3 Social and Environmental Screening

3.1 Introduction

3.1.1 Purpose of Chapter

This chapter describes how the 2035 Long Range Transportation Plan (LRTP) has considered the social and environmental impacts of transportation decisions. It confirms that the Plan covers the 20-year forecast period required by Federal law. It also provides the discussion of potential environmental mitigation activities that must, by Federal law, be included in this Plan.

3.2 Socio-Economic Information

3.2.1 Metrolina Model as Basis of Information

RFATS has collected socio-economic information for York County since 1965 to support its long range planning efforts. In previous LRTPs, the information was collected for the transportation model developed by the South Carolina Department of Transportation (SCDOT). More recently, however, RFATS joined the other Metropolitan Planning Organizations (MPOs) in the Charlotte area to develop a regional transportation model. This is the Metrolina Regional Travel Demand Model ('Metrolina model'). The South Carolina area of the model includes the RFATS Study Area, the remainder of York County, and the panhandle area of Lancaster County east of the RFATS Study Area.

Like similar models across the nation, it is divided into Traffic Analysis Zones (TAZs) which represent the basic areas for forecasting. Socio-economic data is compiled, and forecasts are made, for each Traffic Analysis Zone. The RFATS Study Area has 296 TAZs within the Metrolina model.

3.2.2 Data and Sources

For the 2035 LRTP, RFATS staff updated the planning data for use in the Metrolina model. The information collected included housing, employment and school enrollment data for the years 2000, 2005, 2006, and 2007. Data was also projected into the future for the years 2015, 2025, and 2035 ('horizon years').

A number of subcategories of the three data types were collected (Table 3.1). The subcategories are important elements in determining travel. For example, trip–making characteristics vary by household size, income, and type of employment. This information allows for travel to be broken down by detailed trip purposes, which gives

more accurate estimates of the area's travel patterns. Table 3.2 summarizes the methods used to collect the information.

Table 3.1 Subcategories of Socio-Economic Data

Housing	Employment	School Enrollment
• Households • Population • Population in Households • Population in Group Quarters • Mean Household Income	• Total Employment • Employment - Manufacturing, Industrial, Warehouse, Transportation, Communications, Utilities • Employment - Retail • Employment - Highway Retail • Low-Traffic Service Employment • High-Traffic Service Employment • Employment - Office & Government • Employment - Bank • Employment - Education	• Students - Grades K-8 • Students - High School • Students - College

Table 3.2 Metrolina Regional Model Socio-Economic and Land Use Data Sources

Year	Comment	Housing Data	Employment Data	School Enrollment
2000	Initial Base-Year for Metrolina Regional Model	Housing Units estimated from US Census data • Permits locally reported by Census Tract manually distributed to Census Block Groups • Permits within the City of Rock Hill were geocoded directly by address • Census Block Group data geographically assigned to *smaller* Metrolina Model TAZs. • Data distributed to specific TAZ zones based on land use assumptions.	Data acquired from SC Employment Security Commission	Data gathered from individual K-8, High School, and College/Universities
2005	Established as New Base-Year for purposes of modeling and Horizon Year S/E Projections. Data collected between February 2006 –March 2007 and submitted in July 2007.	Household and Population estimate based on County-wide construction permit data • Permits from 2000-2002 manually distributed to block groups, incorporating some assumptions • Permits from 2003-2005 geocoded by address	• purchased from InfoUSA • Sorted into Metrolina employment categories* (OFFGOV, HISVC, MIWTCU) by NAICS code • Geocoded to TAZs by address	• Individual school enrollment estimates based on population growth estimate combined with past enrollment trend • Geocoded to TAZs by address
2006	Data collected between March 2007 - July 2007	• Household and Population data estimated by adding 2006 Building Permit data, compiled by Catawba Regional Council of Governments, with previously (2005) established housing base. Population Data calculated by applying county-wide *average household size* factor of 2.62.	Purchased from InfoUSA	School enrollment data collected by individually surveying all public York County schools, universities, and private schools
2007	Data collected between March 2008-July 2008	Household and Population data estimated by adding 2007 Building Permit data, compiled by Catawba Regional Council of Governments, with previously (2006) established housing base. Population Data calculated by applying county-wide *average household size* factor of 2.62.	purchased from InfoUSA	School Data collected from 4 York County, SC school boards, universities, and private schools
Horizon Years	Projections for years 2015, 2025, and 2035 incorporating "Pipeline Development" information	Projections rely on 2005 base year data	Projections rely on 2005 base year data	Projections rely on 2005 base year data
	• Pipeline Development includes County-wide residential and commercial developments expected to see significant build-out by 2009. • Project information solicited from York County, Fort Mill, Rock Hill, Tega Cay, and York County Chamber of Commerce. Projects geocoded to specific TAZ zones.			

** OFFGOV=Office and Government Employment; HISVC=High-Traffic Service Employment; MIWTCU=Manufacturing, Industrial, Warehouse, Transportation, Communications, Utilities Employment*

TAZ = Traffic Analysis Zone(s)

3.2.3 Socio-Economic Forecast

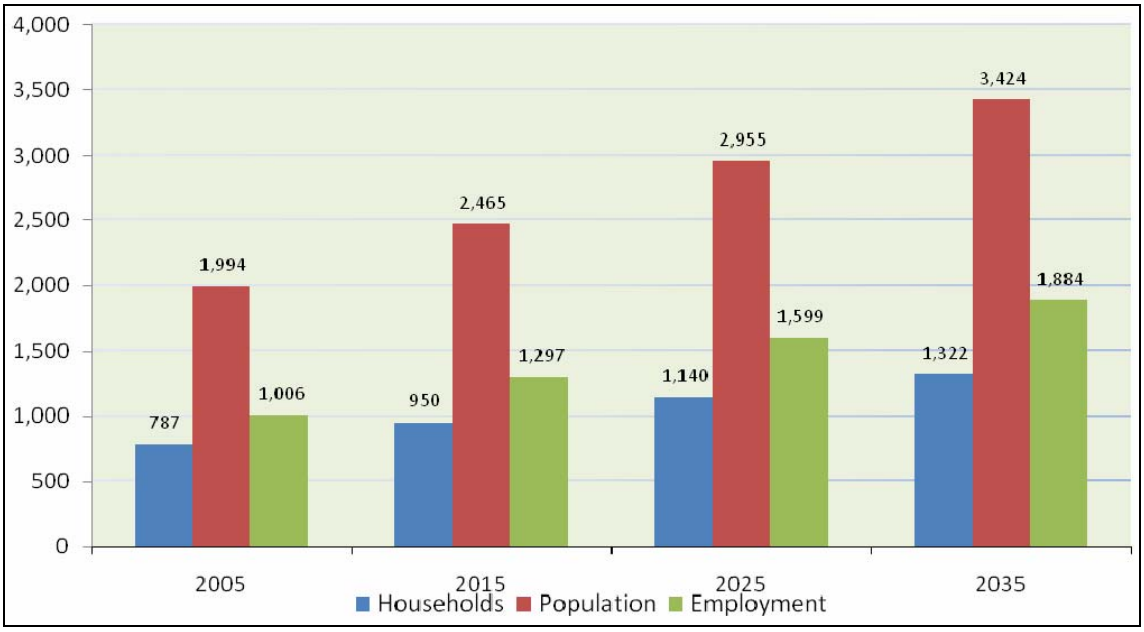
Table 3.3 summarizes the socio-economic data in the Metrolina model. The number of households is expected to grow from 787,000 in 2005 to 1,322,000 in 2035, a 68% increase. Total employment is estimated to rise from 1,006,000 in 2005 to 1,884,000 in 2035, an increase of 87%. This is charted in Figure 3.1.

