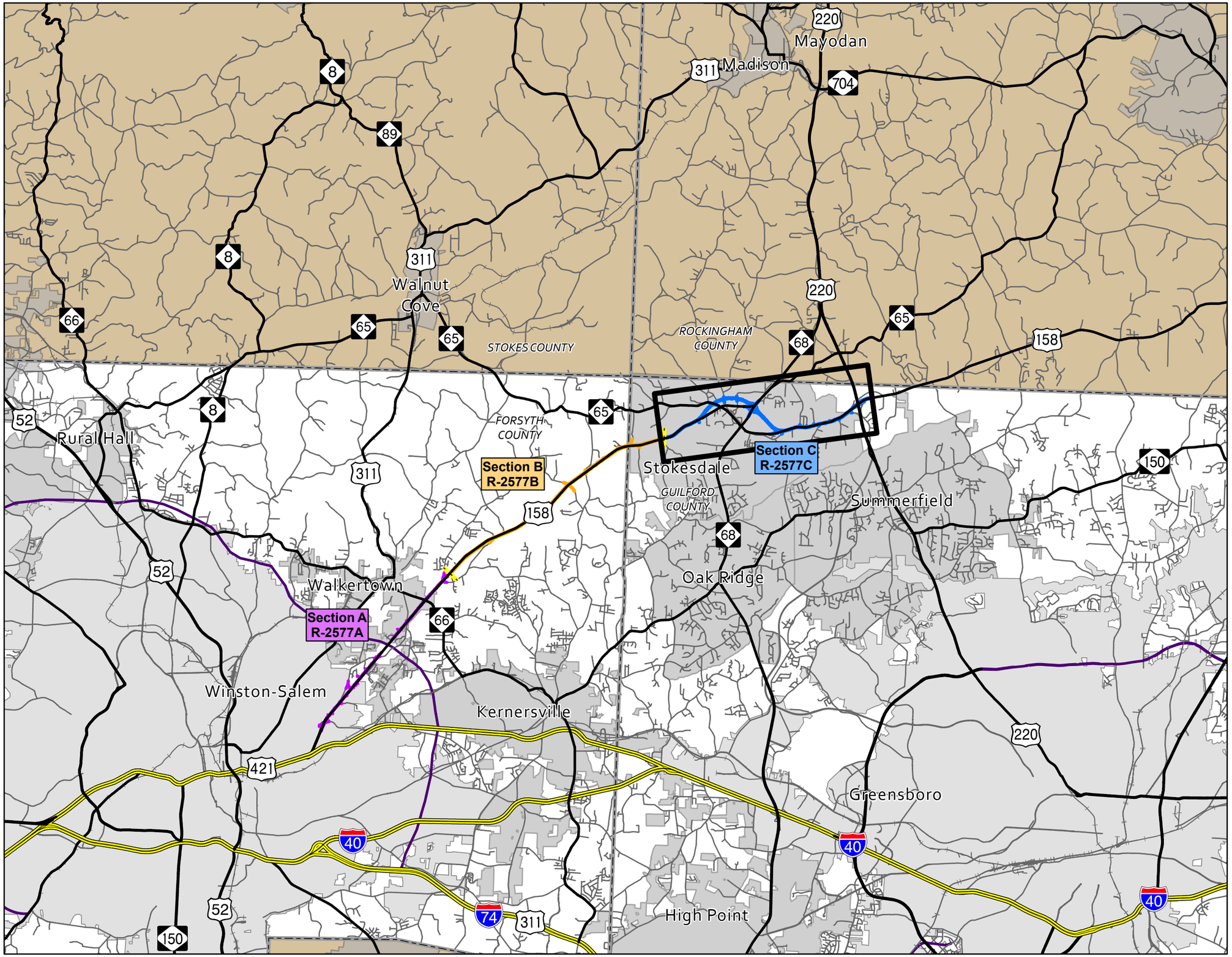
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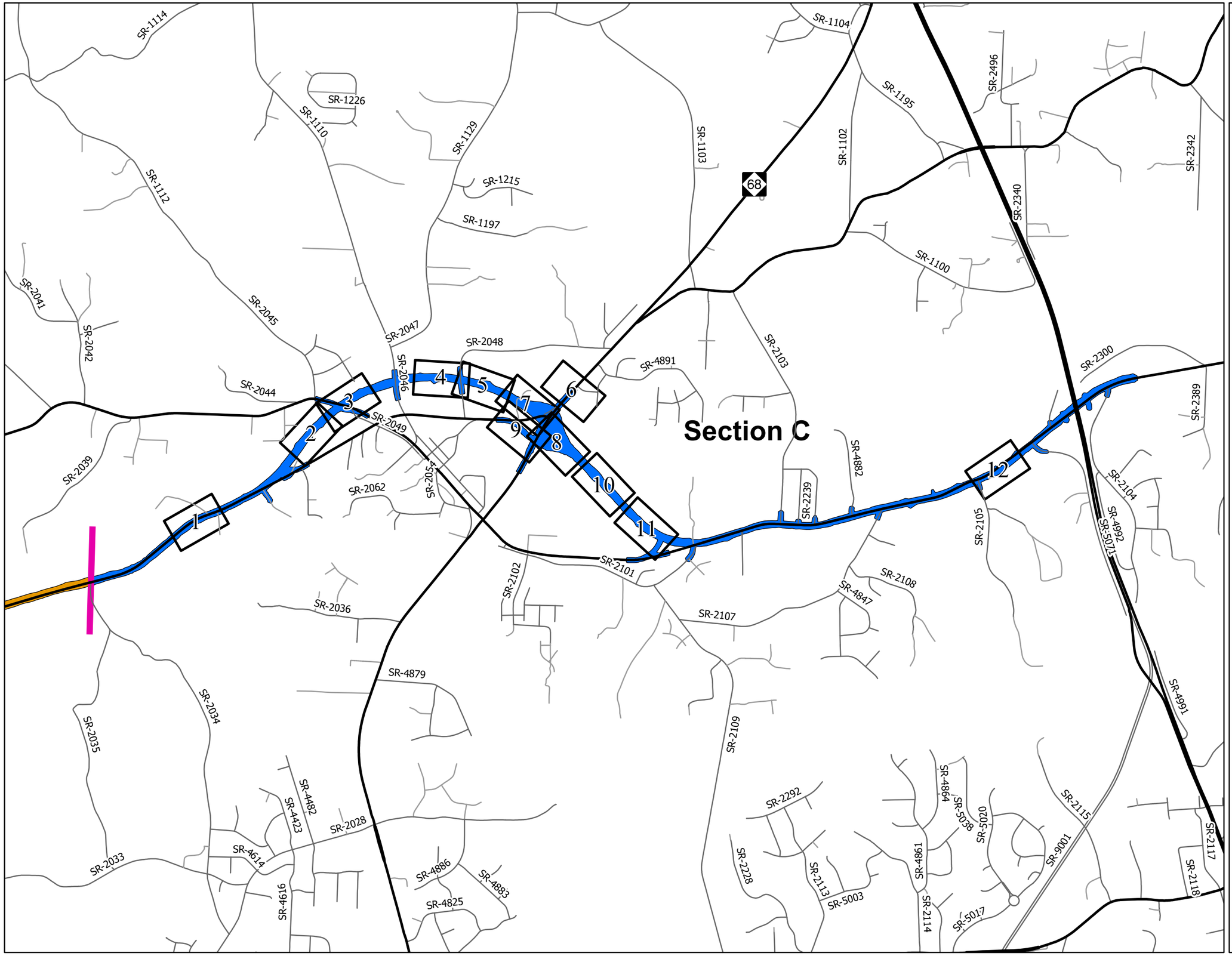
- Slope Stakes + 25'
- Preliminary Design
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- All Wetlands
- All Open Water
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- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

