

Application to the

SOUTH CAROLINA TRANSPORTATION INFRASTRUCTURE BANK

Florence County Forward Project

Submitted by
Florence County
South Carolina
May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

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EXECUTIVE SUMMARY

Florence County hereby presents its application for assistance to the South Carolina Transportation Infrastructure Bank for the improvement and upgrade of vital road corridors in the county. This project is called the Florence County Forward Project because these improvements are needed in order for Florence County to go forward and serve its citizens and the citizens of the surrounding counties. These projects were chosen because without these improvements, the well-being and safety of citizens of Florence County may be jeopardized and necessary economic growth in the southern portion of the county will not occur.

Due to the fact that Florence County serves as the “hub” of the Pee Dee Region, which includes eight surrounding counties, not only are the citizens of Florence County’s lives impacted by these improvements, it is likely that automobile injury and death counts will continue to rise and the economic growth of Florence County could be stagnated.

Florence County is requesting financial assistance in the form of a “grant” for the improvements and upgrade of five major roads in Florence County. It asks the State Infrastructure Bank to finance \$280,000,000 for these projects to be completed by the South Carolina Department of Transportation. Project funding will include a local contribution of \$139,910,000, the majority of which is to be raised through a seven-year one percent local sales tax, subject to Florence County voters’ approval of a referendum to be held in November 2006. The remaining local funds are to be provided through a \$3,000,000 federal grant and \$110,000 contribution by Florence County. Though a capital project sales tax referendum regarding road improvements was defeated previously (November 1998), we believe that the large growth in population in Florence County that has occurred since that referendum was held has heightened citizens awareness of the much needed infrastructure improvements. We also believe that the requisite forthcoming referendum for \$136,800,000 will be approved-assuming that the SIB grants its approval of this financial assistance application.

Funding of the Florence County Forward Project is contemplated as follows:

<u>Source of Funds</u>	<u>Amount</u>	<u>Percentage</u>
State Infrastructure Bank	\$280,000,000	66%
Local Contribution	<u>\$139,910,000</u>	<u>34%</u>
Total Project	<u>\$419,910,000</u>	<u>100%</u>

We respectfully submit our request for financial assistance from the State Infrastructure Bank by way of this application.

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Florence County Forward Project Application for Financial Assistance

Florence County is submitting an application for financial assistance to aid in the construction and upgrade of transportation facilities in order to promote economic development, to alleviate congestion, and ensure the public safety of its citizens as well as other motorists traveling through Florence County. This project is called the Florence County Forward Project.

Overview of the Project

Florence County is the hub of the Pee Dee Region area that includes eight surrounding counties. The total current population of the surrounding 50-mile radius is approximately 660,000 people. Florence County is served by Interstate Highways I-20 and I-95. In addition, there are four major U.S. Highways traversing Florence County. Florence County also serves as a thoroughfare for traffic coming south on I-95 heading to Myrtle Beach, as well as traffic flowing from the west on Interstate I-20 to Myrtle Beach.

To realize our potential to capitalize on the area's continuing rapid growth and economic development will require a heavy investment in and commitment to the area transportation infrastructure. If we don't make the investment in this area's infrastructure, growth will most certainly go to the areas north of South Carolina on I-95.

The Florence County Forward Project will provide multiple public benefits and economic development opportunities to not only Florence County, but also to Marion County, Dillon County, and Williamsburg County. These counties are experiencing the lowest median household income, highest unemployment rates, and greatest loss of existing industries of any other counties in the state. The project will achieve these benefits by:

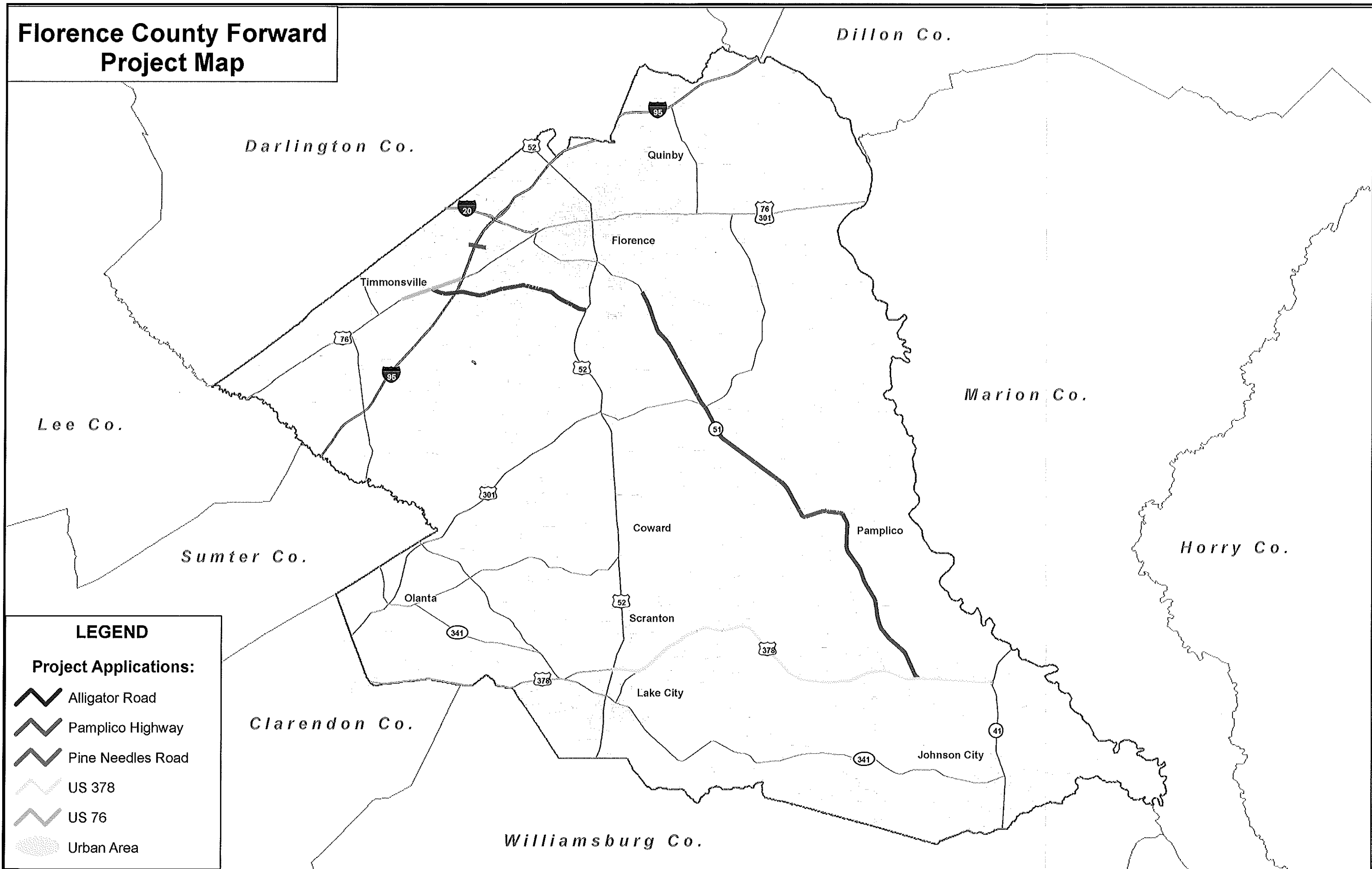
- A) Widening South Carolina 51, Pamplico Highway, from Claussen Road to US 378 in Kingsburg. This corridor is currently a two-lane road of approximately 23 miles. The widening would serve to improve access to southeastern

Florence County, particularly Pamplico, Johnsonville, and Hemingway. The southern area of Florence County is a rural, low-income area which has predominately relied on agriculture for its livelihood and is in dire need of new industries. In order to promote economic development in this area, the existing two-lane road needs to be widened to provide adequate means of transportation from the interstates to the southeastern area of the county. Florence County has developed a new commerce park in Johnsonville in an effort to attract new industries. To make this commerce park a more viable option for industry, the infrastructure from the northern portion of the county must be improved.

According to Wilbur Smith Associates' existing link capacity analysis that was conducted along this corridor, the data shows that the corridor is nearing capacity condition. This corridor can support only a slight increase in peak time traffic flow before the level of service equals that of a congested roadway. In 2003, there were 123 accidents along the corridor with 49 of the accidents resulting in injuries. By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents along the Pamplico Highway corridor would be 167 accidents by the year 2025.

- B) Completion of the 301 By-Pass from US 76 near Timmonsville to the intersection of US 52/301 and Howe Springs Road. Florence County serves as a thoroughfare for traffic coming south on I-95 heading to Myrtle Beach, as well as traffic flowing from the east on Interstate I-20 to Myrtle Beach. Due to the heavy traffic volumes in Florence County, the 301 By-Pass has been under construction. To date, Phase One of the project has been completed and Phase Two is currently under construction. The third phase is the most expensive as it entails the largest distance of roadway. Upon completion, this by-pass will provide an alternative route from I-95 around the city limits of Florence for those tourists traveling to Myrtle Beach. This alternative route

Florence County Forward Project Map



Project Description

The following elements make up the Florence County Forward Project. These improvements are shown in detail on the attached project map.

- 1. South Carolina 51- Pamplico Highway- widen to four lanes from Claussen Road to US 378 near Kingsburg.**

Estimated Cost: \$ 193,000,000

Distance: 23 miles.

- Widening road increases access to southeastern Florence County and economically disadvantaged areas such as Pamplico and Johnsonville.
- The corridor is currently operating at near capacity conditions and traffic forecasts indicate the corridor will soon reach a level of service that equals a congested roadway.
- Reduce the high rate of accidents in and around the town of Pamplico.
- Provides a better and more efficient means of transportation to the Johnsonville Commerce Park that will aid in recruiting industry to these economically disadvantaged areas.

- 2. Completion of the 301 By Pass via the widening of an existing thoroughfare-Alligator Road from US 76 near Timmons ville to the intersection of US 52/301 and Howe Springs Road.**

Estimated Cost: \$180,000,000

Distance: 7.5 miles.

- Provides a vital connection for tourists traveling to Myrtle Beach via I-95 South.
- Phase One of the By-Pass is complete and Phase Two is currently under construction.

- This alternative route would assist in alleviating congestion on existing four lane roads.