Table 3.3 Metrolina Model Household, Population and Employment Forecasts

Year	Households (1,000s)	Population (1,000s)	Employment (1,000s)
2005	787	1,994	1,006
2015	950	2,465	1,297
2025	1,140	2,955	1,599
2035	1,322	3,424	1,884

All numbers in this table are 1,000s – for example, '787' represents 787,000.
Source: Metrolina Regional Travel Demand Model, April 2007 version

Figure 3.1 Metrolina Model Household, Population and Employment Forecasts

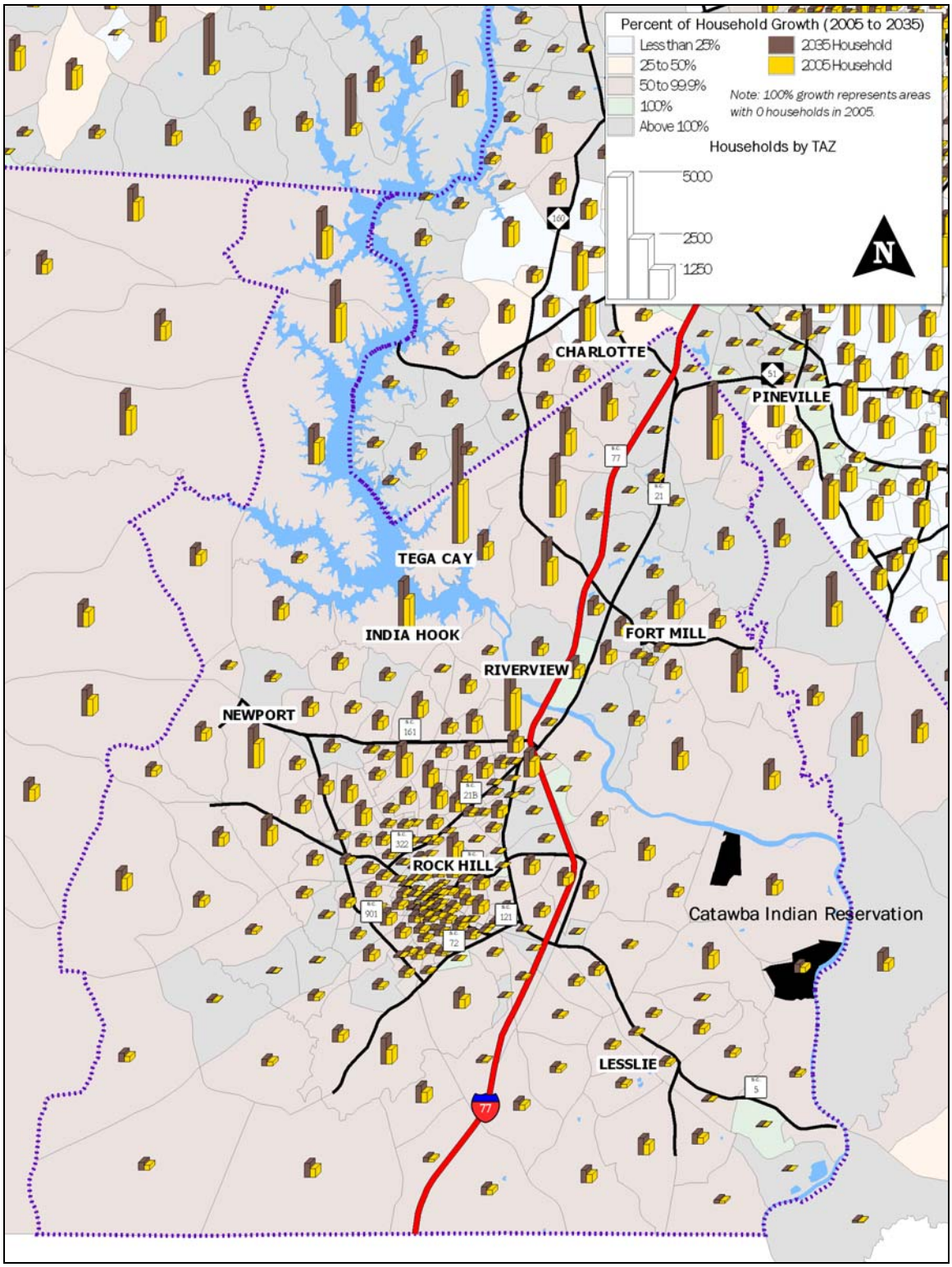


All numbers in this chart are 1,000s – for example, '787 represents 787,000

Source: Metrolina Regional Travel Demand Model, April 2007 version

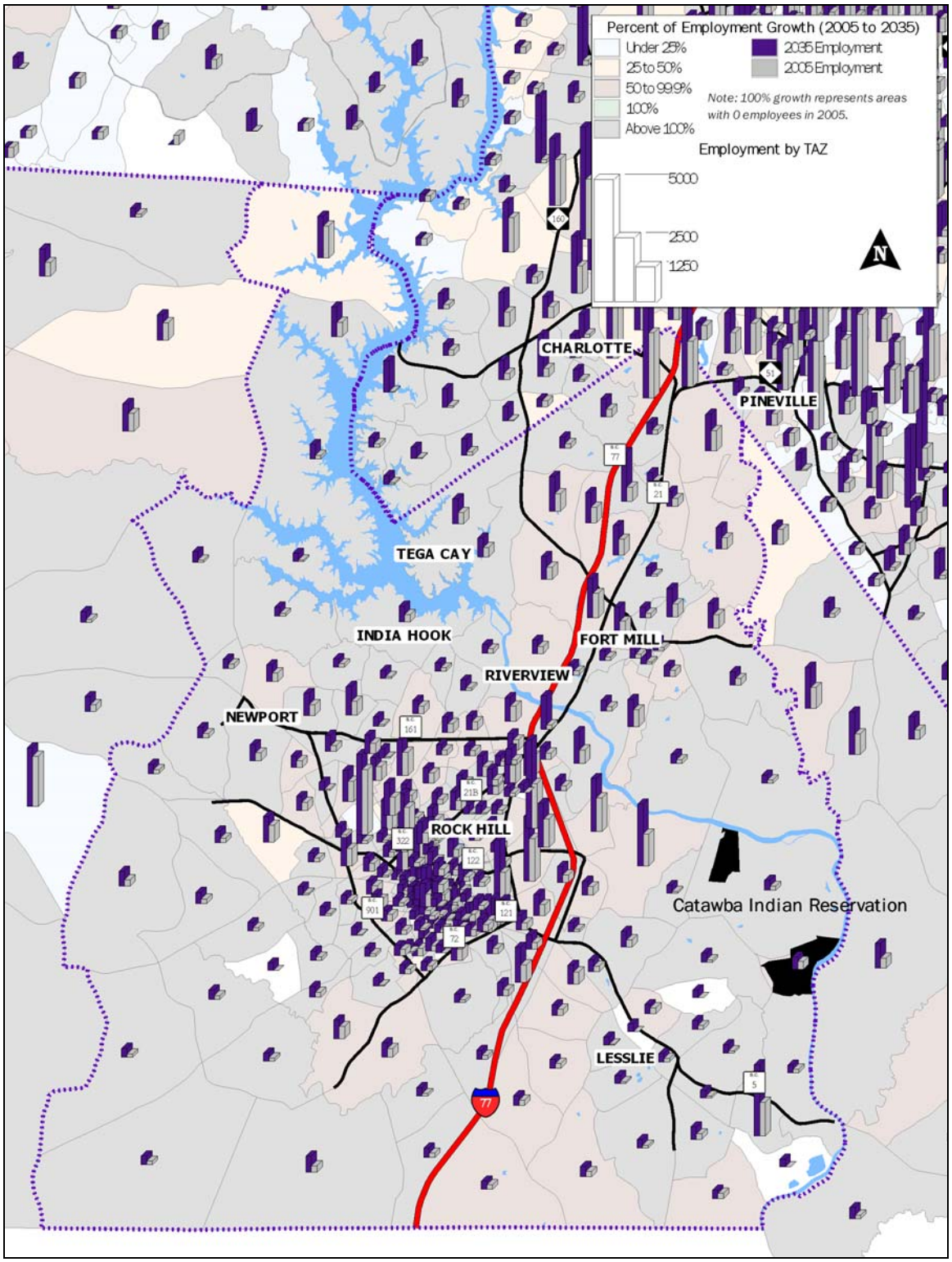
Figure 3.2 shows show the forecast growth in the number of households from 2000 to 2035 by MRTDM traffic analysis zone. In the same way, Figure 3.3 shows the forecast employment growth. The estimates show that Fort Mill and the areas north of Rock Hill will experience the most growth in households and employment in the RFATS region.

