Chapter 3
Potential Environmental Effects

This chapter describes resources along the I-95 corridor for the purpose of evaluating the nature and scale of the potential environmental effects of the proposed project. Specific impacts to resources within the project corridor were not analyzed because the information available at this stage of the project, both in terms of the development of the design concepts and the location and quality of resources, does not allow for quantification of direct construction footprint impacts. This level of analysis correlates with the decisions being made regarding selection of the funding program to be used to implement improvements along I-95. More detailed quantification of environmental effects, along with identification of specific mitigation measures, will be completed in subsequent individual, project level, NEPA studies undertaken to implement the general design concept and scope identified in the project phasing plan included in this EA (see **Section 2.5**).

NCDOT completed two studies as part of the effort to describe the potential environmental effects of improving the I-95 corridor. Both are incorporated by reference. The *Environmental Screening Findings Memorandum* (March 2010) reviewed currently available geographic information system (GIS) information for land use, zoning, demographics, natural resources, cultural resources, and hazardous waste sites in the vicinity of the I-95 corridor. The review included a windshield survey of potential historic architecture sites, identification of noise sensitive areas using aerial photography, and selected ground truthing to gauge the accuracy of the existing of National Wetland Inventory (NWI) GIS information and identify potential data inaccuracies. Air quality was assessed in terms of conformity with federal regulations. A project map book was developed to show the location of identified resources within one-half mile of existing I-95, which was used in the development of project alternatives.

The *Socioeconomic and Indirect and Cumulative Effects (ICE) Technical Memorandum* (September 2011) identified potential socioeconomic impacts and ICEs associated with the proposed improvements to I-95. The study included a review of existing GIS information, outreach to local planning organizations, a preliminary review of potential recurring impacts to communities, and identification of potential community resources using aerial photography.

3.1 CONSISTENCY WITH TRANSPORTATION PLANS

The project team identified planned roadway improvements in the study area including improvements programmed in the State Transportation Improvement Program (STIP) and local transportation programs and projects included in Comprehensive Transportation Plans (CTPs) and Long Range Transportation Plans (LRTPs) for municipalities and counties along the project corridor. The I-95 project improvements were reviewed to verify consistency with these plans. Planned improvements from study area CTPs and LRTPs are described below. Subsequent project-level design efforts will incorporate, where feasible and appropriate, other local plan elements not captured in the conceptual design.

3.1.1 Statewide Transportation Improvement Program

Several improvements along I-95 are included in the 2012- 2018 STIP. Current I-95 improvement projects (excluding pavement rehabilitation) in the STIP include (projects listed by STIP number):

- B-4937, Johnston County, I-95, CSX Railroad. Replace Bridge No. 118 and Bridge No. 119. Funded for construction in 2020.
- I-4413, Robeson County, I-95, I-95 at US 301. Replace Bridge No. 36, widen to multi-lanes, Jackson Court to SR 1791 (Dawn Drive), revise I-95 interchange (Exit 22) and install signal. Currently unfunded.
- I-4745, Cumberland, Harnett, Johnston Counties, I-95, I-95 Business (exit 56) north of Fayetteville in Cumberland County to I-40 (exit 81) north of Benson in Johnston County. Rehabilitate pavement and structures, widen and upgrade interchanges and add additional lanes. First section funded for construction in 2018.
- I-4927, Robeson County, I-95. Construct new weigh station. Funded for construction in 2016.
- I-5500, Harnett County, I-95 at Longbranch Road (Exit 71). Safety improvements including shoulder widening and installation of guardrail for on and off ramps. Funded for construction in 2012.
- R-2581, Halifax County, US 158 - NC 903, SR 1405 (Roanoke Chapel Road) east of Littleton to I-95 south of Roanoke Rapids. Widen to multi-lanes. Currently unfunded.
- R-2582, Northampton County, US 158 - NC 46, I-95/NC 46 in Roanoke Rapids to SR 1333 (Lynch Road) east of Jackson. Widen to multi-lanes with bypass of Jackson, some new location. First section funded for construction in 2016.
- R-5512, Cumberland County, NC 24, I-95 – US 301 Business to SR 1006 (Clinton Road/Maxwell Road). Resurface. Funded for construction in 2014.
- U-2519, Cumberland County, I-295 Fayetteville Outer Loop, I-95 south of Fayetteville to west of NC 24/NC 87 (Bragg Boulevard). Freeway on new location. Currently unfunded.
- U-5026, Nash County, I-95, I-95 at SR 1770 (Sunset Avenue). Convert grade separation to an interchange. Funded for construction in 2013.

Additional improvements to I-95 based on the analyses completed as part of this project will be programmed in the STIP in the future.

3.1.2 Robeson County Comprehensive Transportation Plan

The Robeson County CTP (adopted April 2011) lists the need to widen I-95 to 6 lanes within the county. This is consistent with the I-95 project, which proposes to widen the facility to 6 lanes throughout the county, except for a small section between Exit 31 (NC 20) and the Cumberland County line, where widening to 8 lanes is proposed. The Robeson County CTP also recommends the following improvements to routes that cross I-95, which are consistent with the I-95 project:

- NC 130 (I-95 to NC 710 in Rowland) – add turn lanes at major intersections
- US 74 (South/east of Lumberton)– upgrade to freeway with interchanges and grade separations
- NC 20 (from Bladen County Line to SR 1729 (Shaw Road)– widen to 4-lane divided
- US 301 (North of St Pauls from NC 20 to I-95) – widen to 4-lane divided

In addition, the Robeson County CTP recommends a new interchange on I-95 east of Parkton, just south of the existing I-95/SR 2243 (Roslin Farm Road) grade separation. This interchange is not anticipated to be built within the design horizon of the I-95 project (2040); therefore, this interchange was not included in the analysis or conceptual design.

3.1.3 Fayetteville Area Metropolitan Planning Organization 2035 Long Range Transportation Plan

The Fayetteville Area Metropolitan Planning Organization (FAMPO) 2035 LRTP (completed in April 2009), which covers the city of Fayetteville, the towns of Hope Mills and Spring Lake, Fort Bragg Military Reservation, Pope Air Force Base, the urban portion of Cumberland County, a portion of Harnett County, and portions of Hoke County, identifies I-95 and the following routes that cross I-95 as "need improvement":

- US 301
- NC 82 (Godwin-Falcon Road)
- SR 1815 (Wade-Stedman Road)
- NC 13 (Goldsboro Road)
- SR 1831 (Baywood Road)
- SR 1832 (Murphy Road)
- SR 2220 (Tom Starling Road)
- NC 59 (Chicken Foot Road)

The begin and end points of these recommended improvements and the types of improvements needed for these transportation facilities are not specified in the LRTP. Based on the level of detail in the LRTP, the I-95 project is consistent with its recommended improvements.

3.1.4 Mid-Carolina Rural Planning Organization Transportation Improvement Program

The Mid-Carolina Rural Planning Organization (RPO) 2008-2015 Transportation Improvement Program identifies the need to improve pavement on I-95 throughout Harnett County. The I-95 project is consistent with its recommended improvements.

3.1.5 Johnston County Comprehensive Transportation Plan

The Johnston County Comprehensive Transportation Plan (adopted in June 2009) recommends a new roadway extending US 301 in from downtown Selma. It would intersect US 70 in the vicinity of Exit 97 on I-95. No new interchange with I-95 is proposed; therefore, the I-95 project is consistent with this recommendation.

3.1.6 Upper Coastal Plain Rural Planning Organization

The Upper Coastal Plain RPO Project Prioritization List for 2011-2017 State Transportation Improvement Program Development (adopted November 2008) specifies the need to improve the pavement of I-95 in Johnston and Harnett counties. The I-95 project is consistent with this recommended improvement.

The Upper Coastal Plain RPO also recommends the following improvements to routes that cross I-95 in Johnston County:

- Improve US 70 Business from I-95 to US 301 (specific improvements not specified)
- Widen SR 1927 (East Anderson Street) to 3 lanes from I-95 to Webb Street.

The I-95 project would also accommodate the widening of these routes at the interchanges with I-95.

3.1.7 Nash County Comprehensive Transportation Plan

The Draft Nash County CTP (anticipated adoption November 2011) lists the need to conduct pavement and/or bridge rehabilitation for I-95 in Nash, Wilson, and Halifax counties. The I-95 project is consistent with these recommended improvements.

The plan also recommends improvements the following routes that cross I-95:

- U-5026 (I-95 at SR 1770 (Sunset Avenue)) - convert grade separation to interchange
- U-2561 (NC 43 from SR 1616 (Country Club Road) to I-95) – widen roadway to multi-lanes with curb and gutter.

The I-95 project proposes an interchange for SR 1770 (Sunset Avenue), which is consistent with the Nash County Comprehensive Transportation Plan. The project would also accommodate the widening of NC 43 east of the interchange with I-95.

3.2 HUMAN ENVIRONMENT

Four study areas were delineated for the analysis of the potential effects of the I-95 improvements on the human environment (all shown on **Figure 3-1**):

- Socioeconomic/Environmental Justice (EJ) Study Area – 10 miles on either side of existing I-95

- Community Resource Study Area – in the vicinity of the proposed interchange/intersection improvements along I-95
- Recreational and Cultural Resource Study Area – one-half mile on either side of existing I-95
- Recurring Effects Study Area – within the vicinity of I-95 and related regional transportation systems that intersect I-95 (such as US 301, US 74, US 421, US 64, and US 158).

The reason that four study areas were developed is that stakeholders who regularly use I-95 may live several miles away, but should be included in the assessment of socioeconomic impacts (socioeconomic/EJ study area). Stakeholders who have previously been impacted by the original construction of I-95 or related regional transportation facilities should be identified to limit recurring impacts (recurring effects study area). Community resources located in the vicinity of intersecting roadways are most likely to be directly impacted by the proposed improvements to I-95 (community resource study area). Lastly, recreational and cultural resources were identified within one-half mile on either side of existing I-95 in order to identify all resources that could potentially be impacted by project alternatives (recreational and cultural resource study area).

The socioeconomic/EJ study area shown in **Figure 3-1** shows all counties within 10 miles of existing I-95 (Bladen, Cumberland, Edgecombe, Halifax, Harnett, Hoke, Johnston, Nash, Northampton, Robeson, Sampson, Wayne, and Wilson). Based on 2010 Census data, these counties had a combined population of over 1.3 million people, which is almost 14 percent of North Carolina's population.

It should be noted that 2000 Census data were used for some analyses (as indicated) because they have more complete information on poverty level data and English proficiency than the 2010 Census data currently available (September 2011). Other data from the Census Department were used for commute and median income data.

3.2.1 Environmental Justice

Title VI of the Civil Rights Act of 1964 and related statutes require that federal agencies ensure that no person is excluded from participation in, denied the benefit of, or subjected to discrimination under any program or activity that receives federal financial assistance on the basis of race, color, national origin, age, sex, disability, or religion.

The need to identify low-income and minority populations and include them in the project's decision-making process gained greater emphasis as a result of Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994). This order directs all federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and/or low-income populations. It also requires consideration of whether these populations would share equally in the benefits of proposed actions.

Environmental justice refers to the equitable treatment of people of all races, cultures, and income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Implementation of environmental justice regulations for highway projects is governed by the 1997 USDOT Order on Environmental Justice to Address Environmental Justice in Minority Populations

and Low-Income Populations (DOT Order 5610.2). The environmental justice guidance particularly emphasizes the importance of the NEPA public participation process, directing that "each federal agency shall provide opportunities for community input in the NEPA process." Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices." Federal Highway Administration (FHWA) guidelines regarding environmental justice are contained in FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations" (FHWA, 1998). This publication requires all programs and activities of FHWA to comply with Executive Order 12898 and DOT Order 5610.2.

There are three fundamental environmental justice principals that are to be considered in the application of this FHWA order:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental affects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

For purposes of environmental justice, the US Department of Transportation (USDOT) defines "minority" as those persons identifying themselves as: Hispanic, Black or African American, American Indian and Alaska Native (AIAN), Native Hawaiian and other Pacific Islander (NHPI), and Asian. "Low income populations" are defined as persons with household income at or below the poverty guidelines established by the US Department of Health and Human Services. "Limited English Proficiency" (LEP) populations are defined as individuals who do not speak English as their primary language and who have a limited ability to read, speak, write, or understand English (FHWA, 1998).

3.2.1.1 Identification of Environmental Justice Populations along the I-95 Corridor

Potential environmental justice populations were identified at the 2000 US Census tract level and are summarized in **Table 3-1** and **Figure 3-2**. More detailed information is included in the *Environmental Screening Findings Technical Memorandum* (March 2010). The analysis identified tracts where the minority population or low-income population is 10 or more percentage points higher than the respective county average or where the minority or low-income population is at least 50 percent (regardless of the county average). These criteria are referred to as the minority and low-income screening criteria in the table below.