3. US 76 – Palmetto Street – widen to four lanes from the I-95 Interchange to Main Street in Timmons ville.

Estimated Cost: \$ 50,000,000

Distance: 3.5 miles.

- Widening the road increases safety, lessens delays, and improves flow of traffic on a thoroughfare that is operating at near capacity.
- The accident rates along this corridor exceed the state rate for total accidents along primary roadways.
- A large number of developments are proposed along this roadway that will only help deteriorate the conditions of the existing roadway.

4. US 378 widening from US 52 near Lake City to SC 41 in Kingsburg.

Estimated Cost: \$150,000,000

Distance: 19.2 miles.

- This roadway serves as an important commercial route between the Grand Strand and cities further along its alignment such as Sumter and Columbia.
- This route serves as an evacuation route from the Grand Strand area, designated as part of the Governor’s Disaster Evacuation Plan.

5. Pine Needles Road from South Ebenezer Road to Southborough Road.

Estimated Cost: \$ 10,000,000

Distance: 0.8 miles.

- The existing two-lane roadway serves as the only entrance into a densely populated suburban area. This area is one of the fastest growing areas in Florence County.
- There are large areas of undeveloped land that remain with a roadway that is operating at capacity.
- The roadway crosses over I-95 via an overpass that creates a problem for emergency response vehicles to access this area during peak hours of traffic.

Public Benefits

The Florence County Forward Project is essential to the future economic development of the most rural area remaining in the county, as well as being absolutely necessary for the safety and security of all Florence County residents and persons who are traveling through the county for work and recreation. Florence County serves as the economic, medical and commercial center of the Pee Dee. There are three relatively new industrial parks in the county, which County Council and the economic development partnership are promoting to encourage new job growth and subsequently increase the quality of life for all residents of the county. In order to capitalize on these opportunities and to better serve residents traveling to these parks and other destinations in and throughout Florence County, it is imperative that these projects come to fruition.

The 301 By-Pass was identified as a priority project by the South Carolina Department of Transportation in the Statewide Transportation Improvement Plan (STIP). The projects identified in the STIP are funded by earmarked federal and state highway funds. The funding has not become available to complete the 301 By-Pass and Florence County recognizes the importance of this project for the area. Currently the section of road called Alligator Road, stretches 7.5 miles from US Highway 52 (US 52) to US Highway 76 (US 76). This road is slated to connect with Freedom Boulevard completing the connection to US 76 on the east side of Florence County. As the deficiency study points out, Alligator

Road currently has two links at a Level of Service (LOS) rating of E. Additionally, residential development is occurring at a rapid pace along this corridor with five new subdivisions already in the planning stages. With this new growth, it can be expected that the LOS will decrease to an LOS of F in the foreseeable future. When completed, this corridor will not only serve as a major east-west connector for Florence County, but will also alleviate truck traffic in and through the City of Florence.

Northern Florence County has traditionally been the area of choice for industry to locate. Proximity to I-20 and I-95, suitable land, and existing infrastructure foster this type of activity. As a result, southern Florence County has not typically developed in this fashion, as this has historically been an agricultural area with little industry. To bolster industrial activity in this area, Florence County has recently developed the Johnsonville Commerce Park. Plans to construct a spec building have been formulated to generate interest from prospects in locating in this area of the county. The remaining obstacle is the improvement of the primary corridor connecting the Johnsonville area to the northern portion of the county, which is South Carolina Highway 51 (SC 51). The improvement would consist of widening a 23-mile stretch of highway from Kingsburg to the intersection of Claussen Road and connecting with the 301 By-Pass. As depicted in the future link capacity analysis, the condition of the road is expected to reach levels of D – F by the year 2025. In order to correct this deficiency and stimulate industrial opportunity in southern Florence County, it will be imperative to undertake this project.

The Pine Needles Road Project is significant to the West Florence area of the county as this corridor provides the only access into a heavily populated suburban area. The corridor is a two-lane, suburban arterial roadway including a bridge over I-95. During peak traffic hours, emergency management response times are severely reduced to the citizens of that area. Existing link capacity analysis shows that the corridor is at capacity with an LOS of E. This status will deteriorate further with new development and be at capacity for the foreseeable future. Again, the primary concern is access to this large residential area by emergency response vehicles. The West Florence Concerned Citizens Group realized the impending threat to life and property and appeared before Florence

County Council to request that a moratorium be placed on the area for new construction until the concerns regarding inadequate infrastructure have been addressed. An added benefit would be reduced travel times for workers and students during peak hour traffic.

US 76 west from I-95 to Main Street in Timmons ville is a two-lane 3.5 mile corridor that serves as the primary route for workers commuting into Florence from Timmons ville and other portions of western Florence County. Link capacity analysis illustrates a current LOS of D for both segments of the project and a projected LOS of E by the year 2025. A major benefit of this project is increased safety through quicker travel times for emergency vehicles to medical centers.

US Highway 378 (US 378) is a major route through southern Florence County connecting the Town of Olanta to Lake City and the City of Johnsonville. US 378 also has direct access to I-95 and serves as an alternate route west to Columbia and other western portions of the state. The project corridor is a 19.2-mile stretch of US 378 that is a two-lane rural artery. From its eastern border, US 378 is a four-lane corridor to Horry County. Additionally, from the western border of the project corridor to Columbia, US 378 is also a four-lane facility. The importance of this segment of US 378 is that it is the only two-lane stretch of road along a major hurricane evacuation route designated by the SC Hurricane Plan developed in June of 2004. A secondary factor of importance for this segment of road is its economic feature. In addition to the industrial park developed in the City of Johnsonville, a similar park has been developed in the City of Lake City and the Town of Hemingway. To promote the ideals of “Economic Gardening” for businesses in both of these parks, thereby allowing these businesses to take advantage of certain economies of scale and to allow complementary businesses to support one another, this project will greatly enhance truck traffic while maintaining a desired level of service.

While the current 19.2 mile stretch of highway is predominately a two-lane rural artery surrounded by mainly residential and agricultural uses, the expansion of this portion of US Highway 378 could potentially provide improved trucking and commercial access

from I-95 to the Johnsonville and Kingsburg area. With the recent completion of the Johnsonville Commerce Center, the improved route will certainly accommodate a larger volume of truck traffic with less restriction, helping to market and develop this state certified industrial and commercial business park. The beneficiaries would also include Wellman, Inc., a large plastic resin manufacturer located in Johnsonville, which has a tremendous amount of trucks in and out of its facility each day. By improving the logistical access, the Florence County Economic Development Partnership will be able to alleviate concerns of prospective industry and business looking to locate in the Johnsonville and Kingsburg area. These concerns have typically been centered on logistics and accessibility to this region which is difficult because of the current highway condition.

In the Lake City area, the improvements will enhance the area near the Godley-Morris Industrial Center and the Lake City Industrial Park. The County currently has a 50,000 square foot speculative building for sale in the park and improved traffic patterns will only increase its marketability.

In addition to the increased potential for commercial and industrial business activity that may arise from these improvements, the tourism industry could also witness increased benefits. By making the southern region of Florence County more accessible to traffic, the natural resources such as the Lynches River and Great Pee Dee River could see increased nature-based tourists utilizing these great natural assets. Agri-tourism may also increase with these improvements by allowing increased traffic access through the region.

A quick look at all five projects proposed in this application demonstrates the desire of Florence County to enhance the safety and mobility of its residents as well as those passing through the county. Whether it is workers and students commuting to and from work and school, residents traveling for recreation or dining purposes, or those less fortunate travelers forced to evacuate the coastal area, these projects serve to facilitate ease of vehicular movement in and through Florence County. Notice also that four of the five projects serve to extend the economic lifeblood of I-20 and I-95 from northern Florence County south and west into the more rural and economically disadvantaged

areas of the county. The fifth project, as well as the other four, decreases the risk of loss to life and property by increasing the LOS for the projected future. The public benefit of these projects is immeasurable to Florence County and its residents.

Financial Plan

Amount of Local Contribution

It is anticipated that Florence County voters will approve a 1% capital project sales tax referendum in November 2006. Pursuant to state law, collections of that sales tax will begin in May 2007, with these funds becoming available from the S.C. Department of Revenue in July 2007. It is currently planned that all tax revenues will, as collected, be placed in a separate fund of Florence County and will be withdrawn as needed for the project.

Florence County has had in place a 1% local option sales tax in excess of ten years. This sales tax will generate an estimated \$17,400,000 in Florence County during the fiscal year ended June 30, 2005 (FY05). This tax has increased by at least 2% each year for the past three years. Therefore, in the first year of collection of the capital project sales tax (FY08), it is estimated that \$18,400,000 will be collected. As this amount increases by 2% each year, the total collections over a seven-year period will be approximately \$136,800,000.

In addition, a federal grant is being obtained in the amount of \$3,000,000 to fund a portion of the Pine Needles Road project.

Finally, Florence County has already expended \$110,000 toward this project in the form of traffic studies to determine the current and future needs of the proposed project.

Capital Project Sales Tax	\$136,800,000
Federal Grant	3,000,000
Florence County contribution	<u>110,000</u>
Total local contribution	<u>\$139,910,000</u>

Total Cost of Project

Based on estimates provided by the SCDOT, the total cost of the Florence County project is as follows:

Completion of US301 Bypass	\$180,000,000
SC51 Widening from Florence to US378	193,000,000
US76 Widening from I-95 to Timmonsville	50,000,000
Pine Needles Road widening from Southborough Road to Ebenezer Road	10,000,000
US378 widening from Lake City to Horry County line	<u>150,000,000</u>
Total cost of project	<u>\$583,000,000</u>

Amount of Assistance Requested

The amount of assistance requested from the State Infrastructure Bank is \$280,000,000. This would mean that the Bank would match every local dollar raised for this project with two dollars of state funds.

Local contribution	\$139,910,000	33.3%
State Infrastructure Bank	<u>280,000,000</u>	<u>66.7%</u>
Total	<u>\$419,910,000</u>	<u>100.0%</u>

This total funding is less than the total project cost. After this application is approved, Florence County will prioritize the portions of the project based on traffic flow needs and safety and fund them accordingly.

Type of Assistance Requested

Florence County requests that the funding from the State Infrastructure Bank be in the form of a grant rather than a loan. The roads enumerated in the project are all state roads that would be widened by the SCDOT sometime in the future. With the anticipated passage of the 1% capital project sales tax, one-third of the cost of this project will be funded by Florence County taxpayers and, as a result, will not have to be borne by the state.