Figure 3.2 Forecast Change in Households: 2005 to 2035



Source: Metrolina Regional Travel Demand Model

Figure 3.3 Forecast Change in Employment: 2005 to 2035



Source: Metrolina Regional Travel Demand Model

3.3 Public Outreach and Traditionally Underserved Populations

3.3.1 Public Outreach

RFATS conducted an extensive public outreach program during the development of the 2035 Long Range Transportation Plan, as described elsewhere in this document. The outreach program resulted in valuable input from a number of participants concerning social and environmental issues. These included identification of potential impacts on wetland habitats, concern over the growing sprawl in the RFATS Study Area, and the need for employment-related transportation options.

3.3.2 Traditionally Underserved Populations

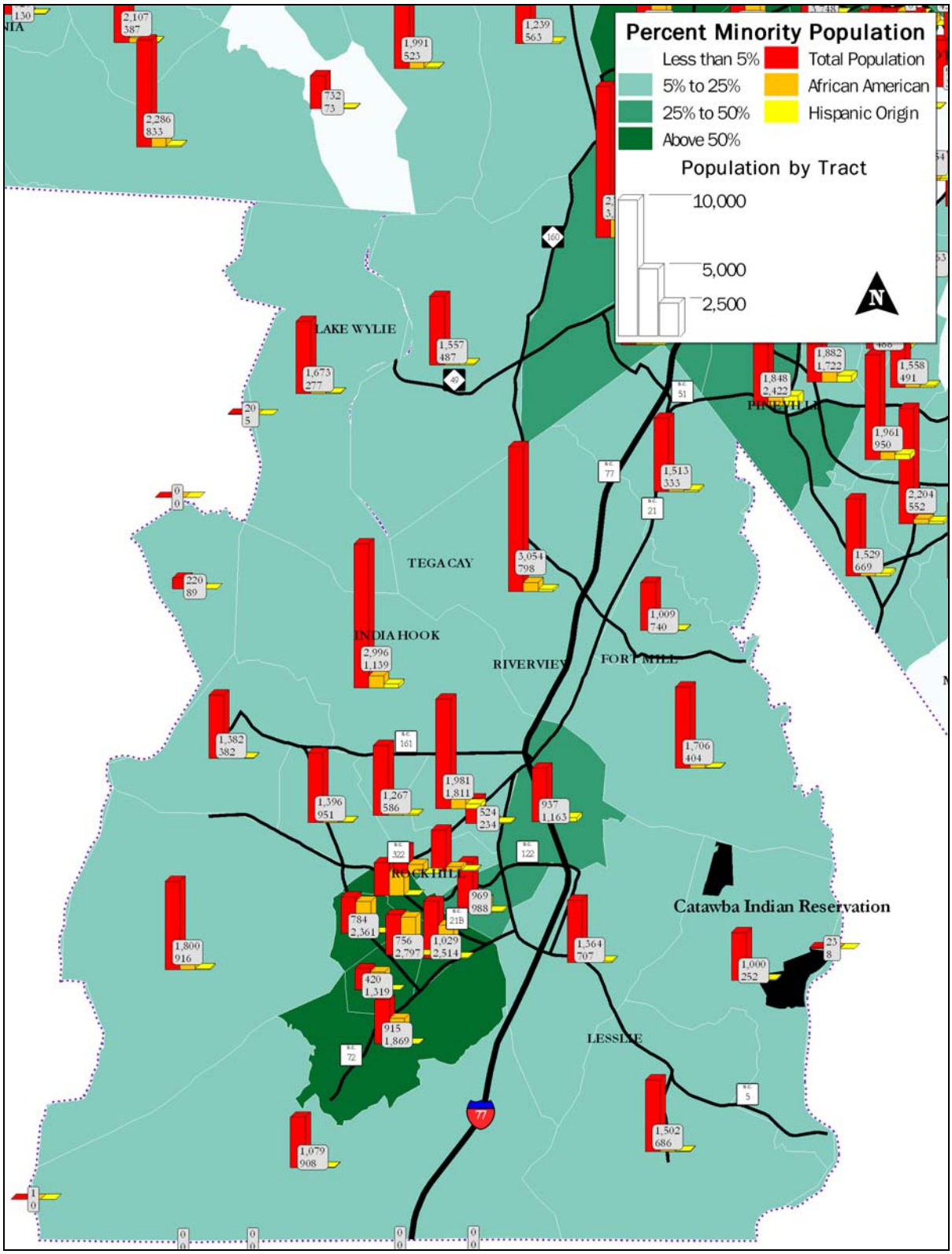
Environmental Justice legislation originated in Title VI of the 1964 Civil Rights Act. This Act, and subsequent legislation, aims to ensure that services and benefits are fairly distributed to all people, regardless of race, national origin, or income, and that all people have access to meaningful participation. This is accomplished in transportation programs by:

- Avoiding, minimizing, or mitigating disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- Ensuring the full and fair participation in the transportation decision-making process by all potentially affected communities.
- Preventing the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

The 2035 LRTP has met these federal requirements by identifying traditionally underserved communities, targeting those communities in the public participation process, and considering these communities in the development of the fiscally-constrained project list.