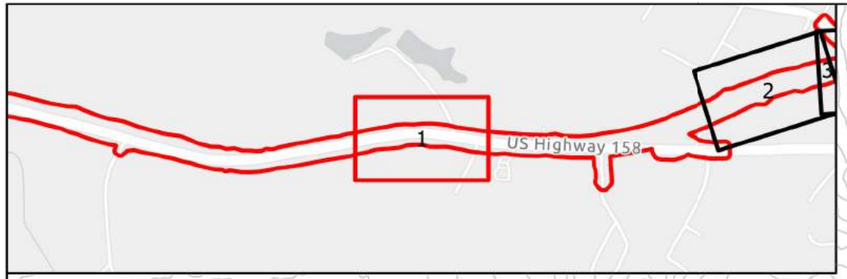
* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION B: SHEET 11 OF 11


N
0
2
4
Miles
Legend
Preferred Alternatives
Project R-2577A
Project R-2577B
Project R-2577C
Interstate
US Routes
NC Route
Secondary Road
Proposed/Under Construction
RailroadTrack
County Line
STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY
STREAMS AND WETLANDS SECTION C: CORRIDOR CONTEXT
FORSYTH AND GUILFORD COUNTIES
Section A R-2577A
Section B R-2577B
Section C R-2577C
STOKES COUNTY
ROCKINGHAM COUNTY
FORSYTH COUNTY
GUILFORD COUNTY
Mayodan
Madison
Walnut Cove
Rural Hall
Walkertown
Winston-Salem
Kernersville
Stokesdale
Summerfield
Oak Ridge
Greensboro
High Point
8
89
311
220
704
65
66
68
158
52
421
40
74
150