Other Proposed Sources of Funds

Two items that were originally to be included in this project – SC41 widening from S-99 to US378 and the I-95/SC327 interchange – are currently under construction and have been funded by a combination of federal and state grants. Therefore these projects are not included in this application.

Florence County will continue to seek for additional federal funding for portions of this project. In addition, it is anticipated that some of the rights of way to be acquired as a part of this project will be donated by the property owners.

Anticipated Schedule of When Disbursement of Funds will be Required

A simplified cash flow analysis, reflecting a monthly input of cash from each of the three funding sources against projected expenditures, is presented in Appendix A.

In preparing this analysis, the following assumptions have been made:

- 1.) Engineering costs will be approximately 10% of the cost of the project and it is anticipated that the engineering of the project will take twelve months to be completed. These costs will begin at the project inception, which is currently scheduled for July 2007, when the capital project sales tax becomes available for expenditure.
- 2.) Acquisition of rights of way is anticipated to take approximately eighteen months and is scheduled to begin six months into the project. Based on information received from SCDOT, the estimate for acquisition of rights of way is approximately \$450,000 per mile, or a total of \$24,300,000.
- 3.) Construction will begin on or around July 2009 after the engineering has been completed and after the necessary rights of way have been acquired. It is anticipated that construction will take the remaining five years of this project life.
- 4.) Local and federal funds will be expended first, prior to any expenditure of funding received from the State Infrastructure Bank.

Schedule of Project Revenues for Loan Payments

Florence County does not anticipate the need to issue any form of bonds to finance the costs associated with this project. However, if the funding from the State Infrastructure Bank is not available as illustrated in the cash flow diagram, Florence County will consider the issuance of grant anticipation revenue bonds. It should be noted; however, that, if it becomes necessary to issue these bonds, interest costs will be incurred which will reduce the funding available for this project.

Useful Life of the Project

The useful life of the project is expected to exceed 20 years as determined by future level of service analyses and standard engineering design practices.

Cost Provisions for Future Resurfacing

Florence County currently collects a \$30 road system maintenance fee on each vehicle in the county. A portion of the proceeds of this fee is used on an annual basis to resurface the secondary roads in the County. When resurfacing of the roads in this project becomes necessary, a portion of this funding could also be used to resurface these roads. The fact that Florence County is using road system maintenance fee funds to resurface secondary roads and could use these funds to resurface the roads in this project should ensure that adequate state funding is available for resurfacing this facility on a standard schedule. Resurfacing of the roads in this project is expected to fall within the standard 15-20 years.

Project Approach

The following is the estimated time frame for the completion of the project, assuming funding would be available on July 1, 2007:

<u>Event</u>	<u>Duration</u>	<u>Completion</u>
Engineering	12 months	June 2008
Right-of-Way Acquisition	18 months	June 2009
Construction	60 months	June 2014

Project Activity and Responsibilities

The project activities and responsibilities for each element of the roadway project are shown on separate attached diagrams in Appendix B. The major activities are as listed above:

- Project Engineering
- Project Right-of-Way Acquisition
- Project Construction

These major activities are color-coded in conjunction with the cash flow diagram, shown earlier as an attachment. In addition, the charts specify financing responsibility for each phase, as well as major administrative activities, such as:

- Alignments
- Environmental Studies
- Project Design
- Right-of-Way Plan
- Bidding Process
- Construction Management and Inspection
- Operation
- Maintenance
- Marketing

APPENDIX A

FLORENCE COUNTY STATE INFRASTRUCTURE BANK APPLICATION CASH FLOW DIAGRAM

Jul-07 Aug-07 Sep-07 Oct-07 Nov-07 Dec-07 Jan-08 Feb-08 Mar-08 Apr-08 May-08 Jun-08 Jul-08 Aug-08 Sep-08

TIMELINE OF PROJECT EXPENDITURES

Engineering														
Rights-of-Way Acquisition														
Construction														

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax														
Federal Grant														
State Infrastructure Bank														

CASH FLOW OF EXPENDITURES (000's)

Engineering	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498
Rights-of-Way Acquisition														
Construction														
Total	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,534	\$1,564
Federal Grant	\$1,000	\$1,000	\$1,000											
State Infrastructure Bank	\$ 965	\$ 965	\$ 965	\$1,965	\$1,965	\$1,965	\$2,887	\$2,887	\$2,887	\$2,887	\$2,887	\$2,887	\$2,887	\$ (0)
Total	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$3,498	\$4,420	\$4,420	\$4,420	\$4,420	\$4,420	\$4,420	\$4,420	\$1,564

**FLORENCE COUNTY
STATE INFRASTRUCTURE BANK APPLICATION
CASH FLOW DIAGRAM**

Oct-08 Nov-08 Dec-08 Jan-09 Feb-09 Mar-09 Apr-09 May-09 Jun-09 Jul-09 Aug-09 Sep-09 Oct-09 Nov-09 Dec-09

TIMELINE OF PROJECT EXPENDITURES

Engineering														
Rights-of-Way Acquisition														
Construction														

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax														
Federal Grant														
State Infrastructure Bank														

CASH FLOW OF EXPENDITURES (000's)

Engineering														
Rights-of-Way Acquisition														
Construction														
Total														

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax														
Federal Grant														
State Infrastructure Bank														
Total														

**FLORENCE COUNTY
STATE INFRASTRUCTURE BANK APPLICATION
CASH FLOW DIAGRAM**

Jan-10 Feb-10 Mar-10 Apr-10 May-10 Jun-10 Jul-10 Aug-10 Sep-10 Oct-10 Nov-10 Dec-10 Jan-11 Feb-11 Mar-11

TIMELINE OF PROJECT EXPENDITURES

Engineering
Rights-of-Way Acquisition
Construction

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank

CASH FLOW OF EXPENDITURES (000's)

Engineering
Rights-of-Way Acquisition
Construction
Total

\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892
\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank
Total

\$1,595 \$1,595 \$1,595 \$1,595 \$1,595 \$1,595 \$1,627 \$1,627 \$1,627 \$1,627 \$1,627 \$1,627 \$1,627 \$1,627 \$1,627
\$4,297 \$4,297 \$4,297 \$4,297 \$4,297 \$4,297 \$4,265 \$4,265 \$4,265 \$4,265 \$4,265 \$4,265 \$4,265 \$4,265 \$4,265
\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892

**FLORENCE COUNTY
STATE INFRASTRUCTURE BANK APPLICATION
CASH FLOW DIAGRAM**

Apr-11 May-11 Jun-11 Jul-11 Aug-11 Sep-11 Oct-11 Nov-11 Dec-11 Jan-12 Feb-12 Mar-12 Apr-12 May-12 Jun-12

TIMELINE OF PROJECT EXPENDITURES

Engineering
Rights-of-Way Acquisition
Construction

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank

CASH FLOW OF EXPENDITURES (000's)

Engineering
Rights-of-Way Acquisition
Construction
Total

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank
Total

\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892
\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892
\$1,627	\$1,627	\$1,627	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660	\$1,660
\$4,265	\$4,265	\$4,265	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232	\$4,232
\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892	\$5,892

FLORENCE COUNTY STATE INFRASTRUCTURE BANK APPLICATION CASH FLOW DIAGRAM

Jul-12 Aug-12 Sep-12 Oct-12 Nov-12 Dec-12 Jan-13 Feb-13 Mar-13 Apr-13 May-13 Jun-13 Jul-13 Aug-13 Sep-13

TIMELINE OF PROJECT EXPENDITURES

Engineering
Rights-of-Way Acquisition
Construction

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank

CASH FLOW OF EXPENDITURES (000's)

Engineering
Rights-of-Way Acquisition
Construction
Total

\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank
Total

\$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,693 \$1,727 \$1,727 \$1,727

\$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,199 \$4,165 \$4,165 \$4,165

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**FLORENCE COUNTY
STATE INFRASTRUCTURE BANK APPLICATION
CASH FLOW DIAGRAM**

Oct-13 Nov-13 Dec-13 Jan-14 Feb-14 Mar-14 Apr-14 May-14 Jun-14

TIMELINE OF PROJECT EXPENDITURES

Engineering
Rights-of-Way Acquisition
Construction

TIMELINE OF PROJECT REVENUES

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank

CASH FLOW OF EXPENDITURES (000's)

Engineering
Rights-of-Way Acquisition
Construction
Total

\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892
\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892

CASH FLOW OF REVENUES (000's)

Capital Project Sales Tax
Federal Grant
State Infrastructure Bank
Total

\$1,727 \$1,727 \$1,727 \$1,727 \$1,727 \$1,727 \$1,727 \$1,727 \$1,727
\$4,165 \$4,165 \$4,165 \$4,165 \$4,165 \$4,165 \$4,165 \$4,165 \$4,165
\$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892 \$5,892

APPENDIX B

SC 51 Widening Project

Project Engineering
Begin-July 2007
End-June 2008




Proposed Project Responsibilities	
Agency to Finance	SIB & Capital Project Sales Tax
Agency to Administer...	
* Determine Alignments	South Carolina DOT & Florence County
* Environmental Studies	South Carolina DOT
* Project Design	South Carolina DOT
* Right-of-Way Plan	South Carolina DOT
* Bidding Process	South Carolina DOT
* Construction Management	South Carolina DOT
* Operation	South Carolina DOT
* Maintenance	South Carolina DOT
* Marketing	South Carolina DOT & Florence County

Project Construction
Begin-July 2009
End-June 2014




Project Right-of-Way Acquisition
Begin - January 2008
End - June 2009




Completion of 301 By-Pass

Project Engineering
Begin-July 2007
End-June 2008




Proposed Project Responsibilities	
Agency to Finance	SIB & Capital Project Sales Tax
Agency to Administer...	
* Determine Alignments	South Carolina DOT & Florence County
* Environmental Studies	South Carolina DOT
* Project Design	South Carolina DOT
* Right-of-Way Plan	South Carolina DOT
* Bidding Process	South Carolina DOT
* Construction Management	South Carolina DOT
* Operation	South Carolina DOT
* Maintenance	South Carolina DOT
* Marketing	South Carolina DOT & Florence County