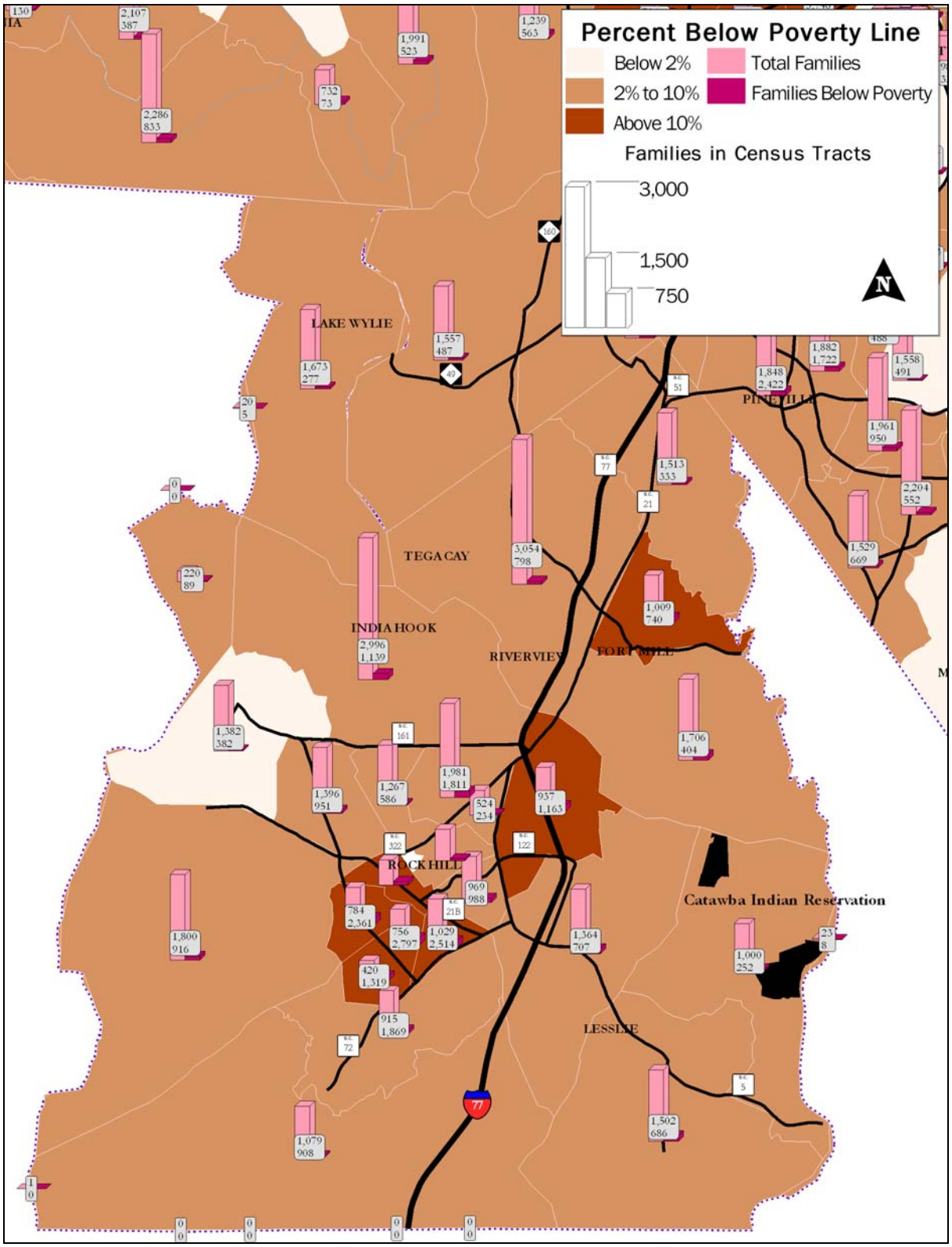
Figure 3.4 shows the distribution of minority populations in the RFATS Study Area. Figure 3.5 shows the percentage of families living below the poverty level. Areas to the southwest of the City of Rock Hill have concentrations of greater than 50 percent minority and families living below the poverty level.

Figure 3.4 Percent Minority Population



Source: Census Bureau, 2000 data

Figure 3.5 Percent of Families Below Poverty Level



Source: Census Bureau, 2000 data

3.4 Air Quality Non-Attainment Status

In 2004, the US Environmental Protection Agency ruled that the Charlotte metropolitan area, which includes the RFATS Study Area, does not meet federal air quality standards – specifically, the standard for ozone levels. In technical language, it is a 'non-attainment area'.

This has implications for the RFATS transportation planning process and the LRTP, because non-attainment status triggers some additional requirements under Federal law. RFATS must demonstrate that its plans, programs and projects will ultimately lead to attainment of the ozone standard. This is known as 'transportation conformity'. Attainment of the air quality standard is demonstrated in a separate document, which does not form part of this plan.

3.5 Environmental Screening and Mitigation

3.5.1 The Role of Environmental Screening and Mitigation

Transportation projects may have impacts – positive or negative – on the environment. The environmental screening process is intended to identify the potential environmental impacts from a project. This helps to balance the sometimes competing interests in improving mobility and preserving important environmental features. The screening process also helps to identify important environmental factors early in the project development process, thus maximizing opportunities to avoid or mitigate impacts and reducing the potential for delays and expense later on.

Highway projects generally have the greatest potential to create significant environmental impacts due to land clearing and grading, modification of natural drainage, increased stormwater runoff, and traffic. In addition, major roads can become barriers within communities, affecting the way residents live and interact. Highway projects also have great potential for secondary and cumulative impacts. Sidewalks and bicycle facilities generally have a much lower impact, because of their small cross-sections and greater flexibility to avoid problem areas. Indeed, when built as part of a highway, their impacts, if any, are marginal beyond those of the motor vehicle elements.

Transit improvements that only involve bus route and service expansions, with no new construction, will have minimal impacts on the environment. However, fixed-guideway systems such as the proposed bus rapid transit service and the planned vintage trolley will potentially have more impacts; these will be evaluated in the same way as roadway projects. In general, however, transit impacts tend to be positive because increased

transit service tends to reduce growth in highway traffic (hence mitigating congestion and emissions) and improve accessibility for traditionally underserved populations.

Mitigation measures aim to avoid or minimize a project's impact on the environment. These measures can include:

- Avoiding the impact altogether, by not implementing a project or a specific element of a project,
- Minimizing impacts, by limiting the degree or size of a project element,
- Rectifying the impact, by repairing, rehabilitating or restoring an environment that has been affected,
- Reducing or eliminating the impact over time, by preservation and maintenance operations during the life of the project, and
- Compensating for the impact by replacing or providing substitute natural resources or environments.

A project will often use a combination of these mitigation measures. The measures may take place in the same location as the project, or (by compensating) in a different location.

3.5.2 Environmental Screening for the 2035 LRTP Projects

As described in the Highway Element, the Project Ranking Criteria for potential projects include an environmental screening criterion. This considers potential impacts to environmental, social, and cultural resources, and therefore helps to bring environmental issues into the selection process. This includes identifying major environmental impacts that diminish a project's feasibility.

However, that screening is not intended as a replacement for a more thorough evaluation within each project as it progresses. For most projects, more detailed environmental assessments will be needed as the project is developed.

3.5.3 Cooperative Coordination with Resource Agencies

As a part of the process to identify, discuss and plan for environmental mitigation activities, RFATS staff consulted with Federal, State and local agencies as well as a broad cross section of environmental resource agencies: specifically, the South Carolina Department of Health & Environmental Control (DHEC); SC Department of Natural Resources (DNR); SC Department of Fish & Wildlife Services; SC Department of Archives and History; Nation Ford Land Trust; The Trust for Public Land; and the Environmental Protection Agency (EPA), in the development and review of transportation plans, needs and potential projects.

Items noted during this process included an environmental summary of natural resources and advisory guidance regarding identified endangered species within the RFATS Study Area. From land management agencies and area municipalities, additional emphasis on the role and importance of trails and bikeways to regional transportation system planning was received. It should also be noted that an extensive review and discussion was conducted as part of the interagency consultation process regarding the identification and emissions analysis of all regionally significant projects within the RFATS Study Area.

3.5.4 Major Environmental and Cultural Features in the RFATS Study Area

The RFATS Study Area includes a range of environmental and cultural features that may affect individual projects. The following discussion is summarized from the 2025 York County Comprehensive Plan. It is not intended to be comprehensive, but rather to highlight some of the key issues and features.

The RFATS Study Area consists of gently rolling landscape within the Carolinas Piedmont physiographic region. The major environmental features are the Catawba River and Lake Wylie. These, together with their tributaries, are not only features in their own right but are also associated with floodplains, wetlands and distinct natural habitats. There are also other scattered wetlands. Landscape quality is generally not a major issue, except for some areas of slope and a recognition that the existing agricultural landscape includes some attractive views. Some parts of the RFATS Study Area, particularly alongside the Catawba River, have steep slopes that make development difficult. The entire RFATS Study Area is within the Catawba River watershed. It is recognized that the area around Lake Wylie is seeing the loss of natural areas, which contain important plants and animal habitats. Measures already in place to preserve these habitats include the Catawba River Buffer adopted by York County; this maintains land within 100 feet of a designated segment of the Catawba River in its natural state.

The RFATS Study Area has a long history rich in cultural diversity. Despite continuing development pressure, much of the RFATS Study Area remains rural in culture and many of its historic and cultural resources endure today. The major cultural features include parks, several historic districts (including downtown Fort Mill and downtown Rock Hill), and numerous individual historic buildings.

The presence of the Catawba Indian Nation is an important cultural factor. Today the Catawba Cultural Center, located on the Catawba Indian Reservation, presents tours an programs.