Section C
1
2
3
4
5
6
7
8
9
10
11
12
68
SR-1114
SR-1226
SR-1110
SR-1129
SR-1112
SR-1215
SR-1197
SR-1103
SR-1104
SR-1195
SR-1102
SR-2496
SR-2342
SR-2340
SR-1100
SR-2041
SR-2042
SR-2045
SR-2047
SR-2048
SR-2046
SR-2044
SR-2049
SR-4891
SR-2103
SR-2300
SR-2389
SR-2039
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SR-2105
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SR-5020
SR-2115
SR-9001
SR-2114
SR-5017
SR-2117
SR-2118
N
0
0.5
1
Miles
Legend
R-2577B
R-2577C
R-2577 Section Break
Section Map Sheets
Interstate
US Routes
NC Route
Secondary Road
Other Existing Road
STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY
MASTERS SHEET
SECTION C



N

0 100 200 US Feet

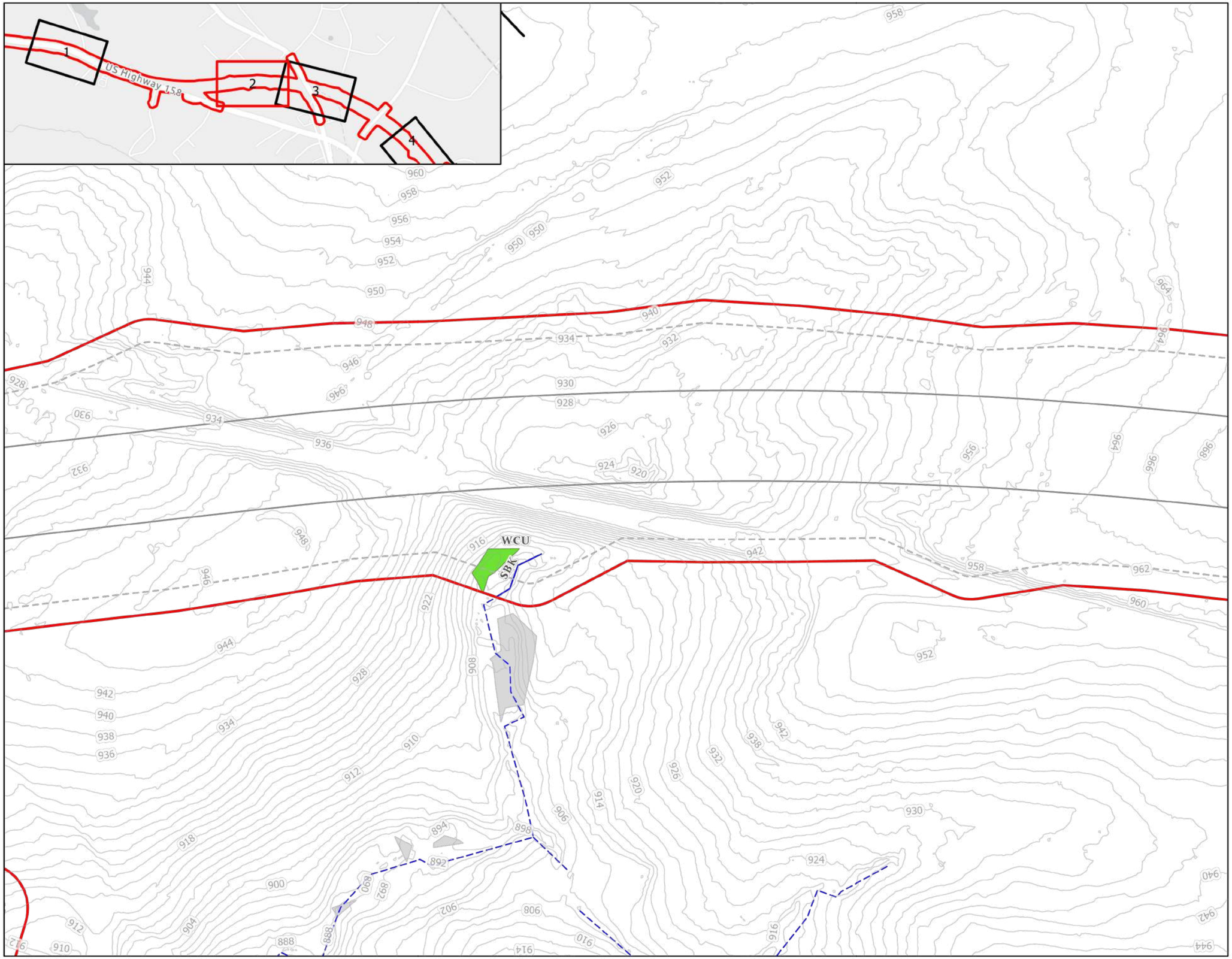
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 1 OF 12



N

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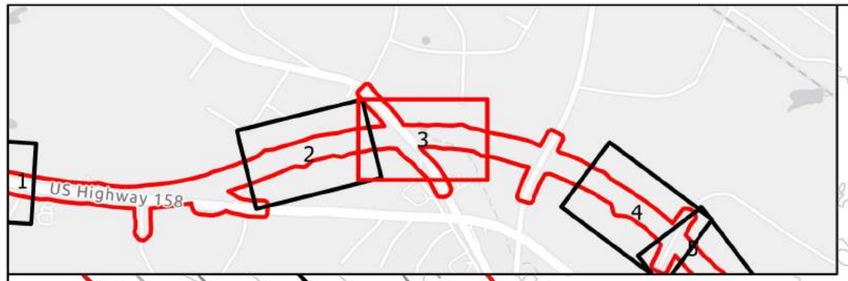
Legend