Project Construction
Begin-July 2009
End-June 2014



Project Right-of-Way Acquisition
Begin - January 2008
End - June 2009



US 76 - Palmetto St widening

Project Engineering
Begin-July 2007
End-June 2008




Proposed Project Responsibilities	
Agency to Finance	SIB & Capital Project Sales Tax
Agency to Administer...	
* Determine Alignments	South Carolina DOT & Florence County
* Environmental Studies	South Carolina DOT
* Project Design	South Carolina DOT
* Right-of-Way Plan	South Carolina DOT
* Bidding Process	South Carolina DOT
* Construction Management	South Carolina DOT
* Operation	South Carolina DOT
* Maintenance	South Carolina DOT
* Marketing	South Carolina DOT & Florence County

Project Construction
Begin-July 2009
End-June 2014




Project Right-of-Way Acquisition
Begin - January 2008
End - June 2009



US 378 widening

Project Engineering
Begin-July 2007
End-June 2008




Proposed Project Responsibilities	
Agency to Finance	SIB & Capital Project Sales Tax
Agency to Administer...	
* Determine Alignments	South Carolina DOT & Florence County
* Environmental Studies	South Carolina DOT
* Project Design	South Carolina DOT
* Right-of-Way Plan	South Carolina DOT
* Bidding Process	South Carolina DOT
* Construction Management	South Carolina DOT
* Operation	South Carolina DOT
* Maintenance	South Carolina DOT
* Marketing	South Carolina DOT & Florence County

Project Construction
Begin-July 2009
End-June 2014



Project Right-of-Way Acquisition
Begin - January 2008
End - June 2009



Pine Needles Road widening

Proposed Project Responsibilities

Agency to Finance	SIB, Federal Grant & Capital Project Sales
Agency to Administer...	Tax
* Determine Alignments	South Carolina DOT & Florence County**
* Environmental Studies	South Carolina DOT**
* Project Design	South Carolina DOT **
* Right-of-Way Plan	South Carolina DOT
* Bidding Process	South Carolina DOT
* Construction Management	South Carolina DOT
* Operation	South Carolina DOT
* Maintenance	South Carolina DOT
* Marketing	South Carolina DOT & Florence County

Project Engineering

Begin-May 2005

End-June 2006



Project Construction

Begin-July 2009

End-June 2014



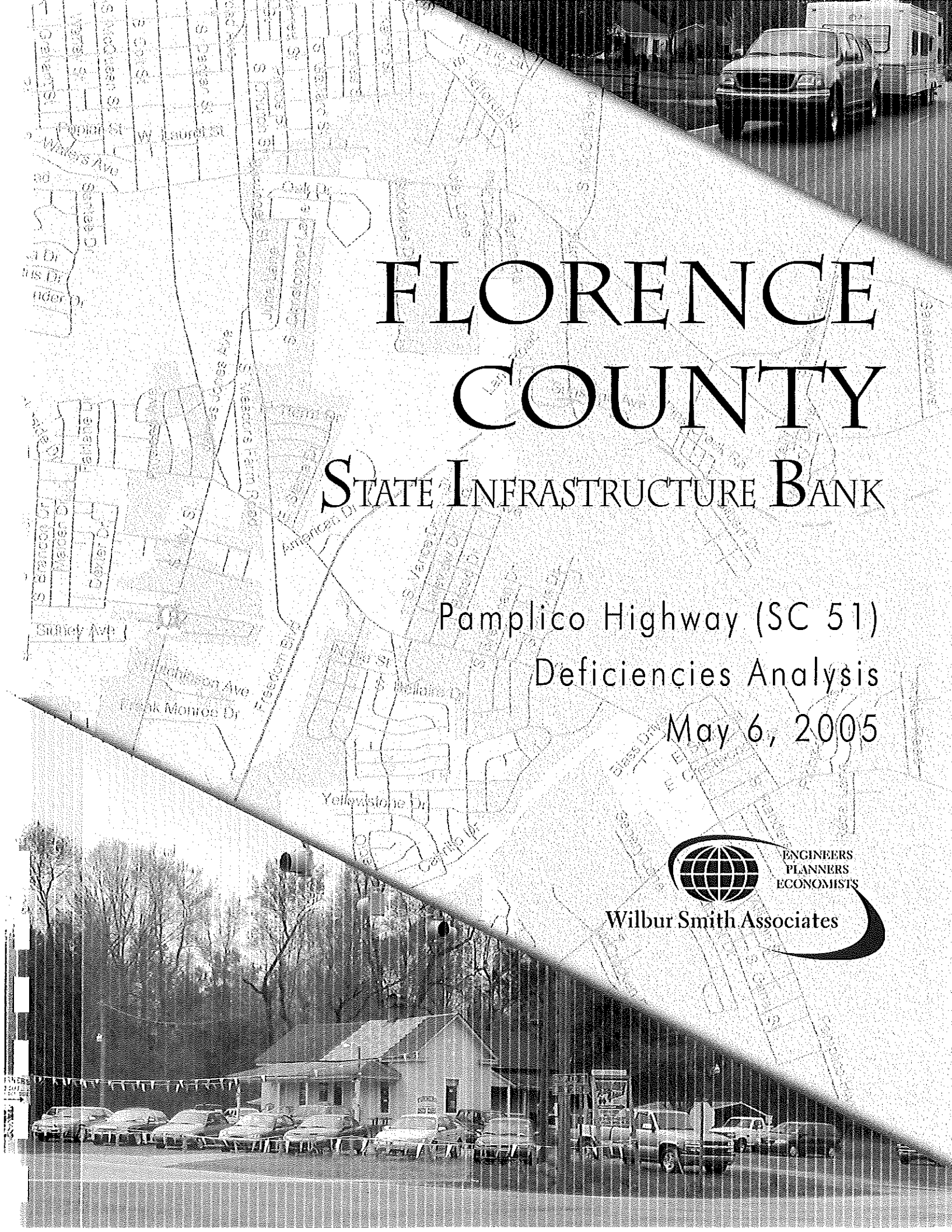
Project Right-of-Way Acquisition

Begin - January 2008

End - June 2009



** (FLATS funded)



FLORENCE COUNTY STATE INFRASTRUCTURE BANK

Pamplico Highway (SC 51)

Deficiencies Analysis

May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

Pamplico Highway (SC 51) Deficiencies Analysis

Section 1: Project Overview

Pamplico Highway (SC 51) is located in eastern Florence County and connects Florence to Pamplico, Kingsburg, Johnsonville, and Hemingway and eventually terminates in Georgetown. The limits of the Pamplico Highway Deficiencies Analysis is the portion of the roadway between the intersections at Claussen Road in Florence and at US 378 near Kingsburg, which is a length of approximately 23 miles (**Figure 1**). The widening of Pamplico Highway would serve to improve access to southeastern Florence County, particularly Pamplico and Johnsonville, and the other aforementioned cities further along the roadway. Development along the roadway primarily consists of agricultural uses with a mixture of low-density residential and commercial nodes at Willow Springs Road and SC 327 as well as the towns of Hyman and Pamplico.

Purpose

The purpose of this analysis is to:

- Identify the existing and projected operational characteristics with respect to capacity and safety along the Pamplico Highway corridor.
- Assess current development patterns, and locations of resulting traffic problems, along the Pamplico Highway corridor.
- Assess how future population growth and land development will affect traffic conditions along an unimproved Pamplico Highway.

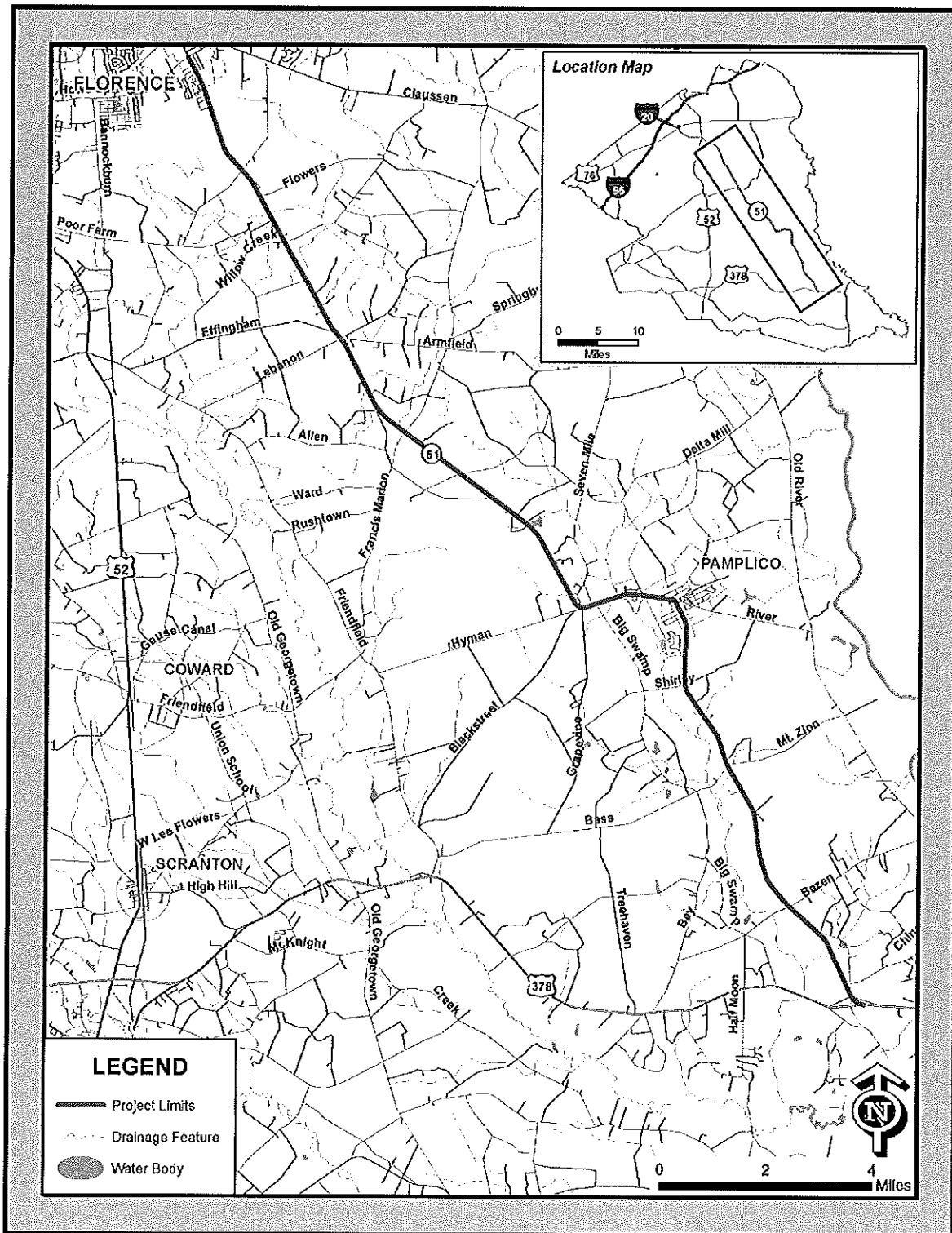
Report Outline

This report is outlined as follows:

- Section 2 provides an overview of the general characteristics of the corridor, including posted speeds, average volumes, and physical conditions and geometrics.
- Section 3 discusses the existing congestion levels for both intersections and link segments along the corridor.
- Section 4 provides an analysis of the existing development patterns along the corridor and future development patterns based on the Florence County Comprehensive Plan and recent development trends.
- Section 5 provides an analysis of the future congestion levels along the corridor based on transportation models developed by the South Carolina Department of Transportation (SCDOT), future land use plans, and recent development trends.
- Section 6 provides an analysis of the safety conditions along the corridor and a projected number of accidents that would occur given these conditions in 2025.
- Section 7 provides an overall summary of the findings within this analysis.