The Bethel community, in the north-west part of the RFATS Study Area, is one of the oldest communities in York County, having developed around Bethel Presbyterian Church which was organized in 1764. Development around Lake Wylie is rapidly

changing the rural character of the community. Although this community currently has no listings on the National Register of Historic Places, a 1992 inventory conducted by the South Carolina Department of Transportation identified a number of individual sites which are considered eligible for National Register nomination. Also in the area is Hill's Iron Works, on Highway 264 at Allison Creek, where weapons were produced during the Revolutionary War. The ore for the iron works was mined at nearby Nanny's Mountain, which is significant for that reason. This mountain was recently purchased by York County for public recreation. Other cultural sites in the area include several individual sites that the 1992 inventory considered worthy of further investigation and consideration for local protection. There are also several abandoned cemeteries in the area.

Rock Hill has many cultural resources. These include the Museum of York County, Winthrop University, York Technical College, Clinton Junior College, and a wide range of others such as the Rock Hill Telephone Company Museum, Cherry Park, and the relatively recent Center for the Arts. Within the City of Rock Hill or nearby, there are currently five historic districts, one historic complex and thirteen individual sites on the National Register. The 1992 survey recommended that additional sites and historic districts be added to the Register, and also listed other sites as being worthy of additional investigation. This area also includes a number of abandoned cemeteries.

The cultural resources in and around the town of Fort Mill and the City of Tega Cay reflect the recent rapid growth in these areas. Cultural sites include the Carowinds theme park and the Charlotte Knights baseball team's Knights Stadium. However, there are sites that reflect a longer history. In addition to neighborhood parks, Confederate Park serves as a town square for Fort Mill and includes monuments to both the Catawba Indians and soldiers who died in the Civil War. The Anne Springs Close Greenway, a protected natural area north of Fort Mill, includes several historically-significant buildings on its property. In Fort Mill itself, the National Register listings include the Downtown Historic District, the Unity Presbyterian Church Historic District, and a number of individual listings. The 1992 survey recommended adding one additional listing and identified a number of other structures as worthy of further consideration.

Near Fort Mill, the prehistoric and historic site of Spratt's Bottom is located on the Catawba valley floodplain. Nauvasee, the main village of the Catawbas, was located less than a mile to the south of the present Fort Mill. There are also several abandoned cemeteries in this area.

3.5.5 Impacts of Major Projects

3.5.5.1 Environmental Screening for the new Catawba River Crossing

The South Carolina Department of Transportation has examined the potential impacts of the primary highway project in this LRTP, the Catawba River Bridge crossing, through the Department's Advanced Project Planning Report (APPR). An APPR is a preliminary evaluation, conducted to provide early information on the populations, environmental and cultural resources that may potentially be affected by the project. The evaluation included site visits, use of GIS data, and consultation with RFATS staff and resource agencies.

The project involves a roadway and bridge on a new location in the vicinity of Mount Gallant Road / India Hook Road (west of the Catawba River) and the Sutton Road vicinity (east of the Catawba River). Figure 3.6 shows the location, approximately 2.5 miles north of Rock Hill. At this stage, there is no definitive location for the bridge.

An environmental screening was conducted using Federal and State data sources. Figure 3.7 highlights these aspects of the project planning. Table 3.4 summarizes the anticipated impacts. SCDOT found no minority communities or areas below the poverty level in the project area. No historic sites or schools were found in the project area, although one church was identified and one archaeological survey line passes through the project area. The Catawba River as well as wetlands along the banks of the river would be impacted. No threatened or endangered species were identified in the study area, although it was recommended that a Carolina Heel splitter study and sunflower study be conducted. The City of Rock Hill's surface water intake is located along Lake Wylie in the study area, as is a sand mine. Impacts on power lines were considered to be certain. The majority of land in the project area is densely forested. However, impacts on residences were considered likely, and impacts on businesses were considered possible.

3.5.5.2 Environmental Screening for the US 21 Bypass Widening

An APPR has also been completed for the US 21 Bypass project. The project involves widening an existing 2.1 mile segment of the US 21 Bypass from the Fort Mill Northern Bypass to SC 51 in northeastern York County. This segment would be widened from two lanes to four or five lanes.

Table 3.4 summarizes the anticipated impacts, according to the Environmental Screening reported in the APPR. SCDOT found no minority communities or areas below the poverty level in the project area. No historic sites were found in the project area, although one church was identified. Two stream crossings were identified; one of these creates possible fish-species of concern. Several isolated wetlands are located close to the roadway. Schweinitz's Sunflower (an endangered species at the Federal and State

levels) has been observed along the corridor. Several public water supply wells, a composting facility, a hazardous waste generator, two compliance enforcement sites, and several underground storage tanks are found along the project route. The land uses in the project area are mixed. Impacts on residences were considered likely, and impacts on businesses were considered possible. Impacts on power lines were considered to be certain.

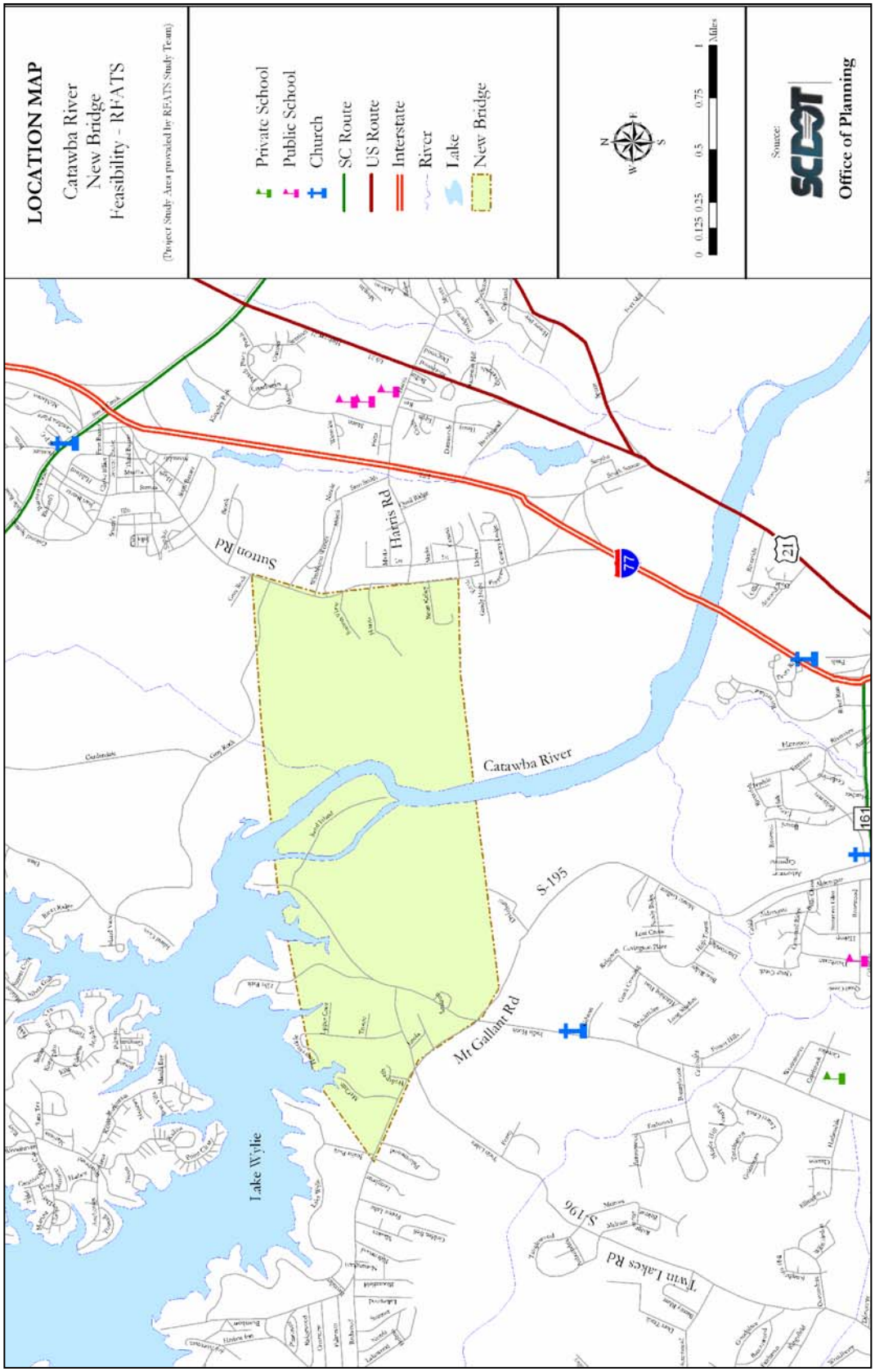
3.5.5.3 Other Projects

Figure 3.8 through Figure 3.11 show the remaining projects in the 2035 LRTP, along with the principal environmental and cultural features within the RFATS Study Area.