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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 2 OF 12



Deer Path Ct

Belews Creek Rd

Stokesdale St

WCP

WCO

WCN

N

0 100 200 US Feet

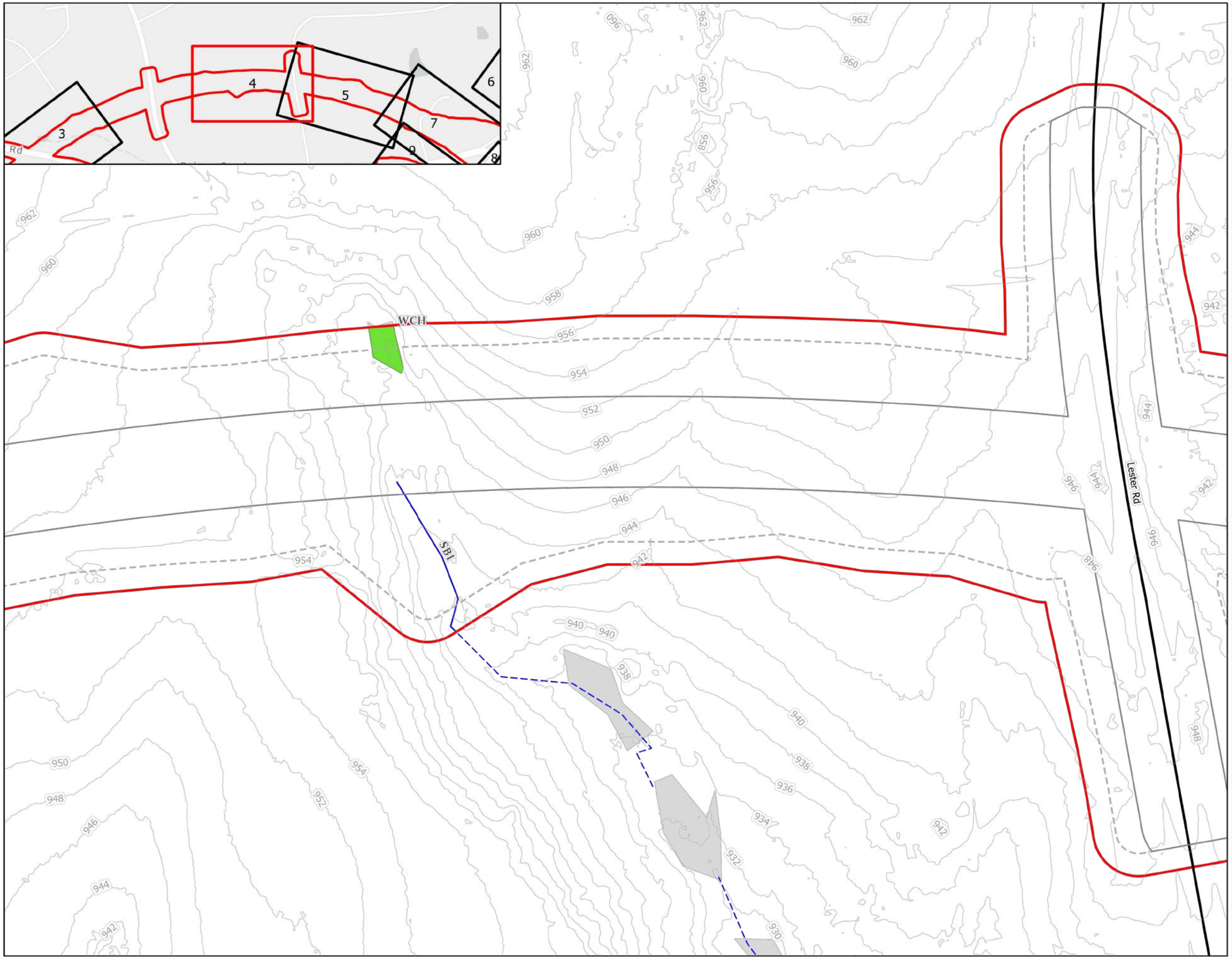
Legend

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- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 3 OF 12