Pamplico Highway (SC 51) Deficiencies Analysis

Figure 1. Pamplico Highway Analysis Corridor



Section 2: Existing Physical Conditions and Geometrics

Existing Road and Surroundings

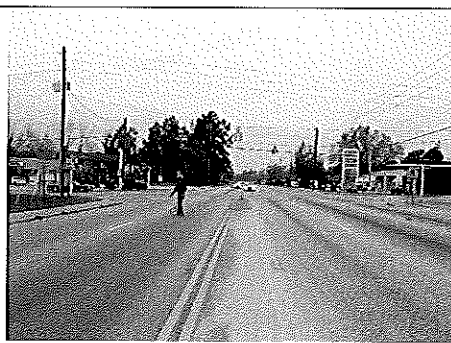
Pamplico Highway is primarily a north-south two-lane roadway, which provides access from US 378 to Pamplico and US 52 to the north. The roadway is under the jurisdiction of the SCDOT and has a posted speed limit of 55 miles per hour through most of the project area. A 2003 average daily traffic count provided by the SCDOT showed that Pamplico Highway was carrying traffic volumes ranging from 2,000 vehicles per day north of US 378 to 9,600 vehicles per day south of Claussen Road.

The intersections of Pamplico Highway at US 378, Bass Road, Main Street, Hyman Road, Francis Marion Road, and Planer Road are all stop-controlled, with stop signs located on the side streets. The intersection of Pamplico Highway at Claussen Road/Howe Springs Road is signalized.

The photographs below document the existing physical condition and geometrics of Pamplico Highway.



Typical roadway section of Pamplico Highway.



Northbound Pamplico Highway at Claussen Road/Howe Springs Road intersection.



Southbound Pamplico Highway at Claussen Road/Howe Springs Road intersection.

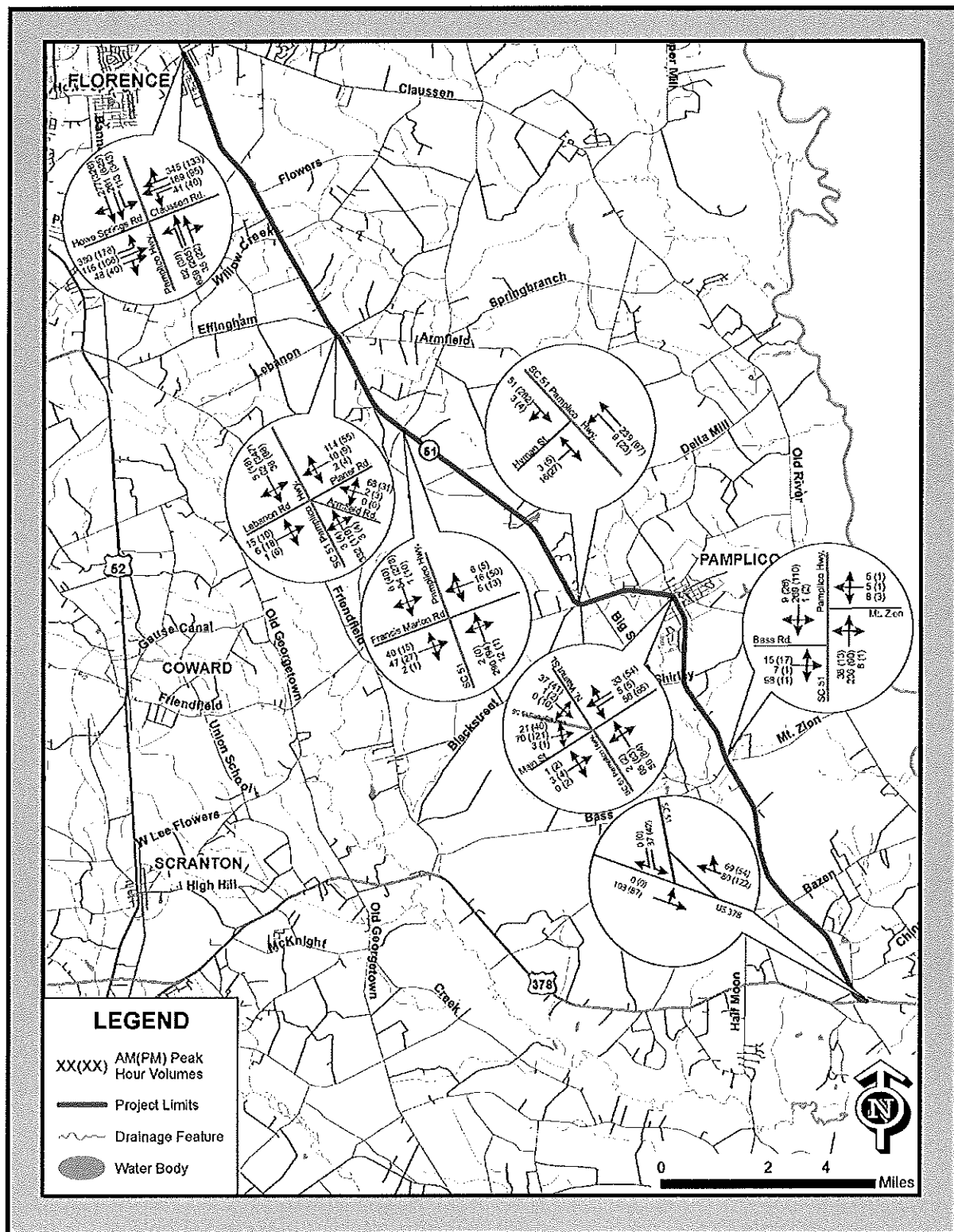
Section 3: Existing Traffic Conditions

Figures 2 illustrates the 2005 AM and PM peak hour turning movement counts at key intersections along Pamplico Highway, which include the following:

- Pamplico Highway at Claussen Road/Howe Springs Road
- Pamplico Highway at Effingham Highway/Planer Road (SC 327)
- Pamplico Highway at Francis Marion Road
- Pamplico Highway at Hyman Road
- Pamplico Highway at Main Street (Pamplico)
- Pamplico Highway at Bass Road
- Pamplico Highway at US 378

Wilbur Smith Associates

Figure 2. AM and PM Peak Hour Turning Movement Counts



Pamplico Highway (SC 51) Deficiencies Analysis

The critical intersections were analyzed according to the methodologies published in the *2000 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service.

Table 1 depicts the results of the capacity analysis of these intersections in terms of level of service. As shown, all intersections within the Pamplico Highway corridor currently operate at an acceptable level of service during peak hours. The intersection of Pamplico Highway at Claussen Road/Howe Springs Road carries a much higher volume than the other intersections in the corridor but is still operating below capacity.

Table 1
Intersection Level of Service

		2005 Existing Conditions		
<u>Significant Intersections</u>	<u>Time Period</u>	<u>VPH^a</u>	<u>LOS^b</u>	<u>Queuing Failures</u>
Pamplico Highway at Claussen Road/Howe Springs Road	AM	2,547	C	None
	PM	2,151	B	None
Pamplico Highway at Effingham Highway/Planer Road (SC 327)	AM	598	A	None
	PM	693	A	None
Pamplico Highway at Francis Marion Road	AM	481	A	None
	PM	534	A	None
Pamplico Highway at Hyman Road	AM	321	A	None
	PM	418	A	None
Pamplico Highway at Main Street (Pamplico)	AM	317	A	None
	PM	478	A	None
Pamplico Highway at Bass Road	AM	699	A	None
	PM	276	A	None
Pamplico Highway at US 378	AM	289	A	None
	PM	245	A	None
* Denotes signalized intersections				
a VPH = Vehicles-per-Hour; volume of traffic entering intersection				
b LOS = Level-of-Service				

The link capacity analysis is based on the *2000 Highway Capacity Manual* methodology for calculating arterial levels of service. This methodology is based on factors such as average speeds, percent-time following, number of lanes, and volume of traffic.

Pamplico Highway (SC 51) Deficiencies Analysis

Table 2 summarizes the results of the existing link capacity analysis along the Pamplico Highway corridor. The links within this corridor range in LOS from C to D, indicating a nearing capacity condition. This corridor can support a slight increase in peak time traffic flow before the level of service equals that of a more congested roadway.