3.6 Summary

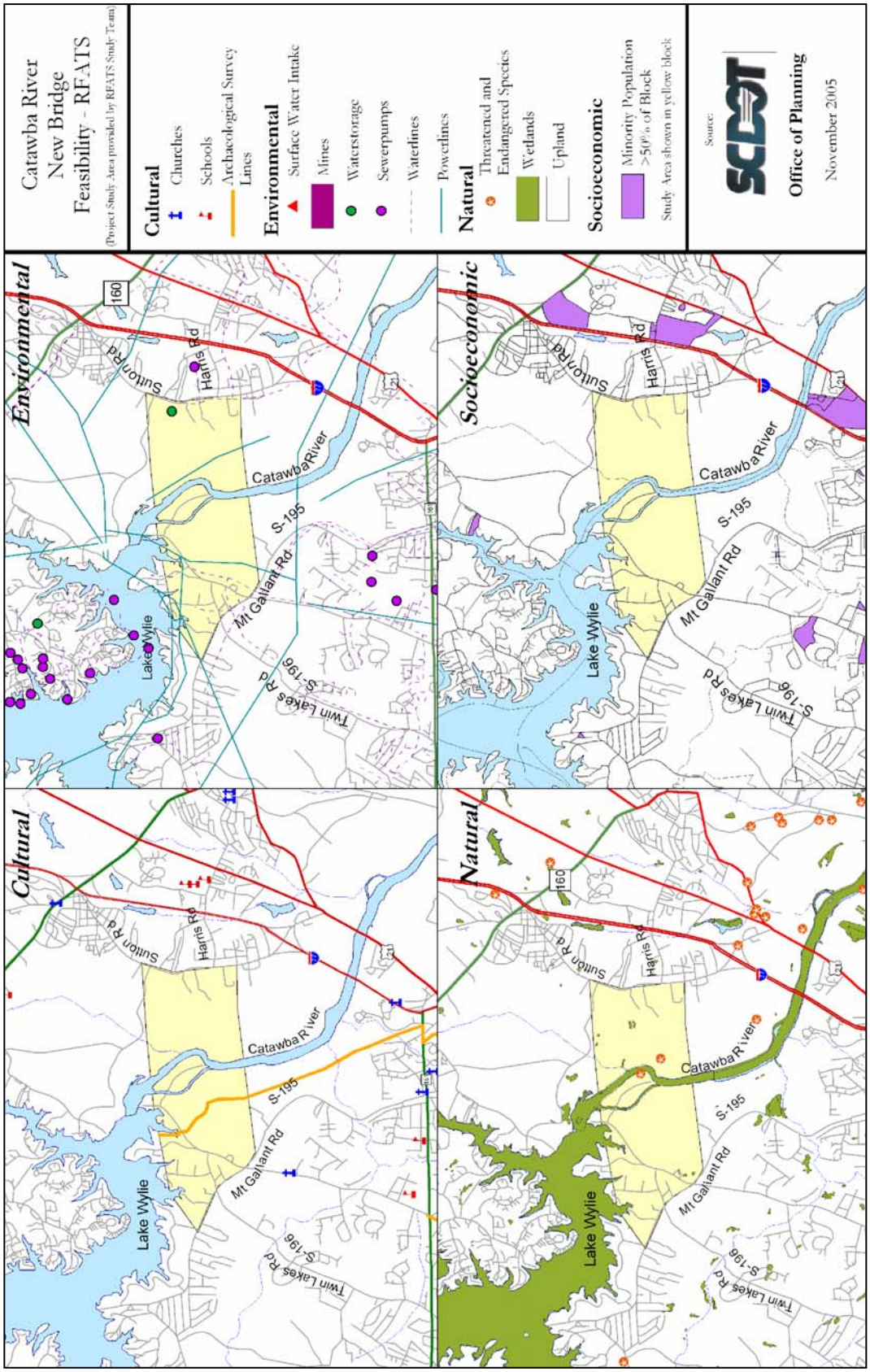
- The Metrolina Regional Travel Demand Model, which covers the RFATS Study Area, has been updated with 2005 data as a baseline and with forecasts for 2035.
- This meets the requirement in Federal law to use the latest planning assumptions with at least a 20-year period between base and horizon years.
- Traditionally underserved populations as well as social and environmental factors have also been considered through the transportation planning process for this Plan.