N

0 100 200 US Feet

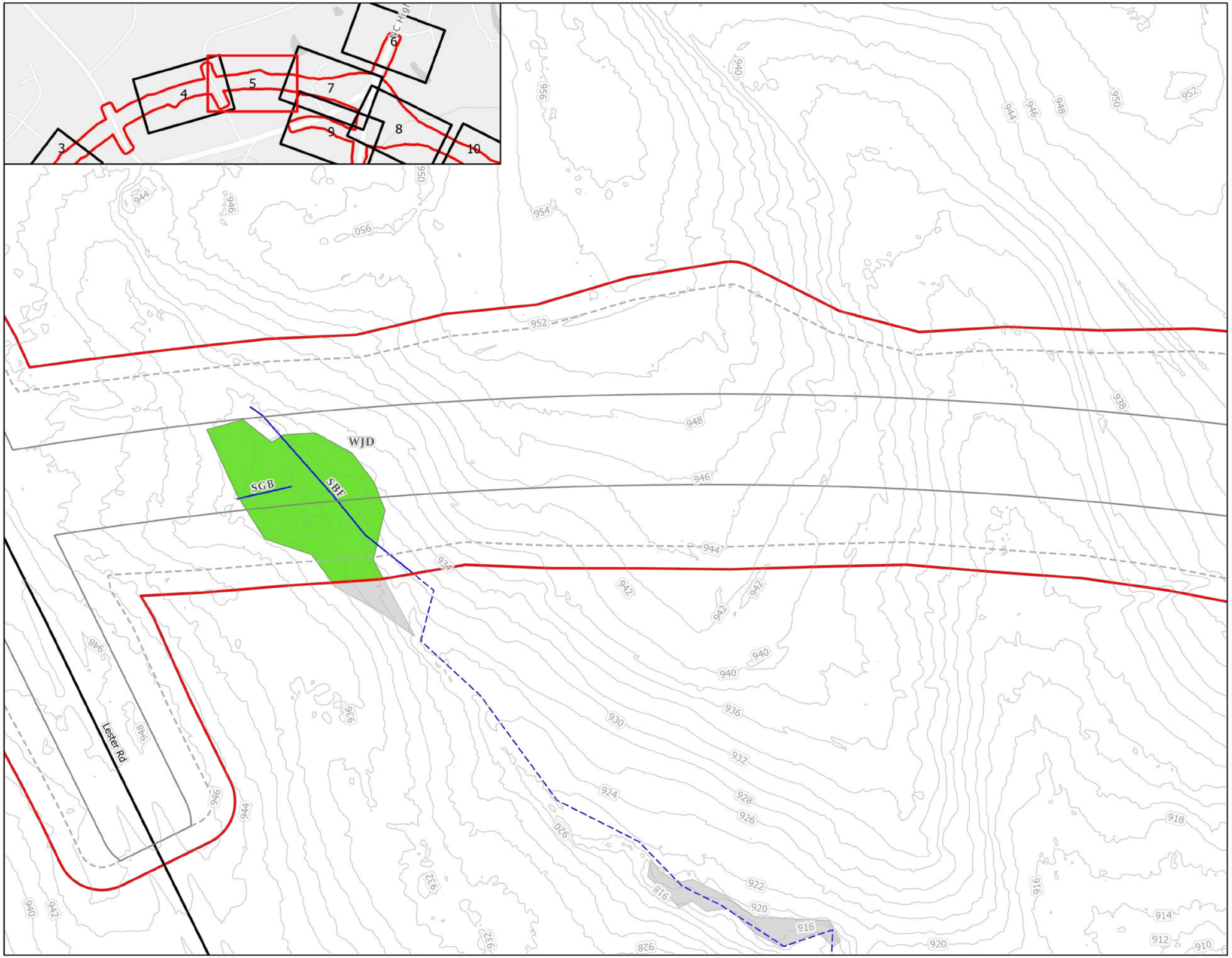
Legend

- Slope Stakes + 25'
- Preliminary Design
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- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 4 OF 12