Table 2
Existing Link Capacity Level of Service

Pamplico Highway Segment	2005 Existing Peak-Hour Traffic Volumes	
	<u>Volume</u>^a	<u>LOS</u>^b
Claussen Road/Howe Springs Road to Effingham Highway/Planer Road (SC 327)	1,126	D
Effingham Highway/Planer Road (SC 327) to Hyman Road	387	C
Hyman Road to Bass Road	535	C
Bass Road to US 378	657	D
a =Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 4: Land Use and Development Patterns

Existing Conditions

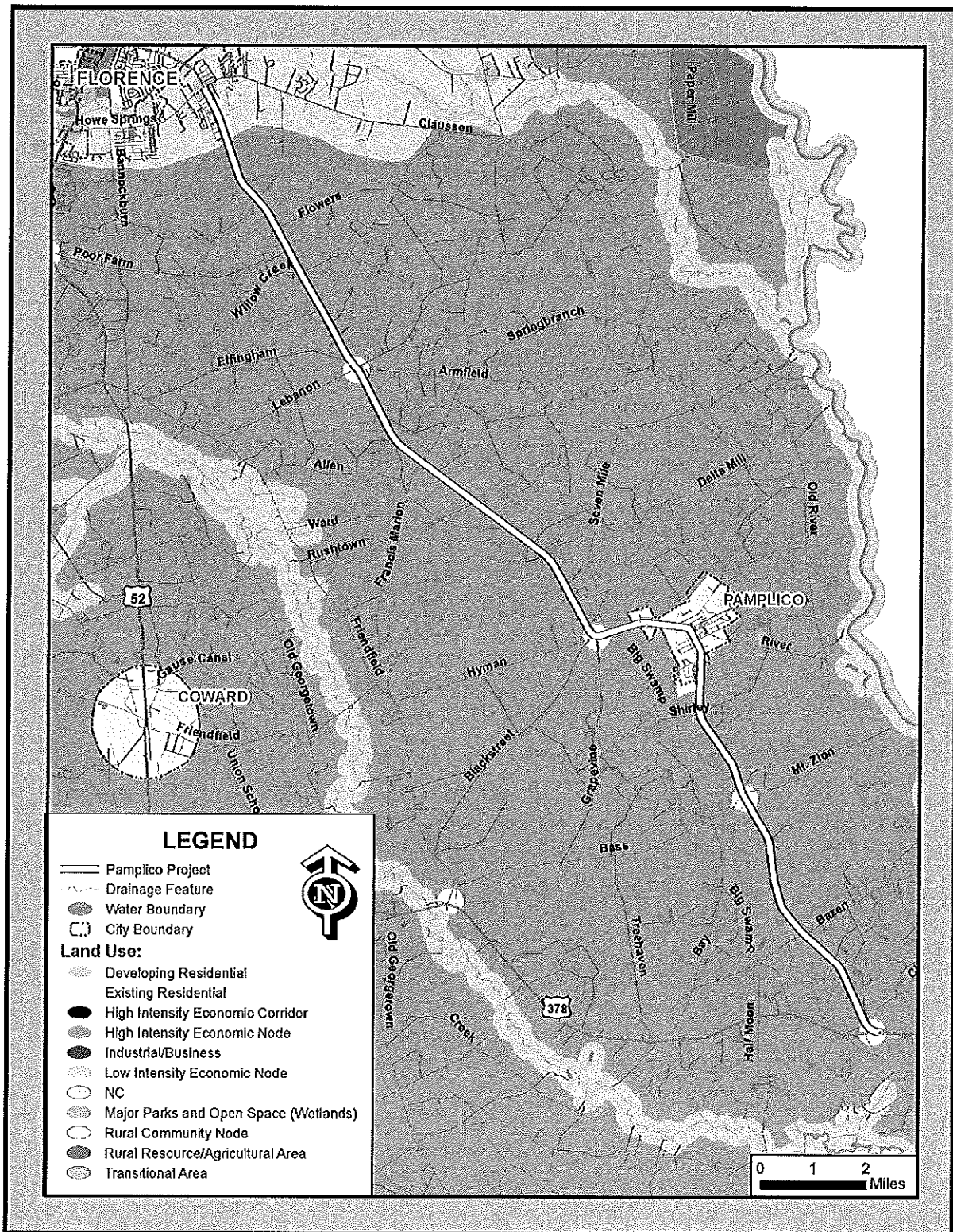
Development along Pamplico Highway from Claussen Road to US 378 primarily consists of a mixture of agricultural uses and single-family housing with commercial nodes at major intersections. Development patterns transition from suburban to rural in character along the alignment as it proceeds south from the Florence metropolitan area. Just south of Claussen Road there is a concentration of single-family housing units along with various low-intensity commercial uses. Greenwood Elementary School and a landfill entrance are also located on this portion of the roadway.

Beyond Willow Creek Road to the town of Pamplico, development primarily consists of agricultural uses with a mixture of low-density residential and commercial nodes at Willow Creek Road and SC 327 as well as the towns of Hyman and Pamplico. Within the town of Pamplico, land uses along SC 51 are a mixture of residential development, commercial uses, and a traditional central business district located at the intersection of Pamplico Highway and Main Street. Development patterns within the town are the most dense than anywhere else along the study corridor. South of the town of Pamplico to US 378, land use is almost exclusively rural with the exception of sparse single-family homes and mobile homes. The one exception is the presence of the Hannah-Pamplico Middle and High Schools located south of Bass Road.

Future Land Use and Development Patterns

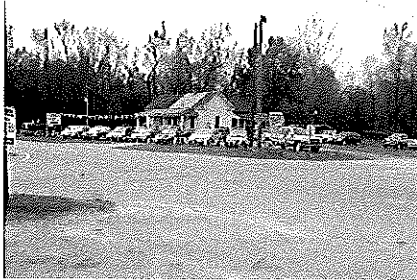
The Land Use Element of the Florence County Comprehensive Plan has designated most of the land along Pamplico Highway as Rural Resource/Agricultural Area, a designation for lands planned for agricultural and low-density residential uses (**Figure 3**). A small portion of property along the roadway in close proximity to Claussen Road is designated as Developing Residential, a designation for growing residential areas, to accommodate for future growth in the Florence metropolitan area. The Plan also identifies three Rural Community Nodes at the intersections of SC 327, Bass Road, and the town of Hyman for local commercial uses. The town of Pamplico is an incorporated municipality that is not a part of the consolidated Florence City-County Planning Commission. Therefore, there are no land use classifications assigned to properties within the town. With the exception of those areas near Claussen Road, there is minimal development planned along the Pamplico Highway Corridor through 2025.

Figure 3. Future Land Uses - Pamplico Highway Corridor

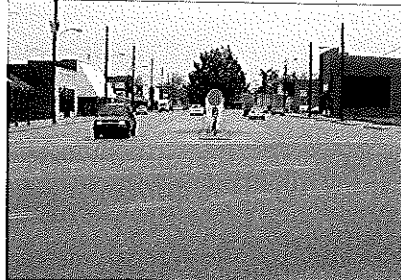


Pamplico Highway (SC 51) Deficiencies Analysis

Information from the Florence City-County Planning Commission was obtained to inventory specific development activities that have recently occurred, are planned, or are under development with the potential to impact the Pamplico Highway corridor. Pursuant to this information, there is one residential subdivision that meets any of these criteria. The 15-unit Arizona Lakes residential subdivision located near the intersection of Seven Mile Road is the only development in progress that could potentially impact the corridor. This development is projected generate up to 144 additional trips per day along the roadway.



A typical rural commercial node at the Willow Creek Road intersection.



Main Street in Pamplico is the traditional central business district within the town.



Hannah-Pamplico schools are located south of Bass Road.



The intersection of Big Swamp Road in Hyman is within a designated future Rural Commercial Node.



Existing agricultural tracts are planned to remain as agricultural properties through the year 2025.



The future land use plan for the town of Pamplico calls for maintaining small town character along Pamplico Highway.

Section 5: Future Traffic Conditions

Future traffic volumes were identified by forecasting via linear regression of current traffic volume growth along Pamplico Highway, estimation of potential future growth along the corridor, and examination of the 2025 Statewide Transportation Model developed by the SCDOT. Adjacent links, at or over capacity, and their relationship to existing traffic volumes along the Pamplico Highway Corridor were also considered. It has been determined that, despite recent development of the Arizona Estates residential subdivision, the land use model within the statewide model remains valid in forecasting 2025 traffic flows along this corridor.

As shown in **Table 3**, the forecasted conditions on Pamplico Highway suggest over-capacity travel conditions. This road is expected to pass its existing capacity on three of the four links and will likely require mitigation measures to maintain an acceptable level of service.

**Table 3
Future Link Capacity Analysis**

Pamplico Highway Segment	2025 Future Peak-Hour Traffic Volumes	
	<u>Volume^a</u>	<u>LOS^b</u>
Claussen Road/Howe Springs Road to Effingham Highway/Planer Road (SC 327)	2,059	F
Effingham Highway/Planer Road (SC 327) to Hyman Road	1,054	D
Hyman Road to Bass Road	2,186	E <i>at capacity</i>
Bass Road to US 378	1,273	E
a = Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 6: Accident Analysis

Accident data from the South Carolina Department of Public Safety for the period of January 1, 2003 through July 22, 2004 was obtained to develop accident rates for the segment of Pamplico Highway between Claussen Road and US 378. As shown in **Table 4**, there were a total of 94 accidents along this segment during this timeframe and, of these, 38 were injury accidents which involved three fatalities.

As shown in **Table 4**, the rate for total accidents and injury accidents along the Pamplico Highway corridor was approximately 123 and 49 accidents per hundred million vehicle miles, respectively. In 2003, the rate for all accidents and injury accidents for the State of South Carolina on primary roads was 239 and 74 accidents per hundred million vehicle miles, respectively. Therefore, the accident rate along Pamplico Highway was below the state rate for both total accidents and injury accidents. However, the segment from Hyman Road to Bass Road does exceed the state rates for both total accidents and injury accidents. The locations and number of total accidents, injury accidents, and fatality accidents are shown on **Figure 4**. As shown, there was a significant concentration of accidents at intersections in and around the town of Hyman - including Hyman Road, Seven Mile Road, and Big Swamp Road.

By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents along the Pamplico Highway corridor would be 167 in the year 2025.