Figure 3.6 Location of Proposed Catawba River Crossing



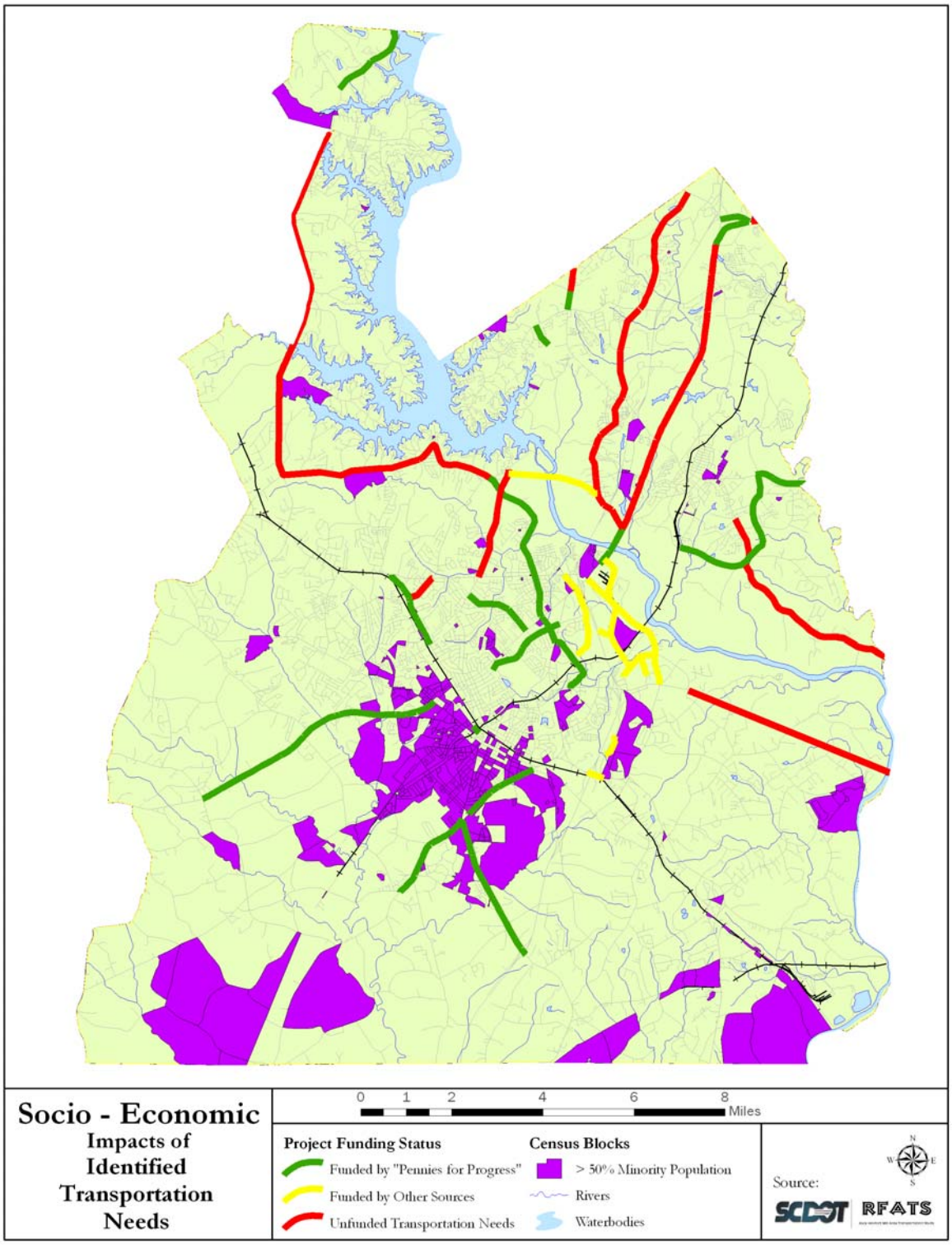
Source: SCDOT Office of Planning

Figure 3.7 Proposed Catawba River Crossing – Potential Impacts



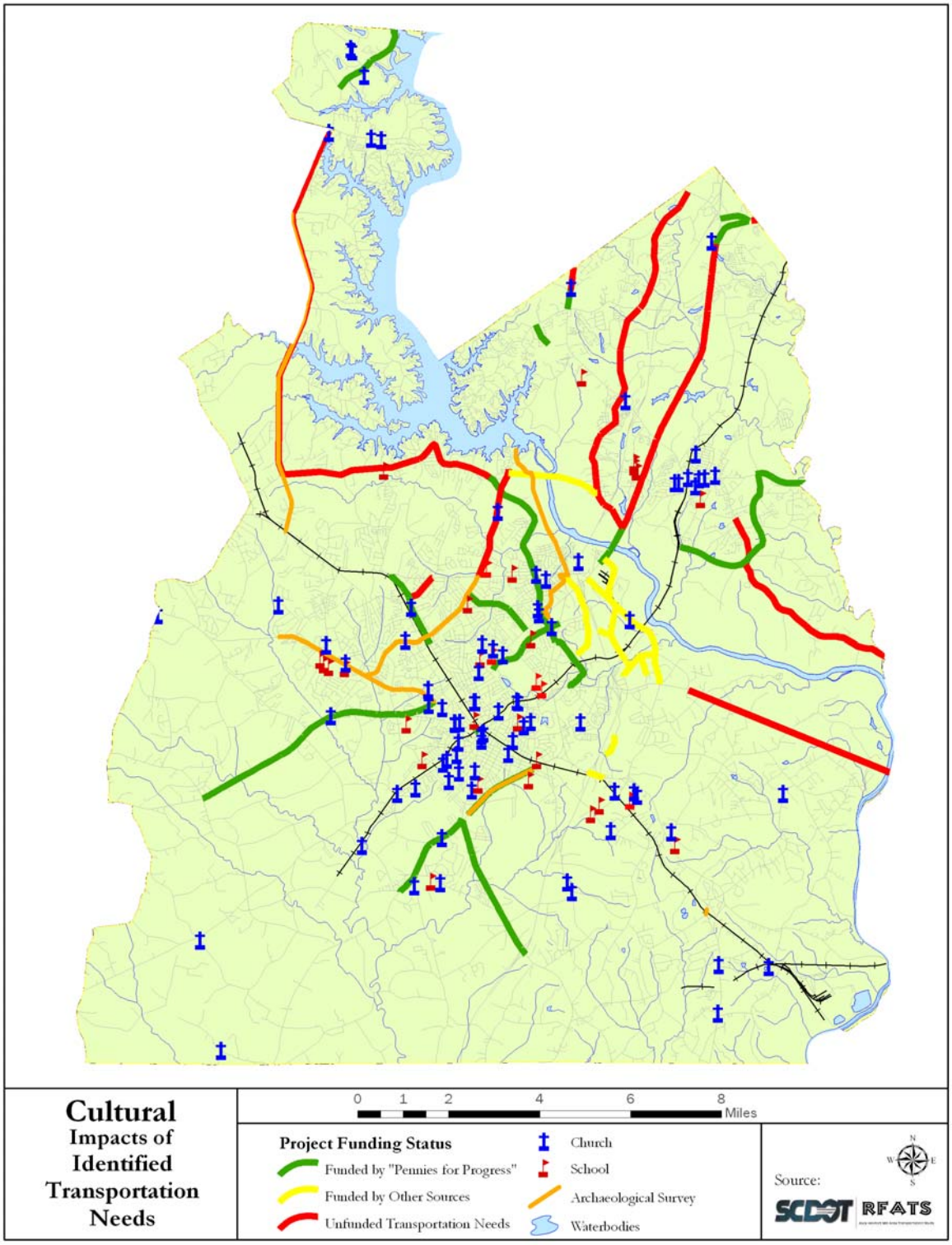
Source: SCDOT Office of Planning

Figure 3.8 2035 LRTP Projects – Potential Socio-Economic Impacts



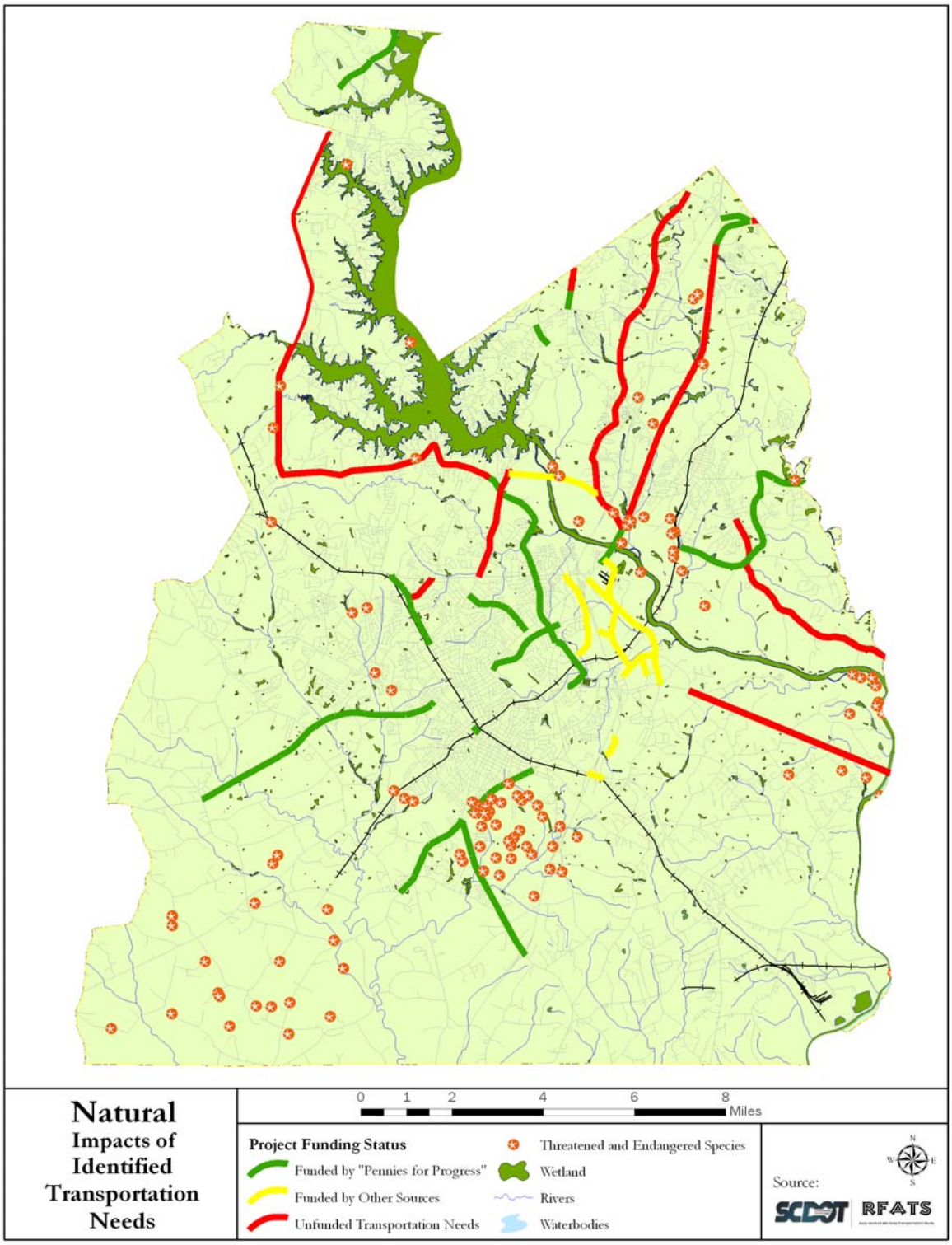
Source: SCDOT Office of Planning

Figure 3.9 2035 LRTP Projects – Potential Cultural Impacts



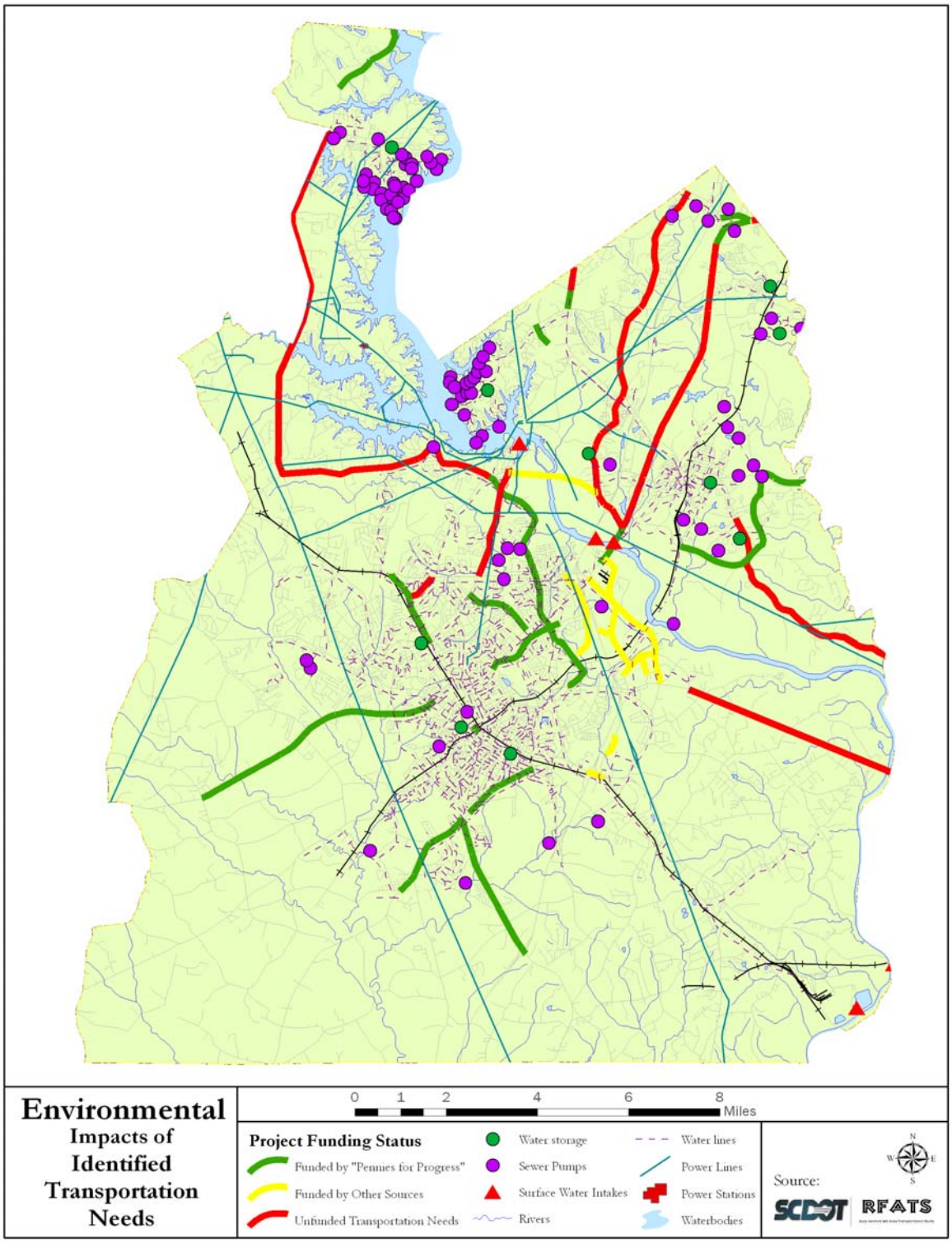
Source: SCDOT Office of Planning

Figure 3.10 2035 LRTP Projects – Potential Natural Impacts



Source: SCDOT Office of Planning

Figure 3.11 2035 LRTP Projects – Potential Environmental Impacts



Source: SCDOT Office of Planning

Table 3.4 Potential Environmental Impacts of Catawba River Bridge

Impact Potential / New Bridge Location	
Natural Resources	
Wetlands	**Certain**
Catawba River	**Certain**
Threatened & Endangered Species	**Possible**
Cultural	
One Church	**Possible**
Archaeological Survey Lines	**Certain**
Historical Sites	**None**
Waste, Water Quality, Air Quality Sites	
Sand Mine	**Possible**
Surface Water Intake	**Possible**
Socioeconomic	
Minority population	**None**
Low-income population	**None**
Infrastructure	
Powerlines	**Certain**
Other	
Residential	**Likely**
Businesses	**Possible**

Key:
Possible (yellow): Located near or within the project corridor; impacts dependent on design and and alignment shifts.