N

0 100 200 US Feet

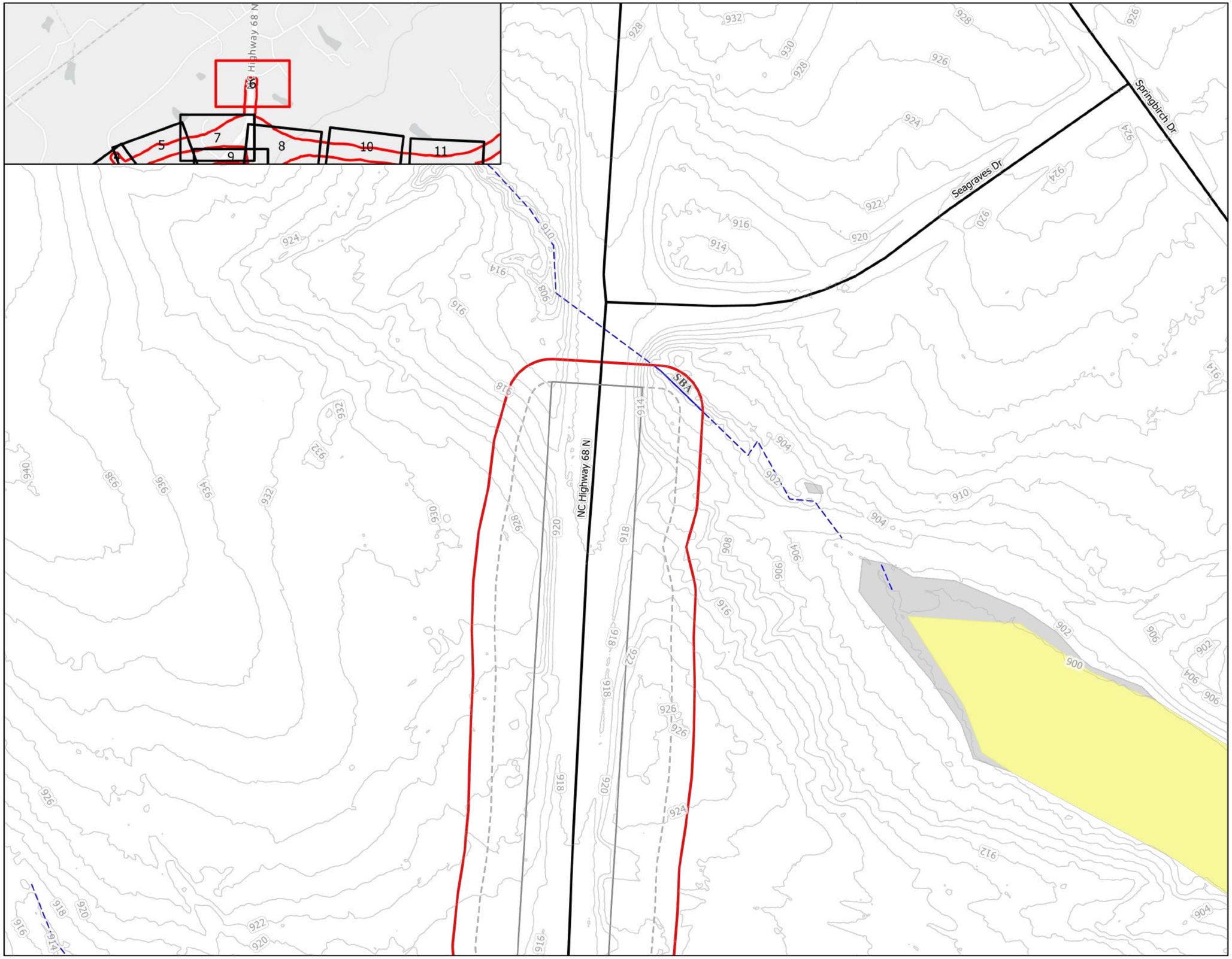
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
- R-2577 Section Break

* = Preliminary Impacts

STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 5 OF 12



N

0 100 200 US Feet

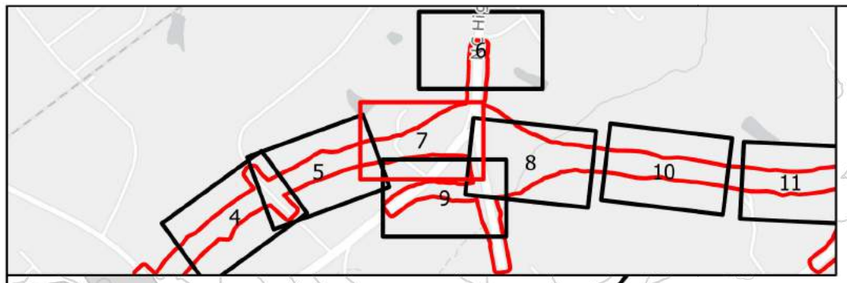
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 6 OF 12



N

0 100 200 US Feet

WCD

SBD

SBG

WCE

Cabernet Cv

Cordey Dr

Belews Creek Rd

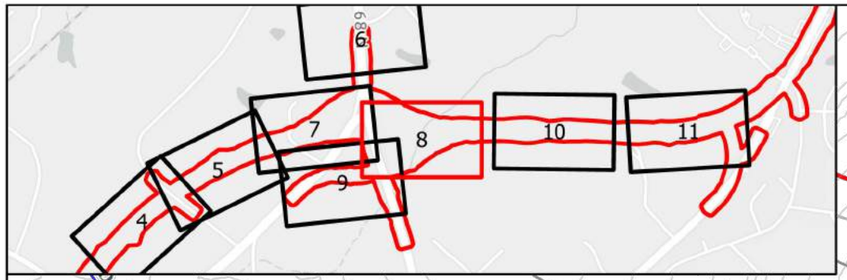
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
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WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 7 OF 12