Table 3-1: Census Tracts Reaching Environmental Justice Screening Criteria (US Census, 2000)

Census Tract	Minority Screening Criteria Reached	Poverty Screening Criteria Reached
Bladen County		
Screening criteria not reached within county in study area		
Cumberland County		
000100	X	X
000200	X	X
000400	X	X
001000	X	X
001100	X	
001200	X	X
001300	X	X
002200	X	
002300	X	
002400	X	
002501	X	
003203	X	
003204	X	
003205	X	
003302	X	
003304	X	
003305	X	
003306	X	
003307	X	
003308	X	
003309	X	
Edgecombe County		
020100	X	X
020200	X	
020300	X	
020400	X	X
020600	X	
020700	X	
Halifax County		
990100	X	
990500	X	
990600	X	
990700	X	
990800	X	
990900	X	
991000	X	
Harnett County		
070100		X
070200	X	X
070600	X	
070700	X	

Table 3-1: Census Tracts Reaching Environmental Justice Screening Criteria (US Census, 2000)

Census Tract	Minority Screening Criteria Reached	Poverty Screening Criteria Reached
Hoke County		
970100	X	
970400	X	
Johnston County		
040300	X	X
040600	X	X
040700	X	
Nash County		
010100	X	X
010200	X	X
010400	X	X
010700	X	
010900	X	
Northampton County		
980300	X	
980400	X	
Robeson County		
960100	X	
960200	X	
960300	X	
960400	X	
960500	X	
960600	X	
960700	X	
960800	X	X
961700	X	
961800	X	
961900	X	
962000	X	
Sampson County		
Screening criteria not reached within county in study area		
Wayne County		
Screening criteria not reached within county in study area		
Wilson County		
000100	X	X
000200	X	X
000300	X	
000700	X	X
000801	X	X
000802	X	

Of the 158 census tracts in the socioeconomic/EJ study area, 67 met the environmental justice screening criteria. This included 21 of the 49 census tracts in Cumberland County, six of the eight in Edgecombe County, seven of the ten in Halifax County, four of the nine in Harnett County, both of those in Hoke

County, three of the 15 in Johnston County, five of the 17 in Nash County, both of those in Northampton County, 12 of the 20 in Robeson County, and six of the 17 in Wilson County.

Comments from the public via project workshops and other outreach (such as hotline calls and website responses) did not include any identification as representing EJ communities. However, many members of the public expressed concerns about the ability of daily I-95 travelers to pay tolls.

3.2.1.2 Potential Tolling Impacts to EJ Communities

Potential equity issues associated with the tolling of I-95 were evaluated. In addition to questions related to who bears the burden of tolling, potential equity issues also include consideration of non-toll alternative routes that may receive additional traffic due to the tolling of I-95.

FHWA has determined four dimensions of equity in relation to tolling (FHWA, 2011):

1. Income equity - Relates to disproportionate impacts of tolling on low-income populations.
2. Geographic or spatial equity - Relates to disproportionate tolling impacts on people who live and work in certain affected locations.
3. Modal equity - Relates to disproportionate tolling impacts based on travel modes (e.g., transit users versus automobile users).
4. Equity in participation - Relates to the extent to which all groups can participate and have their interests considered in the planning and project implementation process.

This analysis focuses on identifying potential income equity issues, using data related to commute patterns in the absence of detailed origin-destination data. Other equity issues, which relate to the location of affected communities and their modal choices, will be more fully addressed in subsequent environmental documents when detailed origin-destination data are available. For this analysis, the socioeconomic/EJ study area was evaluated using data from the US Census Department. The American Community Survey data from 2009 (the most recent information available) was used to determine median income (US Census Department 2011). Local Employment Dynamics data on commuting patterns for census tracts within the socioeconomic/ environmental justice study area were evaluated. These data are also from 2009 (the most recent information available) (US Census Department, 2011).

3.2.1.2.1. Potential Income Equity Issues

A commute pattern analysis was conducted to determine if stakeholders in those census tracts meeting the environmental justice screening criteria were more likely to be affected by changes to I-95 than those living in census tracts not meeting the screening criteria. This analysis consisted of identifying job destinations relative to county of residence. Although the analysis could not determine with certainty whether individuals would travel I-95 to work (and potentially have to pay a toll), it broadly identified travel patterns that would be more or less likely to include use of I-95. Of the thirteen counties in the socioeconomic/EJ study area, three (Wayne, Sampson, and Bladen) did not have census tracts in the study area that met environmental justice screening criteria and were not included as part of the analysis. All of the census tracts within Hoke and Northampton counties met the environmental justice screening criteria.

They were included in the analysis; however, there are no non-EJ tracts in their portion of the socioeconomic/EJ study area with which to compare them.

Commutes were analyzed using data from the Local Employment Dynamics website (US Census Department, 2011) as shown in **Appendix D**. For each county, there are two figures, one showing the commutes for those census tracts meeting the environmental justice screening criteria within the socioeconomic/EJ study area and one showing those tracts in the study area that did not meet the screening criteria. Each figure shows the relevant census tracts, the jobs (by percentage) of each county to which workers commute, as well as the percentage of those working in South Carolina and Virginia. These figures illustrate the degree to which I-95 might be used for commuters within the socioeconomic/EJ study area. Again, for Hoke and Northampton Counties, there is only a Figure A, because all census tracts for these counties within the socioeconomic/EJ study area met environmental justice criteria. The data supporting these figures are presented in the *Socioeconomic and ICE Technical Memorandum* (2011).

In addition, the potential commute costs for individuals in census tracts that met environmental justice screening criteria were also evaluated, as presented in **Table 3-2**. Data from the 2009 American Community Survey (ACS, the most recent income information available that can be analyzed at the census tract level) were used to estimate the costs as a percent of median income for each census tract meeting environmental justice screening criteria (see **Table 3-2**) (US Census Department, 2011). The point at which toll costs exceed 10 percent and 20 percent of annual income are included to illustrate their relative effects on the community.

Annual costs for tolls as a percent of median annual income were estimated for each census tract (annual workdays were estimated to be 240 per year, with toll costs ranging from $4 to $20 per day, equating to $960 to $4,800 annually). It should be noted that ACS data are based on surveys and thus have an associated standard error which can vary widely between census tracts depending on the size of the population, the number of contacts, and the range of income reported. However, the data allow for illustrating the relative effects of tolling in different areas.

Table 3-2: Annual Commute Costs as Percent of Annual Median Income for EJ Census Tracts

Census Tract	Annual Median Income	Annual Commute Costs as Percent of Annual Median Income [shading represents thresholds of 10% (blue) and 20% (red)]				
		$4/Day Toll	$8/Day Toll	$12/Day Toll	$16/Day Toll	$20/Day Toll
Cumberland						
000100	$9,780 (+/- $4,062)	10	20	29	39	49
000200	$7,386 (+/- $1,243)	13	26	39	52	65
000400	$16,990 (+/- $3,091)	6	11	17	23	28
001000	$13,335 (+/- $2,451)	7	14	22	29	36
001100	$14,962 (+/- $2,244)	6	13	19	26	32
001200	$19,746 (+/- $7,135)	5	10	15	19	24
001300	$10,200 (+/- $2,216)	9	19	28	38	47
002200	$16,076 (+/- $3,119)	6	12	18	24	30
002300	$17,733 (+/- $2,020)	5	11	16	22	27
002400	$18,416 (+/- $2,812)	5	10	16	21	26
002501	$25,961 (+/- $3,082)	4	7	11	15	18
003203	$17,024 (+/- $2,047)	6	11	17	23	28
003204	$18,397 (+/- $2,489)	5	10	15	20	25
003205	$24,358 (+/- $2,605)	4	8	12	16	20
003302	$21,189 (+/- $2,141)	5	9	14	18	23
003304	$26,010 (+/- $3,029)	4	7	11	15	18
003305	$19,952 (+/- 2,133)	5	10	14	19	24
003306	$19,285 (+/- $1,393)	5	10	15	20	25
003307	$19,629 (+/- $1,973)	5	10	15	20	24
003308	$22,017 (+/- $4,221)	4	9	13	17	22
003309	$25,532 (+/- $2,149)	4	8	11	15	19
Edgecombe						
020100	$4,075 (+/- $4,186)	24	47	71	94	118
020200	$9,258 (+/- $1,039)	10	21	31	41	52
020300	$15,552 (+/- $1,868)	6	12	19	25	31
020400	$14,498 (+/- $2,638)	7	13	20	26	33
020600	$17,368 (+/- $8,395)	6	11	17	22	28
020700	$18,252 (+/- $2,751)	5	11	16	21	26
Halifax						
990100	$13,958 (+/- $1,987)	7	14	21	28	34
990500	$17,837 (+/- $1,906)	5	11	16	22	27
990600	$18,643 (+/- $2,287)	5	10	15	21	26
990700	$26,973 (+/- $4,727)	4	7	11	14	18
990800	$12,195 (+/- $1,177)	8	16	24	31	39
990900	$11,951 (+/- $1,608)	8	16	24	32	40
991000	$13,893 (+/- $3,082)	7	14	21	28	35
070100	$21,796 (+/- $2,683)	4	9	13	18	22
070200	$17,257 (+/- $1,752)	6	11	17	22	28
070600	$17,889 (+/- $2,068)	5	11	16	21	27
070700	$16,684 (+/- $2,101)	6	12	17	23	29

Table 3-2: Annual Commute Costs as Percent of Annual Median Income for EJ Census Tracts

Census Tract	Annual Median Income	Annual Commute Costs as Percent of Annual Median Income [shading represents thresholds of 10% (blue) and 20% (red)]				
		$4/Day Toll	$8/Day Toll	$12/Day Toll	$16/Day Toll	$20/Day Toll
Hoke						
970100	$18,338 (+/- $1,240)	5	10	16	21	26
970400	$15,172 (+/- $1,694)	6	13	19	25	32
Johnston						
040300	$18,078 (+/- $2,132)	5	11	16	21	27
040600	$18,834 (+/- $3,334)	5	10	15	20	25
040700	$22,298 (+/- $3,252)	4	9	13	17	22
Nash						
010100	$19,889 (+/- $8,043)	5	10	14	19	24
010200	$14,011 (+/- $1,524)	7	14	21	27	34
010400	$15,123 (+/-$3,878)	6	13	19	25	32
010700	$25,899 (+/- $5,078)	4	7	11	15	19
010900	$17,397 (+/- $2,050)	6	11	17	22	28
Northampton						
980300	$18,139 (+/- $2,985)	5	11	16	21	26
980400	$15,743 (+/- $1,999)	6	12	18	24	30
Robeson						
960100	$31,378 (+/- $4,399)	3	6	9	12	15
960200	$31,097 (+/- $3,534)	5	9	14	18	23
960300	$20,830 (+/- $3,365)	5	9	14	18	23
960400	$34,351 (+/- $6,235)	3	6	8	11	14
960500	$27,754 (+/- $3,382)	3	7	10	14	17
960600	$27,447 (+/- $4,396)	3	7	10	14	17
960700	$29,753 (+/- $3,803)	3	6	10	13	16
960800	$16,865 (+/- $5,388)	6	11	17	23	28
961700	$24,036 (+/- $6,932)	4	8	12	16	20
961800	$29,739 (+/- $3,787)	3	6	10	13	16
961900	$21,335 (+/- $5,615)	4	9	13	18	22
962000	$24,655 (+/- $2,876)	4	9	13	18	22
Wilson						
000100	$11,195 (+/- $1,949)	4	8	12	16	19
000200	$9,417 (+/- $2,378)	9	17	26	34	43
000300	$11,429 (+/- $1,926)	10	20	31	41	51
000700	$11,063 (+/- $1,356)	8	17	25	34	42
000801	$14,872 (+/- $4,651)	9	17	26	35	43
000802	$13,923 (+/- $1,792)	6	13	19	26	32

1. ACS, 2009

Table 3-2 and commute data shown in **Appendix D** demonstrate that tolling has the potential to impose a notable burden on lower-income individuals who use I-95 for their commute to work. With detailed origin-destination data, subsequent studies will be undertaken to determine the magnitude of these impacts in comparison to non-EJ commuters and evaluate the potential disproportionately high and adverse effects and potential mitigation, as appropriate.

3.2.1.2.2. Toll Divergence

The existing road network surrounding I-95 provides ample opportunities for travelers to divert to a non-toll (i.e., "free") alternative route. Due to the presence of EJ populations along these routes, it is important to evaluate the potential effects of higher congestion and increased pollution in these communities resulting from vehicles diverting to avoid tolls. Higher congestion could result in additional impacts to emergency response times and school bus travel. Conversely, there is also the potential for positive economic impacts for area businesses along the non-toll alternative routes due to increased traffic exposure.

Traffic modeling completed for the I-95 project indicated that the vast majority of non-toll alternative routes would not experience substantial congestion as a result of traffic diverting from I-95 to avoid tolls. Approximately 20 to 25 percent of traffic along I-95 is expected to divert to avoid tolls of $2.00 for passenger vehicles and $5.60 for heavy vehicles (in 2009 dollars) placed approximately 20 miles apart throughout the project corridor. This diversion is not expected to result in substantial congestion because there are multiple routes in the immediate vicinity of I-95 that have the capacity to accommodate the diverted traffic, and the routes currently do not experience congested conditions. Future studies will address toll diversion in a more detailed manner and determine what, if any, impacts will require mitigation.

3.2.1.2.3. Potential Mitigation

Council for Environmental Quality (CEQ) regulations require that mitigation measures be analyzed to address disproportionately high and adverse effects to environmental justice populations. With respect to tolling, it is important to engage vulnerable or potentially affected populations, which can increase understanding and participation in the process. In addition, some environmental justice populations lack the ability to pay in advance for tolling (i.e., individuals may lack credit cards or checking accounts) (FHWA, 2011).

In-depth evaluations of potential effects of tolling on environmental justice communities will be conducted as subsequent NEPA documents are prepared for construction projects along I-95. If disproportionately high and adverse effects are determined, various potential mitigation options will be investigated. Such mitigation measures could include:

- New investments in transit or ride-sharing services along the toll corridor
- Toll exemptions (based on income, vehicle occupancy, etc.)
- Toll discounts or reimbursement (based on location of residence, vehicle occupancy, etc.)
- Mitigation specific to toll diversion (to be developed in conjunction with FHWA).