Table 4
Accident Rate Analysis

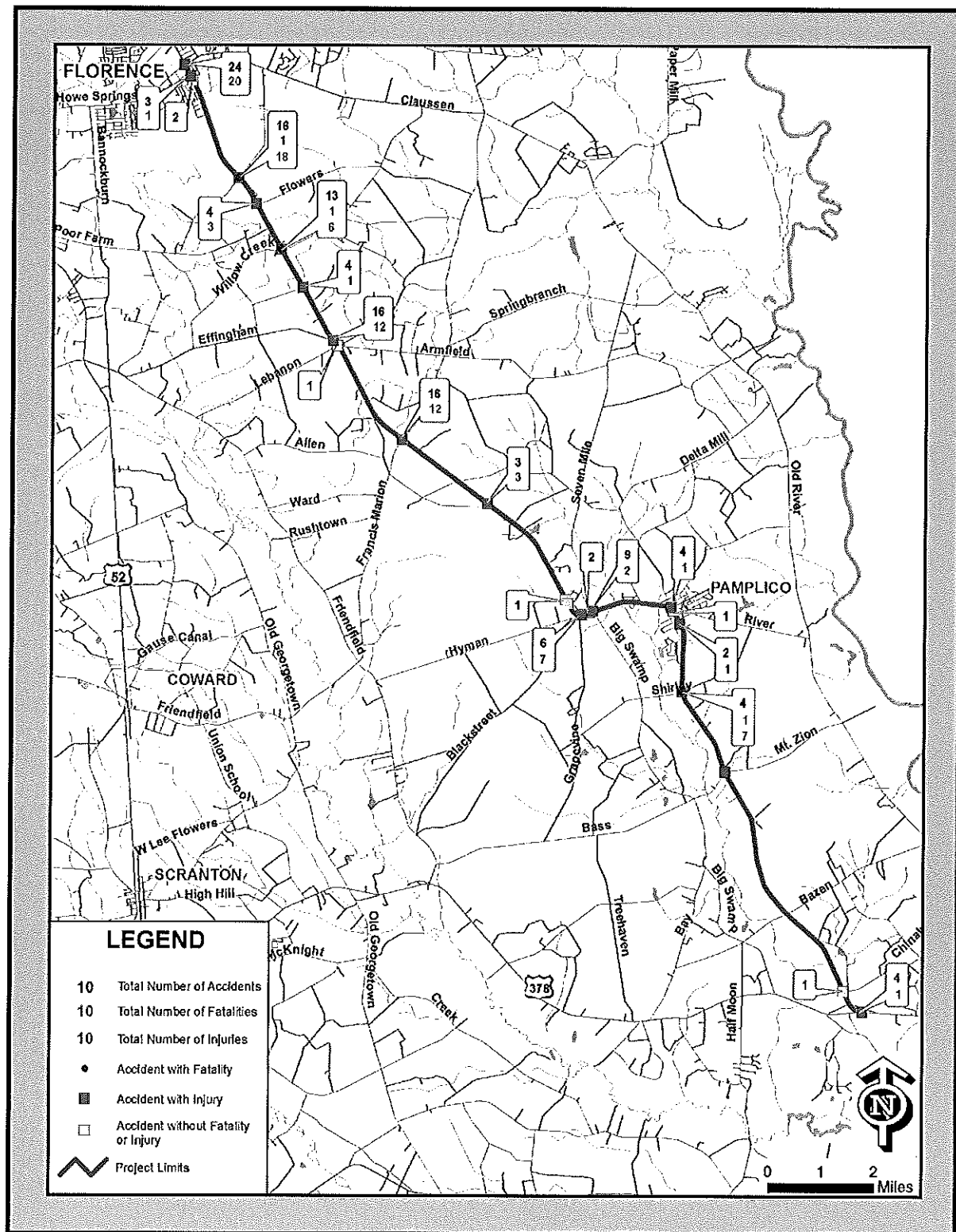
Pamplico Highway Corridor Segment	Accidents by Type				Segment Length (Miles)	2003 Volume	Existing Total Accident Rate**	Existing Injury Accident Rate**	2025 Volume	Projected Number of Accidents - 2025
	Injury	Fatality	PDO*	Total						
Claussen Road to SC 327	20	2	27	49	8.27	9,600	108.5	44.3	17,600	58
SC 327 to Hyman Road	7	0	6	13	4.79	5,400	88.3	47.6	14,700	23
Hyman Road to Bass Road	10	1	16	27	5.23	3,600	252.0	93.3	14,700	71
Bass Road to US 378	1	0	4	5	5.32	2,000	82.6	16.5	3,900	6
Total	38	3	53	94	23.61	5,706	122.6	48.8	13,282	167

* PDO = Property Damage Only

** Accident rates given as accidents per 100,000,000 vehicle-miles traveled on that segment.

Note: Accident data from the intersection at Claussen Road was not incorporated into this analysis because this portion of Pamplico Highway is a four-lane divided roadway.

Figure 4. Accident Locations – Pamplico Highway Corridor



Section 7: Summary

All of the segments within the Pamplico Highway corridor currently operate at a LOS ranging from C to D, indicating a nearing capacity condition. This corridor can support a slight increase in peak time traffic flow before the level of service equals that of a congested roadway. However, the forecasted conditions on Pamplico Highway suggest over-capacity travel conditions. Therefore, this road is expected to require improvements to maintain an acceptable level of service.

Because there is very little development activity underway within the Pamplico Highway corridor, the 2025 Statewide Transportation Model developed by the SCDOT remains valid in forecasting traffic flows along this corridor.

The accident rates along Pamplico Highway are below the state rates for both total accidents and injury accidents along primary roads. However, the segment from Hyman Road to Bass Road does exceed the state rates for both total accidents and injury accidents.

In conjunction, projected over-capacity conditions and high accident rates in and around the town of Pamplico are justifications for increasing the capacity and safety features along the Pamplico Highway corridor.



FLORENCE COUNTY STATE INFRASTRUCTURE BANK

Alligator Road
Deficiencies Analysis
May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

Alligator Road Deficiencies Analysis

Section 1: Project Overview

Alligator Road is located in northwest Florence County south of the city of Florence (**Figure 1**). It is a 2-lane suburban arterial roadway primarily characterized by low to medium density residential development along the length of its alignment, which runs from US 76 near Timmonsville to the intersection of US 52/301 and Howe Springs Road. The limits of the Alligator Road Deficiencies Analysis are its entire length of approximately 7.5 miles. While not currently on the primary roadway network, the widening of Alligator Road would serve to improve access from the southwest side of Florence to the eastern segment of the US 301 Bypass (Freedom Boulevard) located to the east of the city, which is currently under construction.

Purpose

The purpose of this analysis is to:

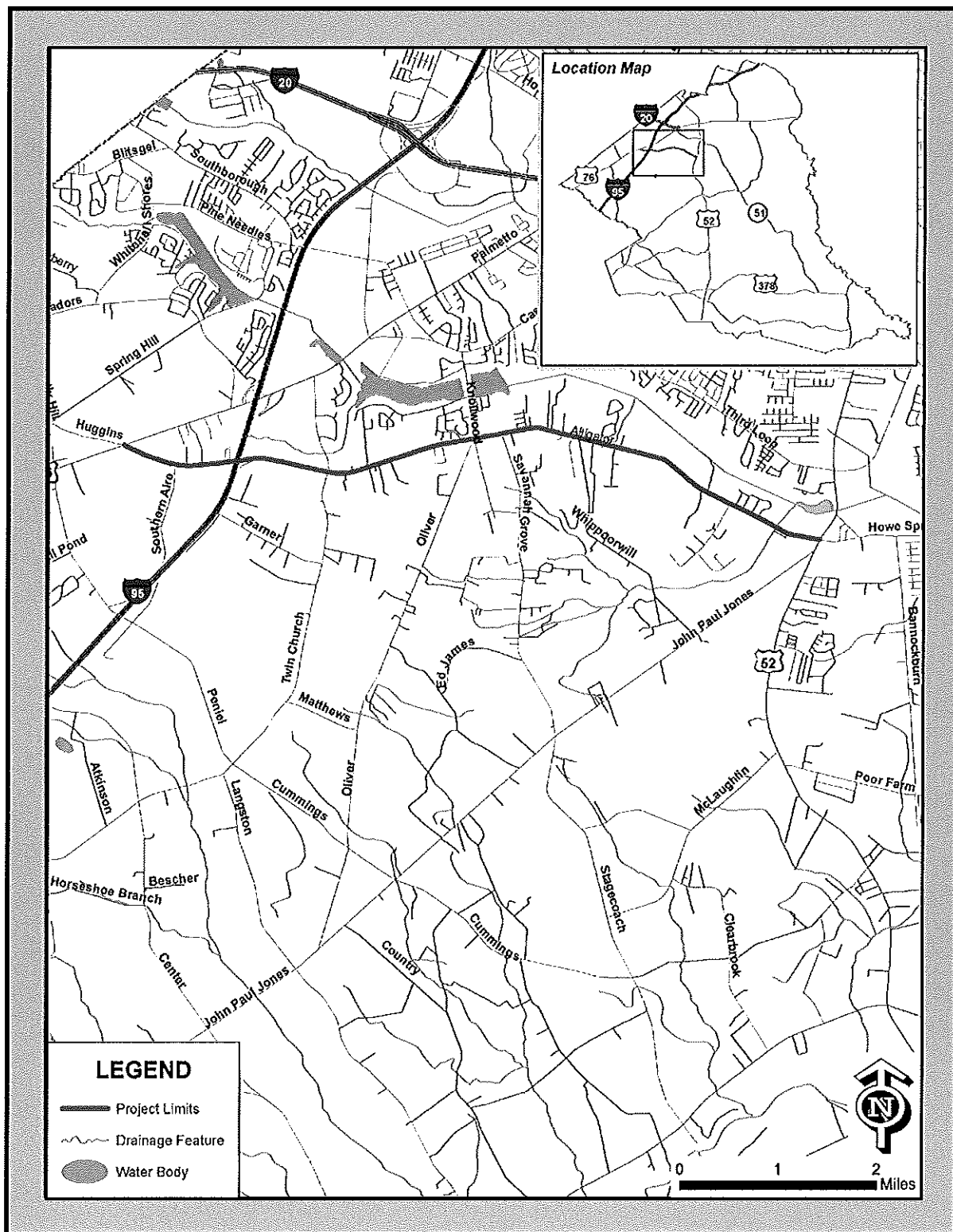
- Identify the existing and projected operational characteristics with respect to capacity and safety along Alligator Road.
- Assess current development patterns, and locations of resulting traffic problems, along Alligator Road.
- Assess how future population growth and land development will affect traffic conditions along an unimproved Alligator Road.

Report Outline

This report is outlined as follows:

- Section 2 provides an overview of the general characteristics of the corridor, including posted speeds, average volumes, and physical conditions and geometrics.
- Section 3 discusses the existing congestion levels for both intersections and link segments along the corridor.
- Section 4 provides an analysis of the existing development patterns along the corridor and future development patterns based on the Florence County Comprehensive Plan and recent development trends.
- Section 5 provides an analysis of the future congestion levels along the corridor based on transportation models developed by the South Carolina Department of Transportation (SCDOT), future land use plans, and recent development trends.
- Section 6 provides an analysis of the safety conditions along the corridor and a projected number of accidents that would occur given these conditions in 2025.
- Section 7 provides an overall summary of the findings within this analysis.