WCB

WCC

SBD

SBC

NC Highway 68 N

N

0 100 200 US Feet

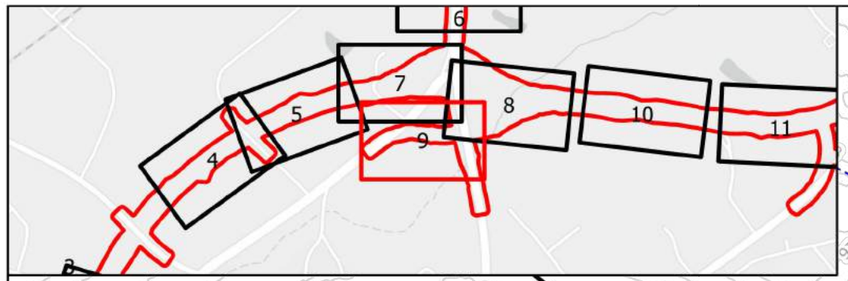
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
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WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 8 OF 12



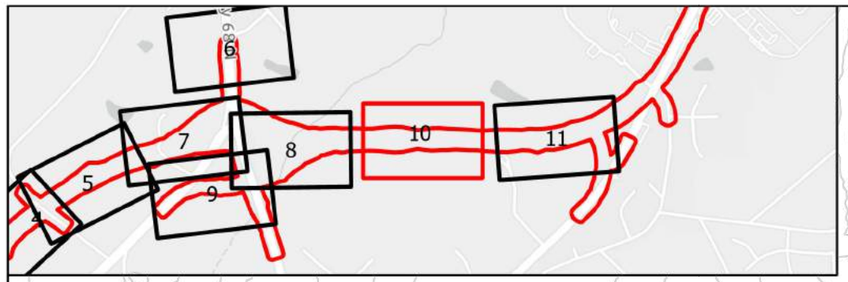
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 9 OF 12



WBK

SAU

N

0 100 200 US Feet

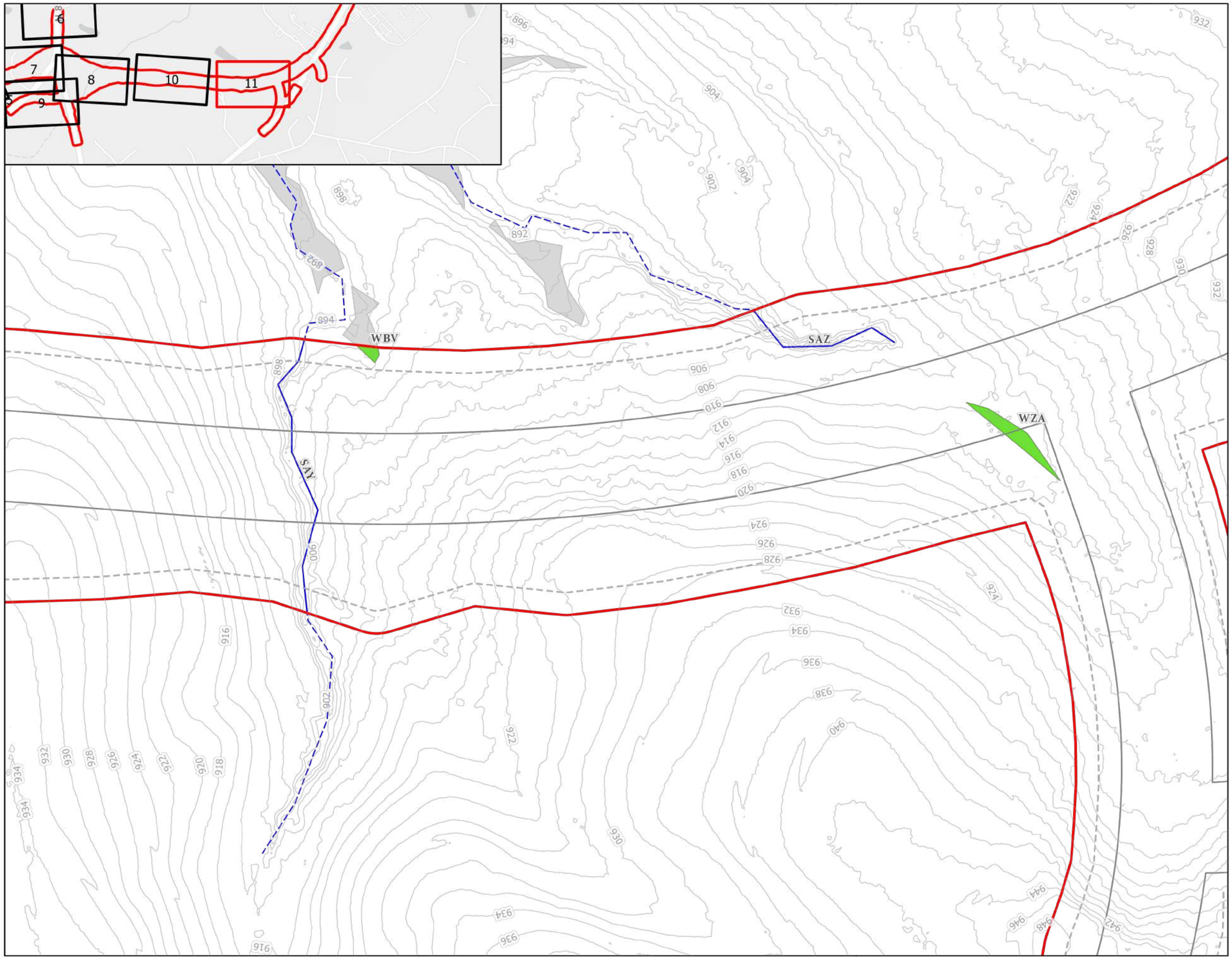
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
- Existing Roads
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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 10 OF 12