When identifying and developing mitigation measures, it will be important to consult with members of the affected communities. Public participation efforts will be designed and conducted to ensure that effective mitigation measures are identified. Such outreach methods will be community specific, and will be based on coordination with local agencies and community stakeholders. Specific outreach methods will be based on the proposed improvements and area demographics, and may include:

- Outreach through local religious institutions and community organizations
- Informal meetings at local establishments or schools to create a physically comfortable area conducive to open discussion
- Offering transportation to meetings for stakeholders without access to transportation and/or selecting meeting locations along public transportation routes.

3.2.1.3 Limited English Proficiency Communities

Efforts were made to include LEP communities in the public outreach for the I-95 project. LEP was screened at the county level (**Table 3-3**). Based on the US Department of Justice "Guidance to Federal Financial Assistance Recipients Regarding Title VI Prohibition against National Origin Discrimination Affecting Limited English Proficient Persons," the analysis identified counties where the number of non-native English speakers who speak English less than "very well" reaches a threshold of either 5 percent of the county population or 1,000 individuals. These criteria are referred to as the LEP threshold in **Table 3-3**. The number of Spanish speakers who spoke English less than very well exceeded 1,000 individuals in nine of the 13 counties in the socioeconomic/EJ study area and exceeded 5 percent of the population in Johnston and Sampson counties. In Cumberland County, there were also more than 1,000 people who spoke a language other than Spanish and spoke English less than very well. LEP for non-Spanish speakers of other Indo-European and Asian Pacific Island languages are summarized in **Table 3-4**. LEP information is also summarized in **Figure 3-3**.

Table 3-3: Limited English Proficiency in the Socioeconomic/Environmental Justice Study Area

County	Total Persons 5 years and older	Total Spanish SELVW[1]	Total Non-Spanish SELVW[1]	Percent of Spanish SELVW[1]	Percent Non-Spanish SELVW[1]	Total Spanish SELVW[1] >1,000	Percent of Spanish SELVW[1] >5%	Total Non-Spanish SELVW[1] >1,000	Percent of Non-Spanish SELVW[1] >5%
Bladen	30,051	736	61	2.45	0.20				
Cumberland	278,459	5,473	4,329	1.97	1.55	X		X[2]	
Edgecombe	51,964	945	172	1.82	0.33				
Halifax	53,830	367	252	0.68	0.47				
Harnett	84,164	2,550	546	3.03	0.65	X			
Hoke	30,636	1,204	332	3.93	1.08	X			
Johnston	112,146	5,636	498	5.03	0.44	X	X		
Nash	81,664	1,695	438	2.08	0.54	X			
Northampton	20,838	105	113	0.50	0.54				
Robeson	113,682	3,308	790	2.91	0.69	X			
Sampson	55,708	3,282	269	5.89	0.48	X	X		
Wayne	105,621	3,032	647	2.87	0.61	X			
Wilson	68,861	3,336	291	4.84	0.42	X			

1. Speaking English Less Than "Very Well" (SELVW)
2. In Cumberland County, the 1,000 person threshold for non-Spanish speakers who speak English less than "very well" is met for the following language groups: Other Indo-European and Asian and Pacific Island (see Table 3-4).

Table 3-4: Limited English Proficiency for Other Indo-European or Asian/Pacific Island Language Speakers in the Socioeconomic/Environmental Justice Study Area

County	Total SELVW[1]		Percent SELVW[1]		SELVW[1] > 1,000 or 5%	
	Other Indo-European	Asian/Pacific Island	Other Indo-European	Asian/Pacific Island	Other Indo-European	Asian/Pacific Island
Bladen	27	14	0.09	0.05		
Cumberland	1,829	2,300	0.66	0.83	X	X
Edgecombe	101	61	0.19	0.12		
Halifax	71	155	0.13	0.29		
Harnett	314	226	0.37	0.27		
Hoke	134	173	0.44	0.56		
Johnston	291	129	0.26	0.12		
Nash	142	179	0.17	0.22		
Northampton	94	16	0.45	0.08		
Robeson	408	282	0.36	0.25		
Sampson	106	113	0.19	0.20		
Wayne	289	303	0.27	0.29		
Wilson	159	72	0.23	0.10		

1. Speaking English Less Than "Very Well" (SELVW)

Primary languages spoken for each county in the socioeconomic/EJ study area are summarized in the *Environmental Screening Findings Technical Memorandum* (March 2010). In all cases, English is the most common language spoken and Spanish/Spanish Creole is the second most common language spoken. In Cumberland County, there are also substantial populations that speak German, Korean, French, and Vietnamese. For this project, Spanish translators were available at all public workshops and outreach materials were translated into Spanish for use by LEP communities. Additional outreach activities for subsequent projects along the I-95 corridor will be targeted to relevant LEP communities to ensure their input is obtained, and vital documents will be translated for their use. In Cumberland County, for example, local language organizations exist that may be able to facilitate communications with the various LEP communities.

3.2.2 Community Resources

A visual screening of community resources was performed to identify sites of potential community importance to stakeholders in the intersection interchange/improvement study area (**Table 3-5**). The screening used aerial photography (Google Maps) to identify potential resources that might be impacted by proposed improvements. It should be noted that two interchanges currently proposed for improvements in other projects listed in the current North Carolina State Transportation Improvement Program (STIP), I-4413 (Robeson County at Exit 22) and U-5026 (Nash County at Exit 137), were not included in this analysis. Chain restaurants and gas stations were also excluded from this analysis.

Table 3-5: Potential Community Resources in Community Resource Study Area

County/ Exit Number	Proposed Improvement(s)	Land Use	Potential Community Resources
Robeson/1	Ramp adjustment	Mixed use	None
Robeson/2	Interchange	Agriculture	None
Robeson/7	Interchange and connector road	Agriculture	None
Robeson/10	Interchange	Agriculture	None
Robeson/17	Interchange and connector road	Mixed use	Fifth Street Businesses (Southern Inn/Friends for Life Animal Shelter)
Robeson/19	Interchange and connector road	Mixed use	Lackey Street Businesses (economy hotels, non-chain restaurants)
Robeson/20	Interchange and connector road	Commercial	None
Robeson/25	Interchange	Agriculture/ Commercial	None
Robeson/31	Interchange	Commercial	St. Pauls Alcohol Control Board, cemetery
Robeson/33	Interchange	Agricultural	None
Cumberland/41	New structure, interchange & connector road	Forested	None
Cumberland/44	New structure and interchange	Residential/ Forested	None
Cumberland/49	New structure and interchange	Commercial	None
Cumberland/52	Slight Ramp Adjustment	Forested/ Commercial	None
Cumberland/55	New structure, interchange & connector road	Commercial /Forested	Temple Christian Academy/Temple Baptist Church (Sanderosa Road)
Cumberland/58	New structure and interchange	Industrial/ Forested	None
Cumberland/61	New structure, interchange & connector road	Forested/ Commercial	None
Cumberland/65	Interchange and connector road	Forested/ Commercial	None
Harnett/71	New structure and interchange	Mixed use	None
Harnett/71	Interchange and connector road	Mixed use	American Earthworks (Dixieland Road)
Harnett/72	Interchange and connector road	Mixed use	Mobile Home Park (Spring Branch Road)
Harnett/73	Interchange and connector road	Mixed use	Commercial plot (180 Old State Highway 55 East)

Table 3-5: Potential Community Resources in Community Resource Study Area

County/ Exit Number	Proposed Improvement(s)	Land Use	Potential Community Resources
Harnett/75	Interchange and connector road	Agricultural/ Commercial	None
Harnett/77	Interchange and connector road	Mixed use	None
Johnston/79	Interchange and connector road	Mixed use	Residential relocations (Chicopee Road); Grocery stores and NC Sweet Potato Commission Office (Parrish Drive)
Johnston/81	Ramp modification	Agriculture/ Residential	None
Johnston/87	Interchange	Agriculture/ Commercial	Business on Brewer Road
Johnston/90	Interchange and connector road	Mixed use	Mary Craft Fiberglass Products (Hillsboro Road; business at NC 302 and Benson Ave)
Johnston/93	Interchange and connector road	Mixed use	None
Johnston/95	Interchange and connector road	Agricultural/ Industrial	None
Johnston/97	New structure, interchange & connector road	Agricultural/ Commercial	Walls Cemetery, businesses on Crocker Road
Johnston/98	Interchange and connector road	Agricultural/ Industrial	Sadisco (Anderson Street)
Johnston/101	Interchange and connector road	Mixed use	Mobile Home Park (Saint Stephens Road)
Johnston/102	Interchange and connector road	Mixed use	None
Johnston/105	Interchange	Industrial/ Agricultural	None
Johnston/106	Interchange and connector road	Industrial/ Agricultural	None
Johnston/107	Interchange	Commercial/ Agricultural	None
Wilson/116	New structure, interchange & connector road	Agricultural/ Industrial	ThermoKing of Wilson (Flowers Road)
Wilson/121	Interchange	Forested/ Agricultural	None
Nash/127	Interchange	Forested	None
Nash/132	New structure and interchange	Forested	None
Nash/141	Interchange	Forested	None
Nash/145	New structure and interchange	Forested	None
Nash/150	New structure and interchange	Forested/ Agricultural	None

Table 3-5: Potential Community Resources in Community Resource Study Area

County/ Exit Number	Proposed Improvement(s)	Land Use	Potential Community Resources
Halifax/154	New structure and interchange	Forested/ Agricultural	None
Halifax/160	New structure and interchange	Forested/ Commercial	None
Halifax/168	New structure and interchange	Agricultural/ Commercial	None
Halifax/171	New structure and interchange	Forested/ Agricultural	None
Halifax/173	New structure and interchange	Commercial	None
Northampton/176	New structure, interchange & connector road	Residential/ Commercial	Residences (Long Farm Road)
Northampton/180	New structure and interchange	Forested/ Commercial	None

It is anticipated that the community resources identified in **Table 3-5** would be verified via ground-truthing and that projects addressing specific improvements to I-95 would ensure efforts are made to include these resources in evaluations of community effects.

3.2.3 Recreational Resources

3.2.3.1 Section 4(f) and Section 6(f) Recreational Resources

Section 4(f) of the Department of Transportation Act of 1966 stipulates that federal transportation agencies cannot approve the use of land from public parks, recreation areas, and wildlife/waterfowl refuges unless there is no feasible and prudent alternative to use of the land and the action includes all possible planning to minimize harm to the property resulting from the use. (Section 4(f) also applies to historic sites and is discussed below.) In addition, Section 6(f) of the Land and Water Conservation Fund (LWCF) Act (Public Law 88-578) requires that recreation land acquired or developed with assistance under this section remain in use exclusively for public outdoor recreation.

Local officials in the project study area were contacted to determine potential Section 4(f) and Section 6(f) recreational resources within the recreational and cultural resource study area (see Section 5.2). A total of 19 parks and recreational facilities were identified based on the information provided: 12 in Robeson County, 3 each in Johnston and Harnett Counties, and 1 in Halifax County. Based on a review of the LWCF database (http://waso-lwcf.ncrc.nps.gov/public/index.cfm), Chockoyotte Park in Halifax County and C.D. Codrington Park in Harnett County have received LWCF funding and are Section 6(f) resources. Potential impacts to these resources will be evaluated during the development of subsequent environmental documents for specific improvements to I-95.

3.2.3.2 Bicycle Routes

Figure 3-4 shows bicycle routes in North Carolina, based on data from NCDOT (NCDOT, undated). Of these routes, several North Carolina Bike Routes cross I-95. The following section describes these routes from south to north.

- The Sand Hills Sector is an unnumbered state bicycle route that crosses I-95 in southern Cumberland County on SR 2252 (Chicken Foot Road) at Exit 41.
- NC Bike Route 5 (Cape Fear Run) crosses I-95 in northeast Cumberland County on SR 1815 (Wade-Stedman Road) at Exit 61.
- NC Bike Route 7 (Ocracoke Option) crosses I-95 in southern Wilson County just north of Exit 119B on SR 1001 (Lamm Road).
- NC Bike Route 2 (Mountains to Sea Trail) crosses I-95 south of Exit 127 on SR 1313 (East Hornes Church Road) in northern Wilson County.
- NC Bike Route 4 (North Line Trace) crosses I-95 on SR 1201 (Macon Price Road), just south of Exit 180 in Northampton County.

Subsequent NEPA documentation for specific improvements to the I-95 corridor will assess whether proposed improvements accommodate state bicycle routes.

In addition to state bicycle routes, the City of Fayetteville plans to expand its local bicycle routes to include several crossings of I-95. Included are a crossing at SR 2220 (Tom Starling Road), SR 2341 (Claude Lee Road) at Exit 44, SR 2212 (Doc Bennett Road) at Exit 46A, SR 2000 (Sapona Road), and SR 1832 (Murphy Road) at Exit 55. Other non-designated bicycle routes also cross the project corridor. According to MapMyRide.com, the Bentonville-Smithfield Loop in Johnston County crosses I-95 at SR 1178 (Keen Road) at Exit 87 and at SR 107 (Brogden Road) just south of Smithfield. Also according to MapMyRide.com, several popular bicycle routes in Nash County cross I-95 at SR 1700 (Oak Level Road) south of Rocky Mount and SR 1604 (Hunter Hill Road) north of Rocky Mount. The Roanoke Canal Trail in Halifax County crosses under I-95 at the Roanoke River just north of Exit 173. It is anticipated that subsequent projects addressing specific improvements to I-95 will coordinate with local planning agencies to reach out to the cycling public and local planners on the need for bicycle accommodations on routes crossing over or under I-95.

3.2.4 Voluntary Agricultural Districts

In North Carolina, Voluntary Agricultural Districts (VADs) are established through county ordinances to promote the preservation and protection of farmland. Along the I-95 corridor, there are currently VAD ordinances in Cumberland, Harnett, Johnston, Nash, Wilson, and Northampton Counties. Based on input from county planning organizations and local agricultural extension offices, there are several VADs located within a half mile of I-95. This includes one district in Cumberland County, three each in Harnett and Northampton Counties, four in Johnston County, nine in Nash County, and two in Wilson County.