Likely (orange): Located within close proximity of project corridor and impacts are more likely to occur.

Certain (red): Impacts will occur.

Source: Advanced Project Planning Report for Potential Catawba River Bridge on New Location (SCDOT and RFATS, undated)

Table 3.5 Potential Environmental Impacts of US-21 Bypass

Impact Potential / US 21 Bypass Widening	
Natural Resources	
Wetlands	**Possible**
Two Streams	**Possible**
Threatened & Endangered Species	**Possible**
Cultural	
One Church	**Possible**
Archaeological Survey Lines	**Possible**
Historical Sites	**None**
Environmental	
Several public water supply wells	**Possible**
Composting facility	**Possible**
Hazardous waste generator	**Possible**
Several public water supply wells	**Possible**
Two compliance enforcement sites	**Possible**
Underground storage tanks	**Possible**
Socioeconomic	
Minority population	**None**
Low-income population	**None**
Infrastructure	
Powerline	**Likely**
Other	
Residential	**Possible**
Businesses	**Likely**
Fire Department	**Likely**

Key:
Possible (yellow): Located near or along the project corridor; impacts dependent on design and and alignment shifts.

Likely (orange): Located within close proximity of project corridor and impacts are more likely to occur.

Source: Advanced Project Planning Report for Potential Improvements to U.S. Route 21 Bypass from the Fort Mill Northern Bypass to SC 51 in York County (SCDOT and RFATS, undated)