N

0 100 200 US Feet

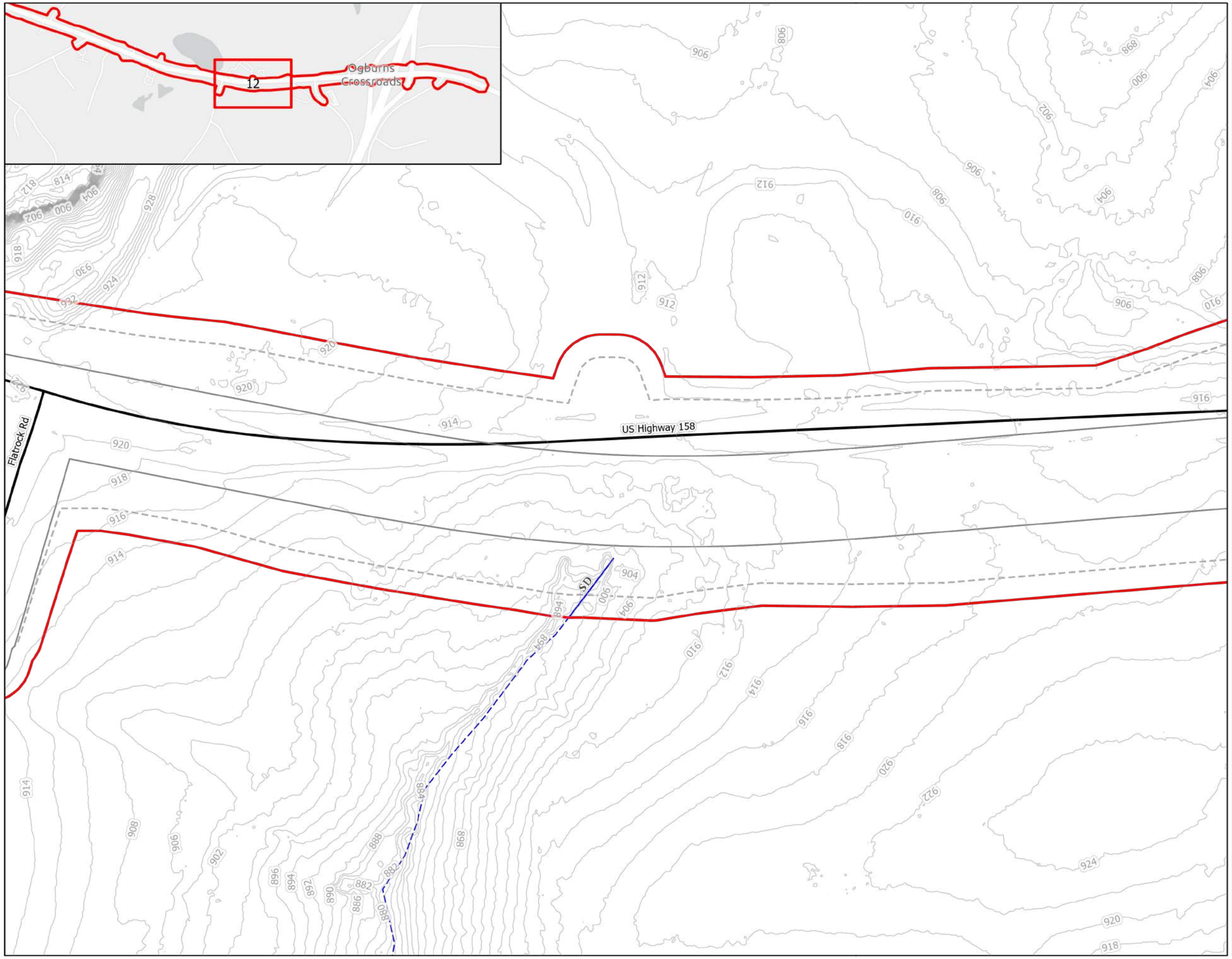
Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 11 OF 12



N

0 100 200 US Feet

Legend

- Slope Stakes + 25'
- Preliminary Design
- All Streams
- All Wetlands
- All Open Water
- Streams within Slope Stakes + 25' *
- Wetlands within Slope Stakes + 25' *
- Open Water within Slope Stakes + 25' *
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STIP PROJECT: R-2577
WIDENING OF US 158 FROM THE 4-LANE ROADWAY NORTH OF I-40 IN FORSYTH COUNTY TO US 220 IN GUILFORD COUNTY

STREAMS AND WETLANDS
SECTION C: SHEET 12 OF 12