If subsequent improvements to I-95 necessitate the condemnation of lands in VADs, there are public hearing requirements that must be met prior to any acquisition of right of way. Public hearing requirements for each county are summarized below.

In Cumberland County, "no state or local public agency or governmental unit may formally initiate any action to condemn any interest in qualifying farmland within a District until such agency or unit has requested the Farm Advisory Board hold a public hearing on the proposed condemnation." Upon the receipt of a notice of proposed condemnation, the Farm Advisory Board directs the Cooperative Extension Director to publish a notice in a Cumberland County general circulation newspaper within five business days. The notice will describe the action and inform area residents that the Farm Advisory Board will hold a public hearing on the request within ten days of the receipt of the notice. The Farm Advisory Board will make a report on their findings available to the public within five days of the public hearing, which will be followed by a ten day public comment period. After the public comment period has expired, the Farm Advisory Board will publish a final report on the condemnation request within 30 days of the initial request. "No state or local agency may formally initiate a condemnation action while the proposed condemnation is properly before the Farm Advisory Board within these time limits."

Harnett County and Wilson County use the same guidelines for condemnation requests that Cumberland County uses: public notice within five business days, hearing within ten business days, five days for report findings, and ten day public comment period prior to finalizing the report. In these counties, the final report on the condemnation request will be issued within thirty days of the initial request.

In Johnston County, the Farm Advisory Board has thirty days from the public hearing to develop its report, and the public then has a ten day public comment period. The total amount of time allowed from the receipt of the condemnation request to the publication of the final report to the rulemaking agency cannot exceed sixty days.

In Nash County, upon the receipt of a notice of proposed condemnation, the Farm Advisory Board directs the Cooperative Extension Director to publish a notice on the Nash County website within ten business days and the public hearing must be held within fifteen business days. The Farm Advisory Board will make a report on their findings available to the public within five days of the public hearing, which will be followed by a ten-day public comment period. After the public comment period has expired, the Farm Advisory Board will publish a final report on the condemnation request within forty-five days of the initial request. If the agency agrees to an extension, the agency and the Advisory Board shall mutually agree upon a schedule to be set forth in writing and made available to the public.

The December 4, 2006, Northampton Voluntary Agricultural District Ordinance has no public hearing requirements.

It is anticipated that prior to the development of environmental documents for construction of projects along I-95, that a review be undertaken to review VAD regulations and ensure that any public hearing requirements are met prior to purchase of right of way.

3.3 CULTURAL ENVIRONMENT

3.3.1 Introduction

A cultural resources screening was performed to identify sites within the recreational and cultural resource study area that may be protected by Section 106 of the National Historic Preservation Act of 1966 (NHPA) and Section 4(f) of the Department of Transportation Act of 1966. Section 106 requires federal agencies to take into account the effects of their undertakings on historic resources that are

included in the National Register of Historic Places (NRHP) or that meet the criteria for listing on the NRHP:

- Criterion A - associated with events that have made a significant contribution to the broad patterns of history; or
- Criterion B - associated with the lives of persons significant in our past; or
- Criterion C - embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D - have yielded or may be likely to yield, information important in prehistory or history.

The federal agency, in consultation with the State Historic Preservation Officer (SHPO), makes an assessment of the effects of the project on the identified historic properties. The following determinations may be made: no effect, no adverse effect, or adverse effect.

Section 4(f) of the Department of Transportation Act of 1966 provides additional protection for historic resources listed in or eligible for the NRHP. These lands can only be used for a federally-funded transportation project if there is no other feasible and prudent alternative, and the project incorporates all possible planning to minimize harm. Where adverse effects to Section 106 and Section 4(f) resources are unavoidable, both Section 106 and Section 4(f) require minimization and mitigation of these effects.

The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005, amended existing Section 4(f) legislation to simplify the processing and approval of projects that have only *de minimis* impacts on resources protected by Section 4(f). For historic resources, a *de minimis* impact means that the federal transportation agency has determined that, in accordance with 36 CFR 800, no historic property is affected by the project or the project would have no adverse effect on the property in question. If after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, a transportation project results in a *de minimis* impact on a Section 4(f) property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. The SHPO or Tribal Historic Preservation Officer (THPO), and the Advisory Council on Historic Preservation (ACHP) (if participating in the consultation process), must concur in writing with this determination.

3.3.2 Existing NRHP Listed Sites

There are seven sites in the cultural resource study area currently listed in the NRHP. These sites are listed in **Table 3-6**. Of the listed sites, only the Garner Farm (near the junction of NC 125 and I-95 in Halifax County) and the Roanoke Canal are located in the immediate vicinity of I-95. The Garner Farm is located less than 100 feet away from I-95 and the Roanoke Canal crosses under I-95. The remaining sites are located more than 1,000 feet from I-95.

Table 3-6: NRHP Listed Sites in the Natural Resource Study Area

Site Name	County	Description	Year Listed
Alfred Rowland House	Robeson	Ca. 1880 2-story frame Greek Revival/Italianate w/2-story porch	2008
Benson Historic District	Johnston	Late 19th /early 20th century commercial district	1985
Four Oaks Historic District	Johnston	Early 20th century railroad town	2006
Union Station	Johnston	1924 1-story brick building	1982
Dortch House	Nash	Ca. 1810 federal 2-story frame house	1972
Garner Farm	Halifax	Ca. 1900 2-story frame house & outbuilding	1990
Roanoke Canal	Northampton	1819-1904 canal around rapids of the Roanoke River	1976

3.3.3 Windshield Surveys of Potential Cultural Resources

In December 2009, NCDOT Human Environment Unit (HEU) staff performed "windshield surveys" of potential additional cultural resources within one mile of the I-95 corridor (i.e., sites potentially eligible for, but not currently listed in, the NRHP). The determination of potential sites was based on visual observation and best professional judgment from experience working with the North Carolina Historic Preservation Office (NC-HPO).

HEU staff located 102 sites within the recreational and cultural resource study area that warrant further investigation if they are located of any proposed improvements to the I-95 corridor. These features are identified in the map book for the *Environmental Screening Findings Memorandum* (March 2010). The results of the screening were used in the development of project alternatives. Cultural resources surveys as required under Section 106 of the NHPA, including evaluation of potential archaeological resources, will be undertaken during the development of subsequent environmental documents for individual projects along I-95. This approach is consistent with 36 CFR 800.4(b)(2), which permits a phased process to conduct cultural resource identification and evaluation efforts on projects where alternatives under consideration consist of corridors or large land areas. NC-HPO approved use of this phased approach in correspondence dated November 1, 2011.

3.4 NATURAL ENVIRONMENT

The natural resource study area for the environmental assessment was established as one-half mile on either side of existing I-95. A natural resource screening was performed using available GIS data, supplemented with selected ground truthing of wetland and stream resources.

3.4.1 Water Resources

3.4.1.1 Stream and Wetland Evaluations

From south to north, the I-95 corridor passes through the Lumber, Cape Fear, Neuse, Tar-Pamlico, Roanoke, and Chowan River Basins, as shown in **Figure 3-5**. The figure also shows the location of impaired streams listed under Section 303(d) of the Clean Water Act of 1972, as amended (see discussion below). There are riparian buffer rules in place for the Neuse and Tar-Pamlico River Basins (NCDENR

1997 and 2005, respectively). Based on North Carolina's 2010 Assessment Database (NCDENR, 2011), there are 115 assessed streams that pass within one-half mile of existing I-95. Major streams include:

- Lumber River Basin: Lumber River, Big Marsh Swamp, Ashpole Swamp, Jacob Swamp, and Little Marsh Swamp.
- Cape Fear River Basin: Cape Fear River, Black River, Rockfish Creek, Mingo Swamp, and Locks Creek
- Neuse River Basin: Neuse River, Little River, Hannah Creek, Moccasin Creek, Toisnot Swamp (Lake Wilson, Silver Lake)
- Tar-Pamlico River Basin: Tar River, Marsh Swamp, Fishing Creek, Beaverdam Swamp, and Stony Creek (Boddies Millpond)
- Roanoke River Basin: Roanoke River, Quankey Creek, and Chockoyotte Creek
- Chowan River Basin: Jacks Swamp.

Based on the NCDENR Final 2010 Clean Water Act Section 303(d) list, there are four streams within one-half mile of existing I-95 that are listed as impaired and require the development of a total maximum daily load (TMDL) to address the impairment. These streams:

- Neuse River (Assessment Unit (AU) Number 27-(41.7)) from City of Smithfield water intake supply to 1.7 miles upstream of Bawdy Creek (Neuse River Basin)
- Hannah Creek (AU Number 27-52-6a) from source to NC 96 (Neuse River Basin)
- Tar River (AU Number 28-(36)b) from Peppermint Branch to the City of Rocky Mount Reservoir (Tar-Pamlico River Basin)
- Stony Creek (Boddies Millpond) (AU Number 28-68b) from Lassiters Creek to Tar River (Tar-Pamlico River Basin).

In addition to these listed streams, three streams within one-half mile of existing I-95 are listed as impaired but do not require a TMDL at this time. All of these streams are in the Lumber River Basin. These streams include:

- Lumber River (AU Number 14-(13)a) from US 301 Bypass to SR 2289 (Alamac Road)
- Lumber River (AU Number 14-(7) from Seaboard Coast Line Railroad Bridge near Pembroke to a point 0.5 mile upstream from Powell Branch
- Ashpole Swamp (AU Number 14-30a) from source to Hog Swamp.

Selective ground truthing was conducted to estimate the accuracy of the available wetland and stream data for the natural resource study area, primarily consisting of the National Wetlands Inventory (NWI) and 1:24,000 hydrographic data from the NCOneMap. This was accomplished through a "windshield survey" of wetlands and streams within and adjacent to the natural resource study area. The utility and limitations of these two data sources are recognized by the agencies regulating NCDOT activities with potential to impact wetland and stream resources [the U.S. Army Corps of Engineers (USACE) and the North Carolina Department of Environment and Natural Resources (NCDENR) Division of Water Quality (DWQ)].

While potentially useful for preliminary planning purposes, NWI-mapped wetland boundaries and mapped locations of stream channels are rarely accurate to within a meter of field-determined jurisdictional boundaries and can even be completely inaccurate or outdated. By completing a cursory field review of the readily-accessible resources mapped by NWI and hydrographic data, some confidence is gained in the accuracy of the location of these jurisdictional resources for the purposes of development of project alternatives, impact avoidance, and minimization planning. This ground truthing supplements the planning effort only and complete jurisdictional field determination and verification will be required to appropriately quantify project impacts per USACE and DWQ requirements. Selected ground truthing provided a qualitative estimate of the accuracy of the existing GIS and identified potential "problem areas" for the development of the design alternatives (e.g., large/unique wetland areas). Ground truthing of wetlands and streams was performed from November 16 through 19, 2009.

The ground truthing effort targeted natural resource "hot spots," including large wetland areas and streams shown in GIS within one-half mile on either side of I-95. GIS layers for hydric soils, NWI wetlands, Federal Emergency Management Agency (FEMA)-designated floodplains, and streams and other waterbodies were plotted on 2009 aerial photography for review. In general, the NWI and the hydrography layers appeared to be reasonably accurate representations of current field conditions. No significant discrepancies were noted for approximately 30 percent of the analysis. The inconsistencies noted in the remaining 70 percent of the mapping were predominantly:

1. Potentially jurisdictional small ditches missing from the hydrographic data
2. Carolina Bays depicted as part of the hydrographic data layer are no longer apparent in areas converted to agricultural use.

General trends noted during the ground truthing were:

1. NWI-mapped wetlands depicted as forested and surrounded by agricultural land appear to retain jurisdictional status, even though some may be isolated (i.e., DWQ-jurisdictional).
2. Hydrographic data-mapped channels depicted as originating within lobes of hydric soil tend to be mapped further downstream than a field-determined jurisdictional origin.
3. Significant wetlands associated with large rivers and streams appear to be generally accurately mapped.

Additional ground truthing, including stream and wetland delineations, will be conducted for subsequent environmental studies for construction projects on I-95.

3.4.1.2 Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968 (16 U.S.C. 1271-1287) mandates that "[i]n all planning for the use and development of water and related land resources, consideration shall be given by all Federal agencies involved to potential national wild, scenic and recreational river areas." The act establishes Wild Rivers as those which:

- Are free of impoundments (manmade dams)
- Have unpolluted waters

- Have watersheds or shorelines that are essentially primitive and undeveloped
- Are inaccessible except by trails.

Scenic Rivers meet the first three of the above criteria; however, they can be accessible by roadways. Through the natural resource study area, the Lumber River (shown in **Figure 3-5**) is listed for its cultural, fish, historic, scenic, and wildlife resources and is described as a "secluded blackwater stream with heavily forested cypress swamps; abundance of flora and fauna" (US Department of Interior, 2009). It is anticipated that consideration to the Lumber River would be given during the development of environmental documents for potential improvements to I-95 in Robeson County.

3.4.1.3 Other Water Resource Data

Several additional data sets related to water quality were identified and are included in the map book for the *Environmental Screening Findings Memorandum* (March 2010). They include public water supply sources, surface water intakes, ambient water quality monitoring sites, benthic monitoring sites, wild and scenic rivers, water pipelines, water tank locations and National Pollutant Discharge and Elimination System (NPDES) permits. There is a NPDES facility (the Days Inn in Fayetteville) located in the immediate vicinity of I-95. Additional reviews of water resources will be undertaken during the development of subsequent environmental documents for improvements to I-95.

3.4.2 Protected Species

3.4.2.1 Threatened and Endangered Species

As of September 22, 2010, the United States Fish and Wildlife Service (USFWS) lists ten federally protected species for the counties crossed by the natural resource study area (**Table 3-7**). A brief description of each species' habitat requirements is included in the *Environmental Screening Findings Technical Memorandum* (March 2010). Habitat requirements for this species are based on the current best available information from referenced literature and/or USFWS.

Table 3-7: Federally Protected Species in Counties within the I-95 Natural Resources Study Area

Scientific Name	Common Name	Federal Status	County(ies) Listed
Alligator mississippiensis	American alligator	T/SA	Robeson, Cumberland
Picoides borealis	Red-cockaded woodpecker	E	Robeson, Cumberland, Harnett, Johnston, Wilson, Nash, Halifax, Northampton
Notropis mekistocholas	Cape Fear shiner	E	Harnett
Neonympha mitchellii francisci	Saint Francis' satyr butterfly	E	Cumberland
Alasmidonta heterodon	Dwarf wedgemussel	E	Johnston, Wilson, Nash, Halifax
Elliptio steinstansana	Tar River spinymussel	E	Johnston, Nash, Halifax
Rhus michauxii	Michaux's sumac	E	Robeson, Cumberland, Johnston, Wilson
Schwalbea americana	American chaffseed	E	Cumberland
Lindera melissifolia	Pondberry	E	Cumberland
Lysimachia asperulaefolia	Rough-leaved loosestrife	E	Cumberland, Harnett

E - Endangered denotes a species in danger of extinction throughout all or a significant portion of its range
T - Threatened denotes a species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range,
T/SA indicates species listed as Threatened due to similarity of appearance to a threatened species

Specific conclusions as to the effects of improvements to I-95 on federally listed species will be documented during the development of subsequent environmental documents for improvements to I-95. This analysis will include reviews for potential habitat and field surveys undertaken during appropriate conditions or seasons for listed species.

3.4.2.2 Bald Eagle 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 one mile of open water. Subsequent environmental documents for improvements to I-95 will use GIS to assess 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, using latest available color aerial photography. Survey of the project study area and the area within 660 feet of the project limits will be conducted if there is foraging habitat identified within the review area. Additionally, the North Carolina National Heritage Program (NCNHP) database will be reviewed for known occurrences of this species within 1.0 mile of the project study area.

3.4.2.3 Endangered Species Act Candidate Species

As of September 22, 2010, the USFWS lists no Candidate species for the counties crossed by the natural resource study area.

3.5 PHYSICAL ENVIRONMENT

3.5.1 Air Quality

Air pollution originates from a variety of sources (fire, industrial activity, and solid waste disposal), engine combustion is the most prevalent source. The impact resulting from highway construction ranges from intensifying existing air pollution problems to improving the ambient air quality. Changing traffic patterns are a primary concern when determining the impact of a new highway facility or the improvement of an existing highway facility. Motor vehicles emit carbon monoxide (CO), nitrogen oxide (NO), hydrocarbons (HC), particulate matter, sulfur dioxide (SO_2), and lead (Pb) (listed in order of decreasing emission rate). Of particular concern for transportation projects are hydrocarbons, which are one of the parent pollutants to ozone (O_3), and CO, which is the major pollutant from engine combustion and one that can cause headaches and dizziness in high concentrations. Automobiles are considered to be the major source of CO in the I-95 corridor.

Air quality is defined according to criteria established by the US Environmental Protection Agency (USEPA). Under the Clean Air Act (CAA), these criteria, designated as the National Ambient Air Quality Standards (NAAQS), have been established for six air pollutants: CO, Pb, nitrogen dioxide (NO2), SO_2, particulate matter (PM 2.5 and PM 10), and O_3. The NAAQS for these pollutants are presented in **Table 3-8**. They represent levels of air pollutants and exposure periods that, according to the USEPA, pose no significant threat to human health or welfare. North Carolina has also adopted these air quality standards. Mobile Source Air Toxics (MSAT), though not criteria pollutants, are also included in the analysis as per recent NEPA analysis requirements.

Table 3-8: National Ambient Air Quality Standards (USEPA, July 19, 2011)

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide (CO)	9 ppm (10 mg/ m^3)	8-hour (1)	None	
	35 ppm (40 mg/ m^3)	1-hour (1)		
Lead (Pb)	1.5 µg/m^3 (2)	Rolling 3-Month Average	Same as Primary	
Nitrogen Dioxide (NO_2)	53 ppb (3)	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour (4)	None	
Particulate Matter (PM 10)	150 µg/m^3	24-hour (5)	Same as Primary	
Particulate Matter (PM 2.5)	15.0 µg/m^3	Annual (6) (Arithmetic Average)	Same as Primary	
	35 µg/m^3	24-hour (7)	Same as Primary	
Ozone (O_3)	0.075 ppm (2008 std)	8-hour (8)	Same as Primary	
	0.08 ppm (1997 std)	8-hour (9)	Same as Primary	
	0.12 ppm	1-hour (10)	Same as Primary	
Sulfur Dioxide (SO_2)	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour (1)
	0.14 ppm	24-hour (1)		
	75 ppb (11)	1-hour	None	

µg/m^3 = micrograms of pollutant per cubic meter of air / ppm = parts per million / ppb = parts per billion

(1) Not to be exceeded more than once per year.

(2) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(3) The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard

(4) To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective January 22, 2010).

(5) Not to be exceeded more than once per year on average over 3 years.

(6) To attain this standard, the 3-year average of the weighted annual mean PM 2.5 concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

(7) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).

(8) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

(9) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
(b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
(c) USEPA is in the process of reconsidering these standards (set in March 2008).

(10) (a) USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard ("anti-backsliding").
(b) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is < 1.

(11) The 1971 sulfur dioxide standards remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

(12) Final rule signed June 2, 2010. To attain this standard, the 3-year average of the 99th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

The photochemical reactions with hydrocarbons forming O_3 cannot be accurately predicted on a project-level, micro-scale analysis. For this reason, O_3 modeling is completed regionally for urban areas and is not developed for specific transportation projects. However, the effects of transportation projects on local CO levels can be projected with computer-based dispersion modeling analysis. CO modeling for transportation projects is conducted as appropriate at differing levels of detail for environmental documents and is governed by 40 CFR Parts 51 and 93, USEPA's transportation conformity rule; 23 CFR Part 771, Environmental Impact and Related Procedures; and by the FHWA's Technical Advisory T6640.8A, *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (1987). PM2.5 and MSAT analyses will also be conducted as appropriate at differing levels of detail for environmental documents.

All areas within North Carolina are designated as either attainment, non-attainment, maintenance, or unclassifiable with respect to each of the six pollutants under the NAAQS. Areas that have pollutant concentrations below the NAAQS are designated as attainment areas. Conversely, areas where the NAAQS are exceeded are designated as non-attainment areas. In non-attainment areas, a State Implementation Plan (SIP) is developed to bring the area into compliance with the NAAQS. Maintenance areas are geographic areas that had a history of nonattainment, but are now consistently meeting the NAAQS. Areas where available data are insufficient for classification are designated as unclassifiable.

A qualitative overview of air quality issues in the project area was performed for this EA. This included a review of the conformity status for each county and discussion of future evaluations that will be required for subsequent NEPA documents undertaken for individual I-95 construction projects. Additionally, the potential for MSAT, PM 2.5, and CO hot-spot analyses that might be required in future NEPA studies was evaluated.

PM 10 does not need to be analyzed for future I-95 NEPA documents. The counties that I-95 passes through are in attainment for PM 10 and no further action is required as per conformity procedures set forth in 30 CFR 770. Furthermore, USEPA revoked the annual PM 10 standard because available evidence generally does not suggest a link between long-term exposure to current levels of coarse particles and health problems. However, USEPA did retain the existing daily PM 10 standard.

Lead has not been a mobile source concern since tetraethyl lead was banned as a fuel additive. In the past, motor vehicles were the major contributor of lead emissions to the air. As a result of USEPA's regulatory efforts to reduce lead in on-road motor vehicle gasoline, air emissions of lead from the transportation sector, and particularly the automotive sector, have greatly declined over the past two decades. Major sources of lead emissions to the air today are ore and metals processing and piston-engine aircraft operating on leaded aviation gasoline. The highest air concentrations of lead are usually found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers.

Ozone is only evaluated at the regional level and not on a project (microscale) level. This is because ozone is not directly emitted into the air. Instead, it forms as a result of a chemical reaction in the atmosphere when nitrogen oxides and volatile organic compounds react in the presence of sunlight.

3.5.1.1 Mobile Source Air Toxics (MSATs)

If a proposed project does not create new or add significant capacity to highways where the average annual daily traffic (AADT) is projected to be in the range of 140,000-150,000 vehicles per day (vpd) (or greater) by the design year, then it is considered to be a project with low or no meaningful potential MSAT effects (FHWA, 2009). The I-95 corridor county volumes are currently well below half these AADT threshold volumes (NCDOT, 2007, 2008, 2009), and are forecast to remain below these thresholds for the 2040 design year, see **Table 1-5**. Future improvements along I-95 are, therefore, likely to fall into the "low" or "no meaningful" categories.

An MSAT analysis is not required other than documenting the basis for the determination for projects with no meaningful potential effects (i.e., projects qualifying as a categorical exclusion under 23 CFR 771.117(c); projects exempt under the Clean Air Act conformity rule under 40 CFR 93.126; or other projects with no meaningful impacts on traffic volumes or vehicle mix). This discussion must include prototype language from FHWA's September 2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA specifically written for the "No analysis for projects with no potential for meaningful MSAT effects" scenario (FHWA, 2009).

If a project has a low risk impact (most highway projects, including proposed improvements to I-95, will fall into this category), a qualitative assessment of emissions projections should be conducted. This qualitative assessment would compare, in narrative form, the expected effect of the project on traffic volumes, vehicle mix, or routing of traffic, and the associated changes in MSATs for the project alternatives, based on vehicle miles traveled (VMT), vehicle mix, and speed. It would also discuss national trend data projecting substantial overall reductions in emissions due to stricter engine and fuel regulations issued by the USEPA. Because the emission effects of potential improvements to I-95 are expected to be low, there would be no appreciable difference in overall MSAT emissions among the various alternatives, including the No Action condition.

In addition to the qualitative assessment, a NEPA document for this category of projects must include a discussion of information that is incomplete or unavailable for a project specific assessment of MSAT impacts, in compliance with CEQ regulations (40 CFR 1502.22(b)) regarding incomplete or unavailable information. This discussion must include prototype language from FHWA's September 2009 Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA specifically written for the "Qualitative analysis for projects with low potential MSAT effects" scenario" (FHWA, 2009).

3.5.1.2 National Ambient Air Quality Standards Conformity

Both the Clean Air Act (CAA) and TEA-21 (Transportation Equity Act for the 21st Century) require conformity between a proposed transportation system and the SIP. The transportation conformity regulations are intended to ensure that a state does not undertake federally funded or approved transportation projects, programs, or plans that are inconsistent with the state's obligation to meet and maintain the National Ambient Air Quality Standards (NAAQS). MPOs must show that expected emissions from their transportation system are within the mobile source emission budgets in the applicable SIP. Transportation projects must come from conforming transportation plans/programs, and conforming transportation plans/programs must come from conforming SIPs.

The counties located in the I-95 corridor include Robeson, Cumberland, Sampson (within 1 mile of I-95; included for the assessment of air quality only), Harnett, Johnston, Wilson, Nash, Halifax, and Northampton. Robeson County is part of the Lumber River Council of Governments (COG). Cumberland, Sampson and Harnett counties are part of the Mid-Carolina COG. Wilson, Nash, Halifax, and Northampton counties are part of the Upper Coastal Plain COG. Portions of Johnston and Harnett counties (including the municipal governments of Angier and Clayton) are also part of the Capital Area Metropolitan Planning Organization (CAMPO). These organizations are responsible for updates to the Long Range Transportation Plans and air quality conformity in the I-95 study area.

None of the counties along the I-95 corridor are designated as being in nonattainment of the National Ambient Air Quality Standards (NAAQS). However, Johnston and Nash Counties are designated as being in 8-hour ozone maintenance (whole counties). Johnston County was formerly a subpart 1 nonattainment area from 2004-2007 and was redesignated to maintenance status on December 26, 2007. Nash County was also a former subpart 1 nonattainment area from 2004-2007, but was redesignated to maintenance status on January 5, 2007 (USEPA, 2011).

Any recommended improvements that evolve from this EA that are not currently on the North Carolina State Transportation Improvement Program (STIP), Transportation Improvement Program (TIP) or an applicable LRTP would have to be placed in those documents and run through the transportation conformity process to meet planning and air quality regulations. Transportation conformity would only apply to projects in Johnston and Nash counties, which have been designated as maintenance for the 8-hour ozone standard. It would also apply to any other attainment counties that might someday be in nonattainment of the standards set at that future time. Subsequent air quality transportation conformity modeling would also have to consider the potential impact of tolling, which would take into account the regional dispersion of traffic potentially diverted from (or to) the proposed toll facility.

3.5.1.3 PM 2.5 Hot-Spot Analyses

All of the counties included in the I-95 corridor are designated as being in attainment of the PM 2.5 standard. Additionally, proposed highway projects are likely not "Projects of Air Quality Concern" as the AADT for the facility segments are less than 100,000 and the diesel trucks are less than 8,000 per day (FHWA, 2009). Based on 2007 NCDOT estimates, the AADT on segments of I-95 range from approximately 30,000-54,000 vpd. It is highly unlikely that these volumes will double (or triple) by the design year to exceed the threshold. Current 2008/2009 daily Tractor Trailer Semi Trucks (TTSTs) are estimated to be in the 4,800-6,000 vpd range for most of the counties along I-95 (TDR09-0405 Manual Classification Data). Cumberland and Harnett counties have estimated TTST in the low 7,000s. However, the NCDOT traffic counts were about 5,500 and 5,600 vpd, respectively (NCDOT, 2007, 2008, 2009).

Additionally, it is not likely that improvements to I-95 would cause both a minimum of 25,000 total AADT and a 2,000 diesel truck volume increase between Build and No Action conditions. Therefore, it is likely that hot-spot analyses would not be required for potential improvements to I-95.

3.5.1.4 CO Hot Spot Analyses

All of the counties included in the I-95 corridor are designated as being in attainment of the CO standard. Project-level CO air quality analysis is also performed as part of the NEPA process (NCDENR, 2007). FHWA issued guidance documents in the 1980s for NEPA air quality analysis. Generally speaking, the documents recommend hotspot modeling for projects that are being evaluated as Environmental Assessments (EAs) or Environmental Impact Statements (EISs) and recommend against modeling for Categorical Exclusions (CEs) (FHWA, 1986).

Proposed projects cannot cause new air quality impacts, worsen existing impacts, or delay the timely attainment of the NAAQS. Overall, it is highly unlikely that there will be a CO impact from improvements to I-95 as various auto emissions controls through the past few decades have eliminated all nonattainment areas in the United States. Additionally, FHWA had been proposing to streamline the CO process to screen out most projects as being unlikely to cause an impact. When/if approved, it should be used to screen out CO issues at the first level. States have also been encouraged to develop their own screening criteria.

3.5.2 Noise

A qualitative analysis was performed to identify noise sensitive areas. This included identifying the generalized noise sensitive land uses adjacent to I-95 and the number and type of potentially affected receptors. The analysis identified 91 areas that may potentially need to be modeled for noise impacts.

The qualitative analysis is summarized in **Table 3-9** and the locations of these areas are shown in the map book for the *Environmental Screening Findings Memorandum* (March 2010). The table identifies the relative location of the noise sensitive land uses abutting I-95 and the approximate number and type of potentially affected receptors.

Noise impacts and potential mitigation will be fully documented during the development of subsequent environmental documents for improvements to I-95. These evaluations will be conducted according to 23 CFR 772 [effective July 13, 2011, and NCDOT Traffic Noise Abatement Policy (NCDOT, 2011)].

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
1	NC/SC state line, NB	South of The Border (Motel/RV/camp)	• Business Visibility • US 501/301 noise • Transient clientele
2	Exit 1B, SB	7 businesses/motels	• Business Visibility • Few exterior sites
3	SR 2459 (Horne Rd), SB	30 residences	• Close to I-95 • SR 2459 divides the parcels
4	SR 2459 (Horne Rd), SB	45 residences	• Further from I-95 than other areas
5	Across from Welcome Center, SB	50 residences	• Low density • Mostly forested

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
6	SR 1155 (Dew Rd), SB	5 residences	• Few sites • Low density
7	Annease Dr, SB	30 residences	• Low density • 50% near I-95
8	SR 2457 (Boyce Rd), NB	11 residences	• Few sites • Low density • Mostly forested
9	SR 1201 (Circle Dr), SB	40 residences	• 50% are further from I-95 than other areas
10	SR 2422 (McDonald Rd), NB	25 planned residences	• 50% are further from I-95 than other areas
11	SR 1164 (Back Swamp Rd), SB	20 residences	• SR 1207 noise • Further from I-95 than other areas Some forestation
12	Exit 13B, SR 1589 (Kenric Rd), SB	RV campsite	• Further from I-95 than other areas Transient clientele
13	Exit 17, south of NC 72, NB	20+ residences, airport, 2 motels	• Medium density • SR 1805 noise • Close to I-95
14	South of Exit 17, SB	6 residences	• Medium density • SR 1589 noise • Close to I-95
15	Exit 17, NB	10+ residences, 15+ businesses, 2+ motels	• Medium density • Business visibility • 90%+ of residences further from I-95 than other areas
16	Exit 19, SB	7 businesses/motels	• Medium density • Business visibility • Few exterior sites
17	Exit 19, NB	3 businesses/motel, 40+ residences	• Medium density • Business visibility • Commercial buildings act as noise barrier between I-95 & residences • 60% of the residences are further from I-95 than other areas
18	Exit 20, NB	7+ businesses/motels, 50+ residences	• High density • Some forestation • Business visibility • 75% of the residences are further from I-95 than other areas
19	Exit 20, NB/SB	10+ businesses/motels	• Low density • Business visibility

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
20	North of Exit 20, NB	10+ residences	• Medium density • Mostly forested • 50% are further from I-95 than other areas
21	Exits 20-22, SB	100+ residences	• Medium density • Medium forestation
22	North of Exit 20, NB	Gilbert Carroll School, 5 businesses	• Low density • Business visibility • Exterior school activities are far away from I-95
23	South of Exit 22,NB	10+ businesses, 20+ residences	• Low density • Business visibility • Some forestation • Residences are further from I-95 than other areas
24	Exit 22, NB	10+ businesses/motels	• Low density • Business visibility
25	North of Exit 22, SB	5+ residences	• Low density • Heavily forested • Too far away
26	North of Exit 22, NB	12+ residences	• Low density • Somewhat forested • 50% are further from I-95 than other areas
27	Exit 22, SB	school	• No exterior activities
28	Exit 25, SB	20+ residences	• Medium density • 25% are close to I-95
29	North of Exit 25, NB	20+ residences	• Medium density • 90% are further from I-95 than other areas
30	South of Exit 31, SB	15+ residences	• Low density • Some forestation • 50% are further from I-95 than other areas
31	Exit 31, NB	7+ businesses/motel, 30+ residences	• Low density • Business visibility • 90% of the residences are further from I-95 than other areas
32	Exit 33, NB	9 residences	• Low density • Heavily forested • 90% of the residents are further from I-95 than other areas

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
33	Exit 33 SB	25+ residences	• Low density • Heavily forested • 90% of the residents are further from I-95 than other areas
34	North of Exit 33, NB	7 residences	• Low density • Somewhat forested • 50% are further from I-95 than other areas
35	North of SR 1723 (Parkton Tobermory Rd), SB	20 residences	• Low density • Some are further from I-95 than other areas
36	North of SR 1723 (Parkton Tobermory Rd), NB	50+ residences	• Low density • 30% are further from I-95 than other areas
37	South of Exit 40, along SR 1902 (Everett Rd), SB	10+ residences	• Low density • Some forestation • 75% are further from I-95 than other areas
38	South of Exit 40, along SR 1978 (Buckhorn Rd), NB	11 residences/ parcels	• Low density • 50% built
39	South of Exit 40, NB	25 residences	• Low density • Heavily forested • 75% are further from I-95 than other areas
40	Exit 40, SB	70+ Mixed businesses/ residences, mostly residential	• Medium density • Some forestation • 50% are further from I-95 than other areas
41	Exit 40, NB	40+ residences	• Medium density • US 301 noise
42	Exit 41, SB	100 residences	• Medium density • Heavily forested • 75% are further from I-95 than other areas
43	Exit 44, SB	30+ residences	• Low Density • Some forestation • 50% are further from I-95 than other areas
44	Exit 49, SB	15+ businesses/motels	• Low Density • Mostly forested • Business visibility • Further from I-95 than other areas
45	Exit 49, NB	10+ businesses/motels/ churches	• Low Density • Mostly forested • Business/church visibility • Further from I-95 than other areas

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
46	Exit 52 to SR 2000 (Sunnyside School Rd), SB	10+ residences	• Low Density • Mostly forested • Further from I-95 than other areas
47	South of Exit 52, NB	50+ residences	• Low Density • Mostly forested • 90% are further from I-95 than other areas
48	North of Exit 52, SB	10+ residences	• Low Density • Some forestation
49	North of Exit 52, NB	40+ residences	• Medium density • 50% are close to I-95
50	South of Exit 55, SR 1887 (White Plains Dr), NB	50+ residences	• Medium density • 30% are close to I-95
51	South of Exit 55, SR 1896 (Fairgrove Ct), SB	10+ residences	• Low density • 50% are too far away
52	Exit 55, SB	20 residences	• Medium density • 50% are too far away
53	Exit 56, SB	70+ residences	• Medium-high density • 50% constructed
54	Exit 56, NB	30+ residences	• Medium density • Medium forestation
55	North of Exit 56 and SR 1828 (Baywood Rd), SB	50+ residences	• Medium density • Medium forestation
56	Exit 71 to south of Exit 70, SB	20+ residences	• Low density • Close to I-95 • SR 1811 noise
57	South of Exit 72, SB	55+ residences	• Medium density • 50% of residences are further from I-95 than other areas
58	Exit 73, NB/SB	100+ residences, 10+ businesses/motels	• Medium density • Business visibility • 75% of residences are further from I-95 than other areas
59	South of Exit 75, SB	50+ residences	• Medium density • Some forestation • Nearly all residences are further from I-95 than other areas
60	South of Exit 77, SB	40+ residences	• Medium density • SR 1805 noise • 50% are further from I-95 than other areas

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
61	Exits 79-81, SB	100+ mixed use businesses/residences, Benson Middle School	• Medium density • Business visibility • SR 1173 noise
62	Near SR 1171 (Hannah Creek Church Rd) & SR 1227 (Ivey Rd), SB	20 residences	• Low density
63	Exit 87, SB	75+ residences	• 50% are too far away
64	South of Exit 90, NB/SB	50+ residences, Four Oaks Middle School	• 50% are too far away • Exterior school receptors are further from I-95 than other areas
65	Exit 90, SB	50+ residences	• US 301 noise • 80% are further from I-95 than other areas
66	Exit 93, SB	100+ residences	• Close to I-95 • Environmental justice issues (possible)
67	Exit 95, SB	Johnston Community College	• Public visibility • Few exterior sites
68	Exit 95, NB/SB	50+ businesses/motels, 10 residences	• High density (businesses) • Business visibility • Low density (residential) further from I-95 than other areas
69	Exit 97, NB/SB	20+ businesses/motels, 50+ residences	• High density • Mostly multi-family structures (condos), 75% are further from I-95 than other areas
70	Exit 98, NB	RV campsite	• Business visibility • Transient clientele
71	North of Exit 98, near rest area, SB	100+ residences	• Medium density • US 301/Railroad noise • 40% are further from I-95 than other areas
71A	Exit 101, SB	12+ residences	• Low density • 50% are close to I-95
72	Exit 102, SB	30+ residences, North Johnston Middle School	• Medium density • US 301/Railroad noise • 60% are further from I-95 than other areas
73	Exit 106, NB	50+ residences	• Medium density • SR 2399 noise • 50% are further from I-95 than other areas
74	Exit 107, NB	10+ businesses, 50+ residences	• High density • Minimal forestation
75	Near SR 1154 (St. Rose Church Rd), SB	40 residences	• Medium density • SR 1154 noise

Table 3-9: Potential Noise Sensitive Areas

Area #	General Location	Number/Type of Receptors	Description
76	Exit 119A, SR 1160 (Ernest Rd), NB	22 residences	• Low density • 90% are further from I-95 than other areas
77	Exit 121, NB/SB	15+ businesses, 10 residences	• Business visibility • Few exterior sites • Homes are further from I-95 than other areas
78	Near SR 1984 (Thompson Chapel Rd), NB	15+ residences	• Business visibility • Few exterior sites
79	Near SR 1745 (Bend of the River Rd) & SR 1981 (Tar River Church Rd), NB	20 residences	• Medium density • 90% are further from I-95 than other areas
80	Near NC 58 & SR 1980 (Lewis Rd), NB	30 residences	• Medium density • 75% are further from I-95 than other areas
81	Near NC 58 & SR 1815 (Volunteer Rd), SB	45 residences	• Medium density • Too far away
82	North of Exit 132, SR 1706 (Langley Rd), NB	12 residences	• Medium density
83	North of Exit 132, Remus Road, SB	20 residences	• Some forestation • 30% close to I-95
84	South of Exit 138 & SR 1770 (Sunset Ave), SB	60+ residences	• Mostly forested • 50% near I-95
85	South of Exit 138 & SR 1770 (Sunset Ave), NB	100+ residences	• 50% of the mobile homes not yet placed • 30% near I-95
86	Exit 138, near SR 1604 (Hunter Hill Rd), SB	50+ residences	• Mostly forested • 25% near I-95
87	South of Exit 145, SB	50+ residences	• Mostly forested • 30% near I-95
88	Exit 145, NB	15+ businesses/motels	• Business visibility • Few exterior sites
89	Exit 171, NB/SB	20+ businesses/motels	• Business visibility • Few exterior sites
90	Exit 173, NB/SB	50 businesses/motels	• Business visibility • Few exterior sites
91	Between Roanoke River & Exit 173, SB	100+ residences	• Some forestation • Mostly multi-family structures (condos)

NB = Northbound side of I-95
SB = Southbound side of I-95
Forestation/forested = dense/thick tree areas

3.5.3 Hazardous Waste Sites and Other Environmental Factors

Other potential environmental issues identified through a GIS screening of the natural resource study area included known hazardous waste sites, animal operation facilities (feed lots), and swine lagoons. These features are identified in the map book for the *Environmental Screening Findings Memorandum* (March 2010). Hazardous waste disposal sites are found in the immediate vicinity of I-95 in three locations: north of the Neuse River in Smithfield, just south of US 70 Bypass in Smithfield, and just south of the Roanoke River in Roanoke Rapids. An animal operations facility is located in the immediate vicinity of I-95 north of the Tar River in Nash County off Boone Road.

3.6 INDIRECT AND CUMULATIVE EFFECTS

The purpose of this section is to discuss the potential indirect and cumulative effects (ICEs) associated with the proposed improvements to I-95. NEPA, as amended, requires the assessment of direct, indirect, and cumulative impacts as part of the project decision-making process. The Council on Environmental Quality (CEQ) guidelines defines direct, indirect, and cumulative impacts as follows:

- Direct effects are caused by the action and occur at the same time and place (40 CFR 1508.8).
- Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
- Cumulative impact is the impact on the environment, which 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).

ICEs to the human environment are primarily related to changes in land use, development, and infrastructure. Such changes can alter area economics, travel patterns, and demographics.

3.6.1 Indirect Effects

There are several areas along I-95 that are targeted as growth areas. Cumberland County identified growth areas that included the Towns of Falcon, Wade, and Godwin (Cumberland County, 2008). The Town of Rocky Mount identified two growth areas, a Planned Growth Area (PGA) and a Smart Growth Area (SGA). The Western SGA includes the I-95 corridor, as does the PGA (City of Rocky Mount, 2003). Growth is anticipated to take place in Fayetteville and Wilson in the vicinity of I-95 (Cumberland County, 2008; Nash County, 2009). The Fort Bragg area of Cumberland County is expected to undergo a substantial expansion based on the latest round of Base Realignment and Closure (BRAC) Commission decisions (Cumberland County, 2008).

A detailed study of ICEs associated with specific improvements to I-95 will be completed in subsequent environmental documentation. However, it can generally be noted that indirect effects are not anticipated

to be substantial for improvements to I-95 because significant indirect changes in land use are not expected. The reasoning for this assumption is multifold: (1) local, commuter traffic is not the driving force for the predicted future capacity needs along I-95; (2) the I-95 corridor has experienced low growth in recent years [*Study Area Needs Assessment* (September 2010)]; and (3) the addition of a toll would potentially offset growth in commuter traffic. It is also not anticipated that the proposed diversions associated with tolling would substantially affect businesses whose main purpose is to service existing I-95 traffic. These assumptions, however, will be verified for future specific improvement projects. Other potential effects that will require evaluation include police and emergency medical service (EMS) effects, economic effects, and effects on environmental justice communities.

3.6.2 Cumulative Effects

For this EA, the cumulative effects of I-95 improvements on the natural environment and recurring effects to communities were evaluated.

3.6.2.1 Cumulative Effects to the Human and Natural Environment

For much of the project area, there is the potential to widen I-95 into the existing median, which would limit direct impacts to the human and natural environment. However, there are likely to be impacts in areas where widening will extend beyond the existing right of way. The greatest effects of these impacts are likely to be relocations (primarily around interchanges and along service roads) and wetland impacts (due to the presence of large amounts of wetlands in the project corridor). It is believed that these impacts can be fully mitigated. Therefore, the cumulative effect of the I-95 improvements, in conjunction with the direct impacts associated with other transportation projects in the project vicinity, should not be significant.

3.6.2.2 Recurring Effects to Communities

Recurring community impacts occur when the quality of life of a community (e.g., community cohesion, emergency response, noise, business access, and travel patterns) has been affected more than once over time by past public and private actions. While a proposed action may to have a relatively minor direct impact on communities, the impact of the action might be significant in the context of past actions. Recurring impacts typically occur if past impacts have not been adequately addressed or if past impacts were relatively minor on their own, but are important when considered in combination.

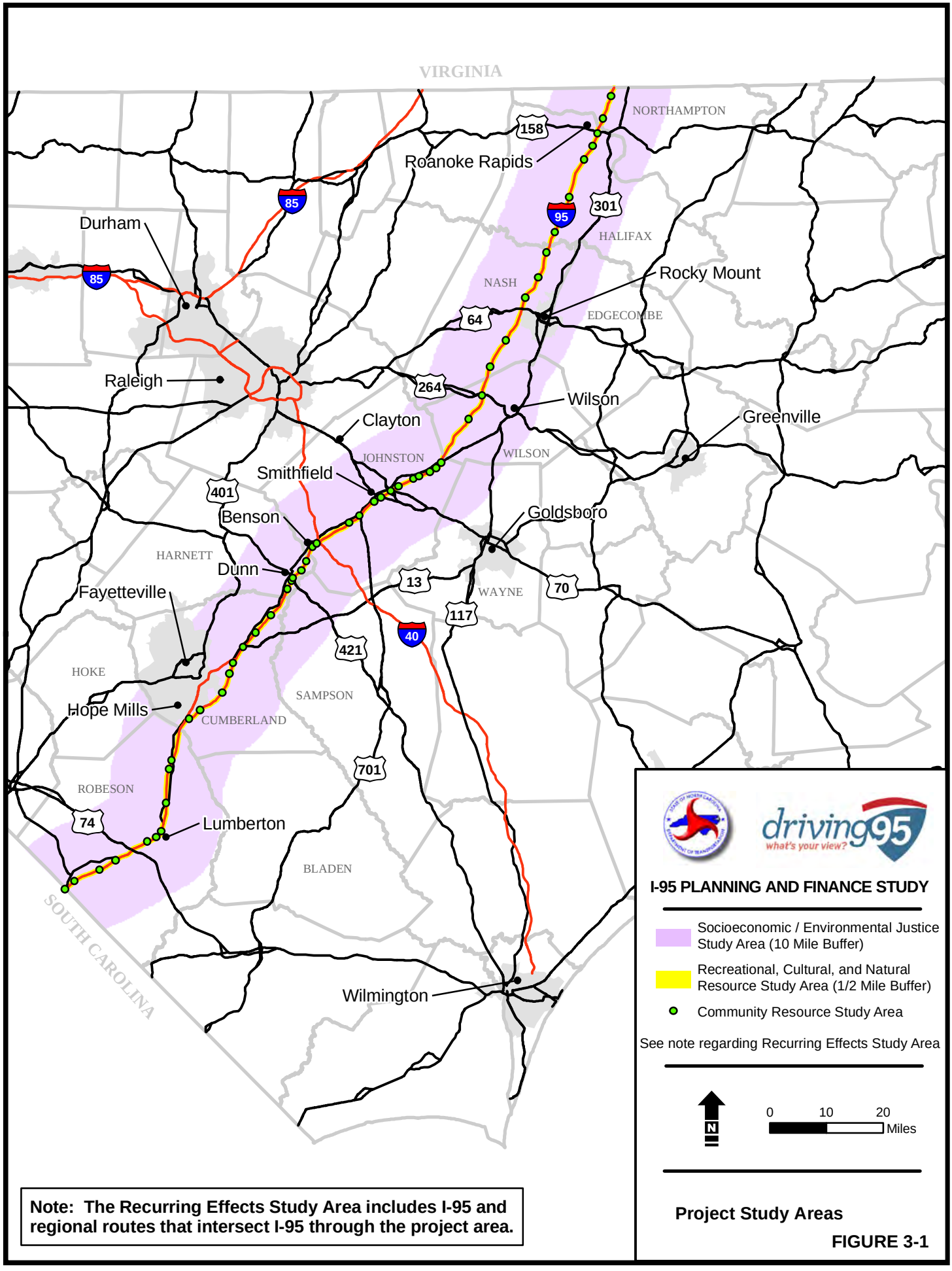
For this project, the past action most important in terms of recurring effects is the previous construction of existing I-95. This analysis focuses on recurring effects to EJ communities because I-95 was initially constructed in the 1950s prior to implementation of Title VI of the Civil Rights Act of 1964, and there are a large number of EJ communities within the I-95 corridor. Subsequent NEPA documents for construction projects along I-95 will consider the full range of recurring effects to all communities in the project study area.

In order to assess the possible recurring effects of I-95 construction on EJ communities, outreach efforts were made to municipal planners along the project corridor. These individuals were asked if they were aware of historic minority or low-income communities along the route of I-95 that might have encountered impacts during past construction. Unfortunately, the municipal planners contacted were not

able to provide such information. Therefore, an evaluation of known historic resources along the project corridor was undertaken with the hope of identifying historic minority communities. This evaluation consisted of a review of the I-95 corridor using the North Carolina Historic Preservation Office GIS web portal to determine if any resources listed on or eligible for the National Register of Historic Places could be traced to potential environmental justice communities.

The Harnett County Training School, located in Dunn to the east of the project area, provided educational opportunities to African-American children beginning in the 1920s (Hairr, 2002). It was a Rosenwald school, which were built primarily for the education of African-Americans in the early twentieth century. The school is one of the largest Rosenwald schools in the state and the only positively identified surviving school in the county. Currently, there are populations along US 301 and I-95 in Dunn that meet current EJ criteria. Therefore, possible recurring effects to EJ populations from the construction of US 301 and I-95 through Dunn will require investigation during subsequent NEPA documentation for proposed improvements to I-95.

Concerns regarding recurring effects of I-95 construction on EJ communities were not raised during the public involvement process for this project. It is anticipated that project NEPA documents for specific improvements to I-95 will provide additional review of the issue of recurring impacts to communities located along the project corridor.


VIRGINIA
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Durham
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Rocky Mount
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EDGECOMBE
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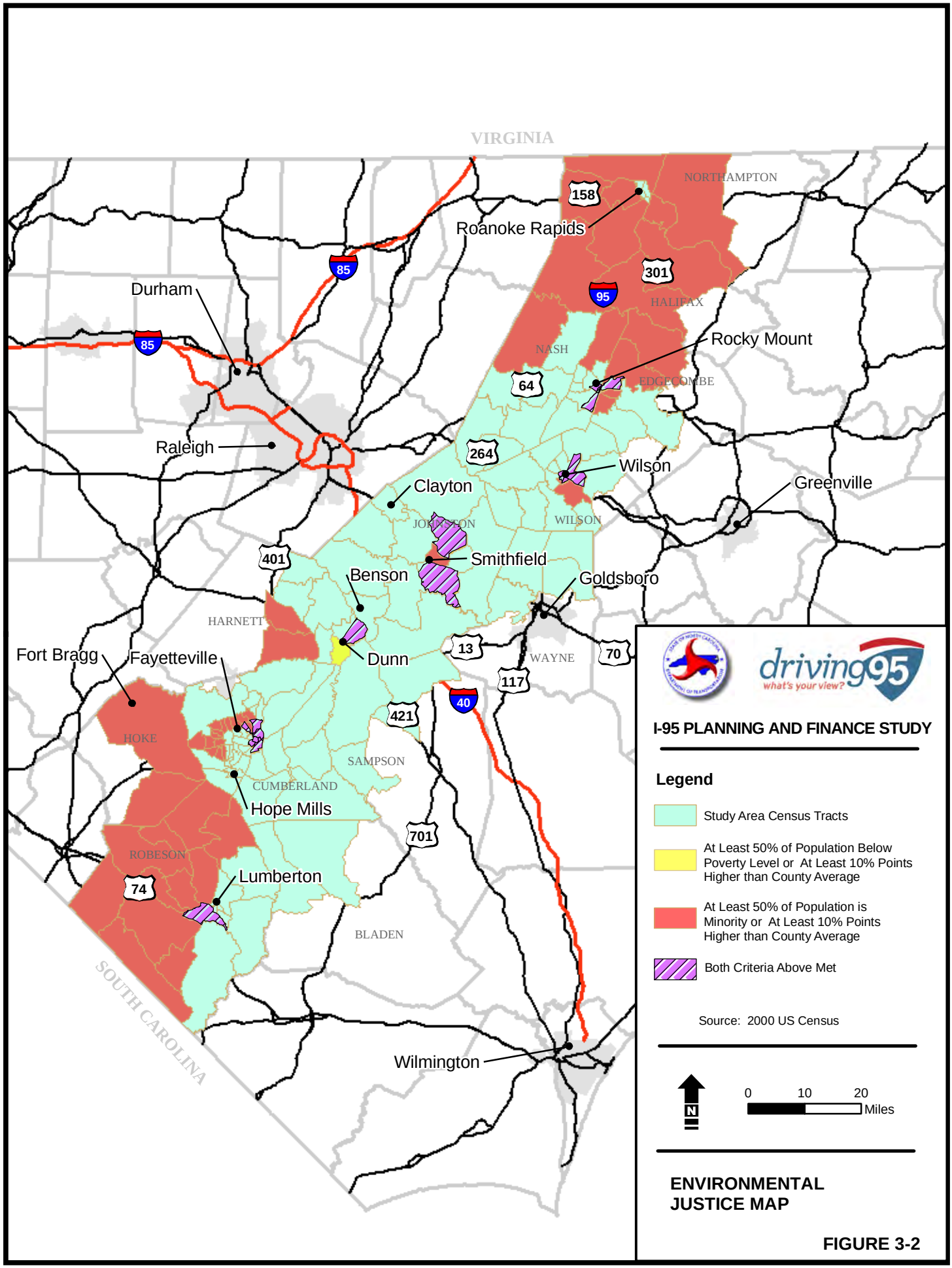
Wilson
Clayton
Greenville
JOHNSTON
WILSON
Smithfield
401
Benson
Goldsboro
HARNETT
Dunn
13
70
Fayetteville
WAYNE
117
40
421
HOKE
SAMPSON
Hope Mills
CUMBERLAND
701
ROBESON
74
Lumberton
BLADEN
SOUTH CAROLINA
Wilmington
driving95
what's your view?
I-95 PLANNING AND FINANCE STUDY
Socioeconomic / Environmental Justice Study Area (10 Mile Buffer)
Recreational, Cultural, and Natural Resource Study Area (1/2 Mile Buffer)
Community Resource Study Area
See note regarding Recurring Effects Study Area
N
0
10
20
Miles
Project Study Areas
FIGURE 3-1
Note: The Recurring Effects Study Area includes I-95 and regional routes that intersect I-95 through the project area.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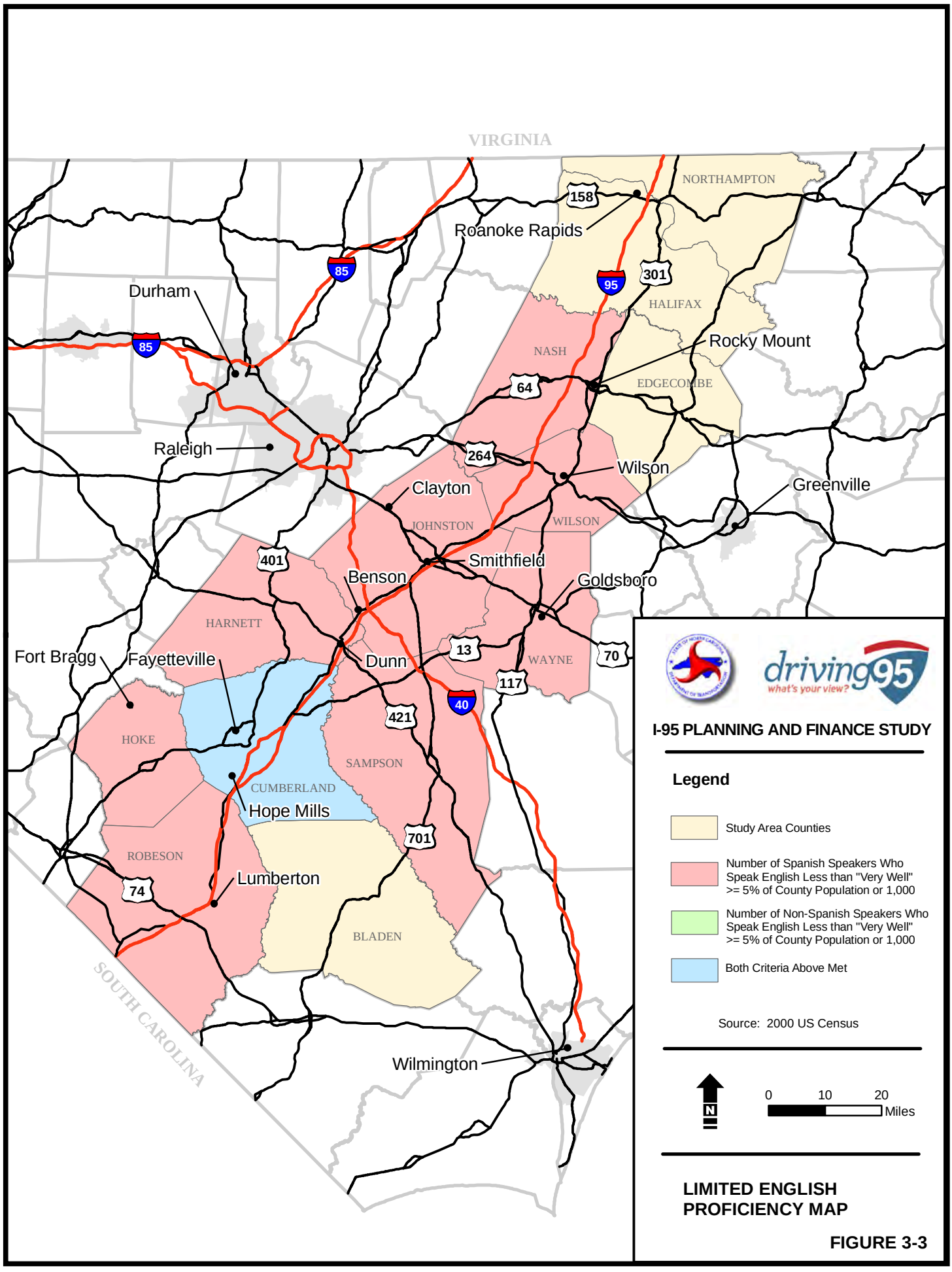
SAMPSON
CUMBERLAND
Hope Mills
701
ROBESON
74
Lumberton
BLADEN
SOUTH CAROLINA
Wilmington
I-95 PLANNING AND FINANCE STUDY
Legend
Study Area Census Tracts
At Least 50% of Population Below Poverty Level or At Least 10% Points Higher than County Average
At Least 50% of Population is Minority or At Least 10% Points Higher than County Average
Both Criteria Above Met
Source: 2000 US Census
N
0
10
20
Miles
ENVIRONMENTAL JUSTICE MAP
FIGURE 3-2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SAMPSON
CUMBERLAND
Hope Mills
701
ROBESON
74
Lumberton
BLADEN
SOUTH CAROLINA
Wilmington
driving95
what's your view?
I-95 PLANNING AND FINANCE STUDY
Legend
Study Area Counties
Number of Spanish Speakers Who Speak English Less than "Very Well" >= 5% of County Population or 1,000
Number of Non-Spanish Speakers Who Speak English Less than "Very Well" >= 5% of County Population or 1,000
Both Criteria Above Met
Source: 2000 US Census
N
0
10
20
Miles
LIMITED ENGLISH PROFICIENCY MAP
FIGURE 3-3

The bike routes shows represent North Carolina bike routes, as defined by the NCDOT Division of Bicycle and Pedestrian Transportation. Bike routes include the Interstate, State, County, Regional, and Urban routes and were based on the DOTRoads file, produced by NCDOT.

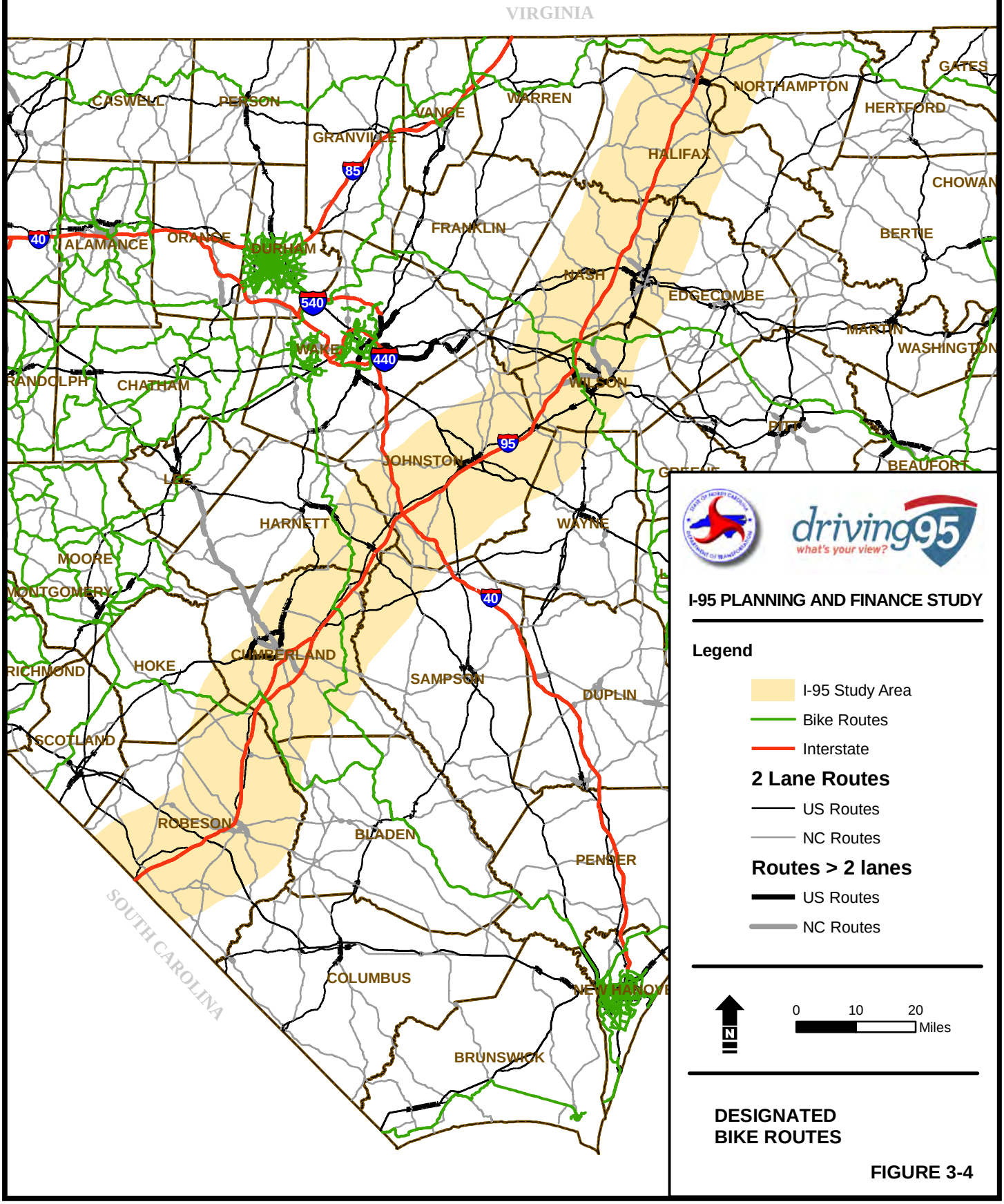
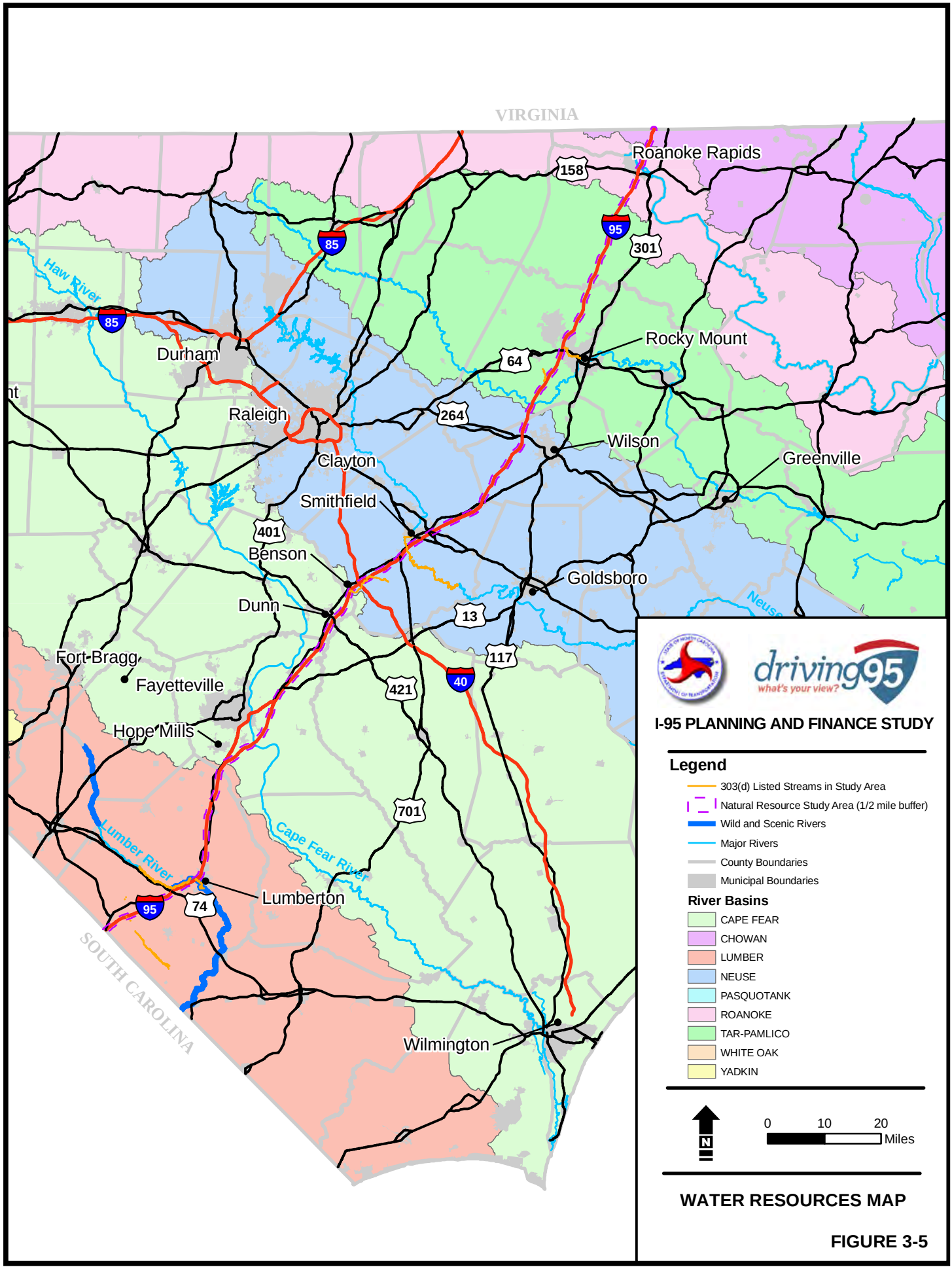


FIGURE 3-4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Raleigh
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Wilson
Clayton
Greenville
Smithfield
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Benson
Goldsboro
Dunn
13
117
Fort Bragg
Fayetteville
421
40
Hope Mills
701
Lumber River
Cape Fear River
95
74
Lumberton
SOUTH CAROLINA
Wilmington
driving95
what's your view?
I-95 PLANNING AND FINANCE STUDY
Legend
303(d) Listed Streams in Study Area
Natural Resource Study Area (1/2 mile buffer)
Wild and Scenic Rivers
Major Rivers
County Boundaries
Municipal Boundaries
River Basins
CAPE FEAR
CHOWAN
LUMBER
NEUSE
PASQUOTANK
ROANOKE
TAR-PAMLICO
WHITE OAK
YADKIN
N
0
10
20
Miles
WATER RESOURCES MAP
FIGURE 3-5