Figure 1. Alligator Road Analysis Corridor



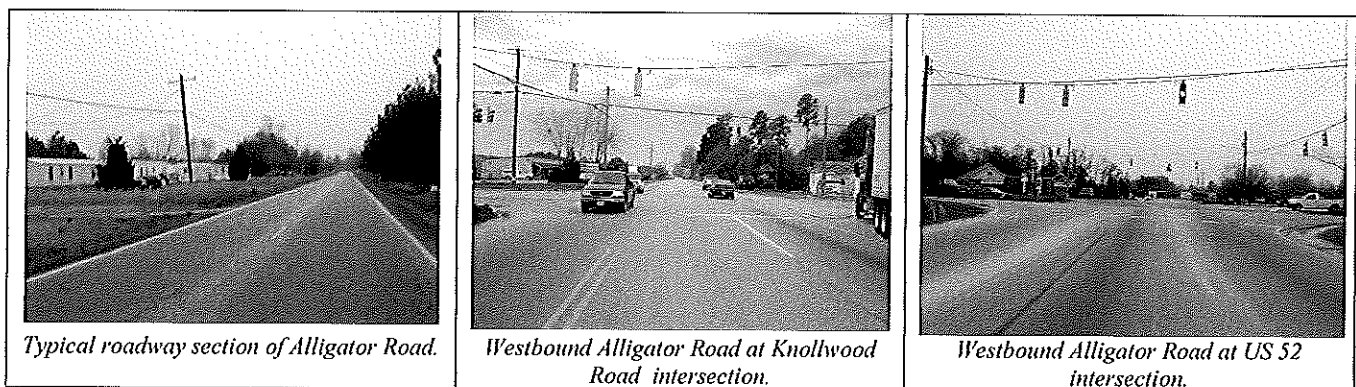
Section 2: Existing Physical Conditions and Geometrics

Existing Road and Surroundings

Alligator Road is an east-west 2-lane roadway that provides access between US 76 and US 52. The roadway is under the jurisdiction of the SCDOT and has a posted speed limit of 45 miles per hour through most of the project area, with the section west of Twin Church Road posted at 55 miles per hour. A 2003 average daily traffic count provided by the SCDOT showed that Alligator Road was carrying a traffic volume ranging from 2,400 vehicles per day near Twin Church Road to 6,900 vehicles per day west of US 52.

The intersections of Alligator Road at Knollwood Road and US 52 are both signalized. The intersection of Alligator Road/Huggins Road at US 76 is stop-controlled, with stop signs located on Alligator Road and Huggins Road. The intersection of Alligator Road at Twin Church Road is also stop-controlled, with stop signs located on Twin Church Road.

The photographs below document the existing physical condition and geometrics of Alligator Road.

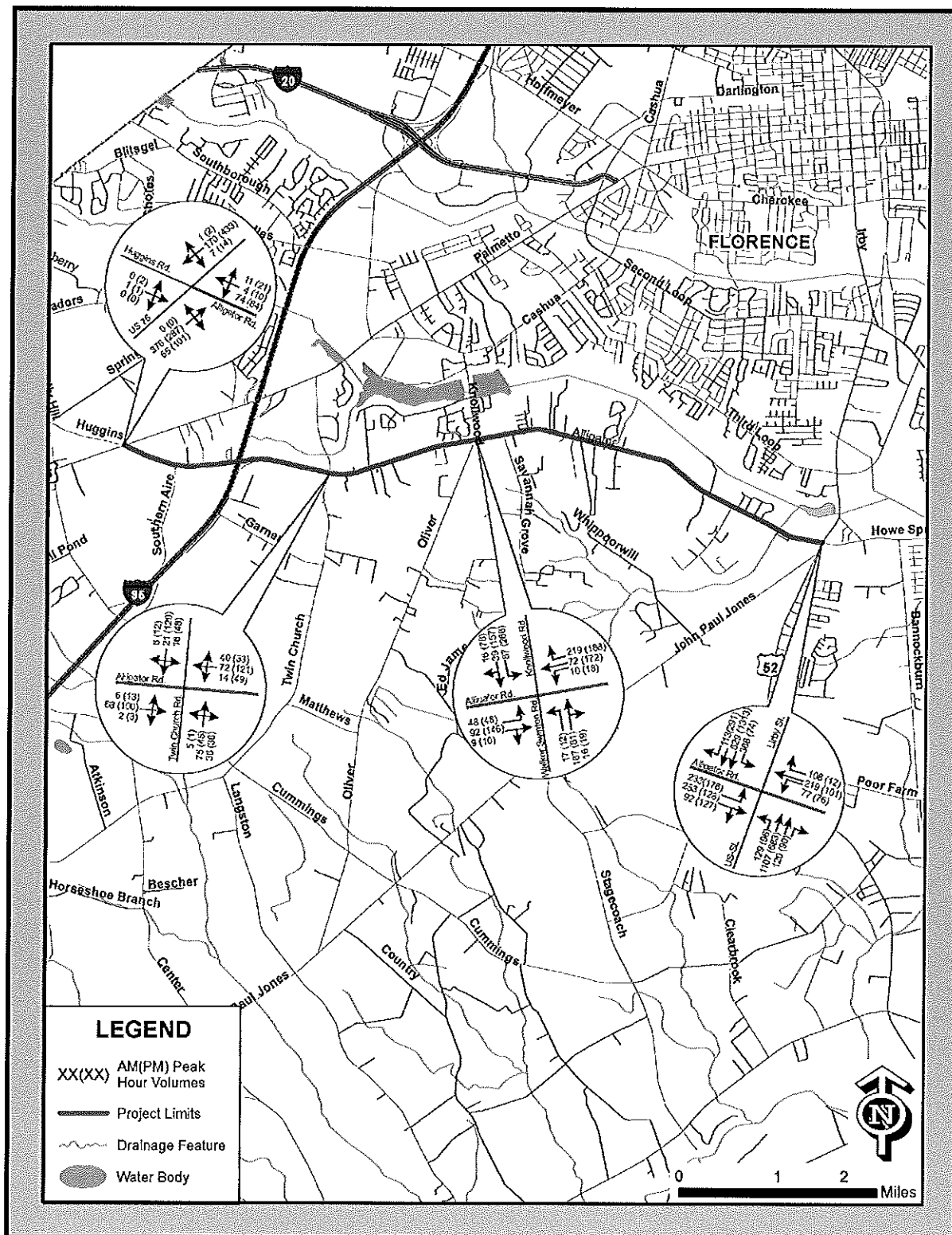


Section 3: Existing Traffic Conditions

Figure 2 illustrates the 2005 AM and PM peak hour turning movement counts at key intersections along Alligator Road, which include the following:

- Alligator Road at US 76
- Alligator Road at Twin Church Road
- Alligator Road at Knollwood Road
- Alligator Road at US 52

Figure 2. AM and PM Peak Hour Turning Movement Counts



Alligator Road Deficiencies Analysis

The critical intersections were analyzed according to the methodologies published in the *2000 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service.

Table 1 depicts the results of the capacity analysis of these intersections in terms of level of service.

As shown, all the intersections within this corridor are operating at acceptable levels of service during both peak hours with the exception of the Alligator/US 52 intersection during the AM peak hour. This intersection is operating at LOS E and is over capacity during the AM peak hour, which suggests that some mitigation measures may be necessary at this location.

**Table 1
Intersection Level of Service**

		2005 Existing Conditions		
<u>Significant Intersections</u>	<u>Time Period</u>	<u>VPH^a</u>	<u>LOS^b</u>	<u>Queuing Failures</u>
Alligator Road at US 76	AM	709	A	None
	PM	956	A	None
Alligator Road at Twin Church Road	AM	361	A	None
	PM	592	A	None
Alligator Road at Knollwood Road*	AM	793	A	None
	PM	1,200	A	None
Alligator Road at US 52*	AM	3,348	E	None
	PM	3,169	B	None
* Denotes signalized intersections				
a VPH = Vehicles-per-Hour; volume of traffic entering intersection				
b LOS = Level-of-Service				

The arterial capacity analysis is based on the *2000 Highway Capacity Manual* methodology for calculating arterial levels of service. This methodology is based on input factors such as average speeds, percent-time following, number of lanes and volume of traffic.

Alligator Road Deficiencies Analysis

Table 2 summarizes the results of the existing link capacity analysis along the Alligator Road corridor. All links along the roadway currently operate at LOS E (over capacity) except for the segment between Palmetto Street and Twin Church Road, which operates at a LOS C.

Table 2
Existing Link Capacity Level of Service

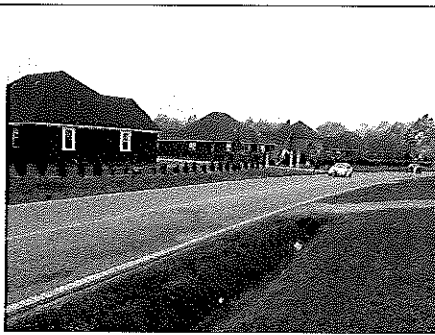
Alligator Road Segment	2005 Existing Peak-Hour Traffic Volumes	
	<u>Volume</u> ^a	<u>LOS</u> ^b
US 76 to Twin Church Road	250	C
Twin Church Road to Knollwood Road	466	E
Knollwood Road to US 52	1,039	E
a = Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 4: Land Use and Development Patterns

Existing Conditions

Alligator Road is characterized primarily by older single family housing, manufactured housing, and mobile homes throughout the most of the corridor between US 52 and Twin Church Road. Much of this housing is located in clusters accessed with individual driveways, cul-de-sacs, and shared dead end streets or shared driveways. Housing of recent construction is also located in proximity to US 52. Low-intensity commercial nodes consisting primarily of local businesses also exist at the intersections of Southpoint Road, Savannah Grove Road and Knollwood Road.

There are scattered parcels of vacant properties between these land uses. The only school along the corridor is Savannah Grove Elementary located on Savannah Grove Road approximately 0.3 miles south of Alligator Road. However, South Florence High School, Southside Middle School, and Greenwood Elementary are located just east of the corridor along Howe Springs Road.



Newer single-family housing development along Alligator Road.



Commercial node at Savannah Grove Road and Alligator Road intersection.



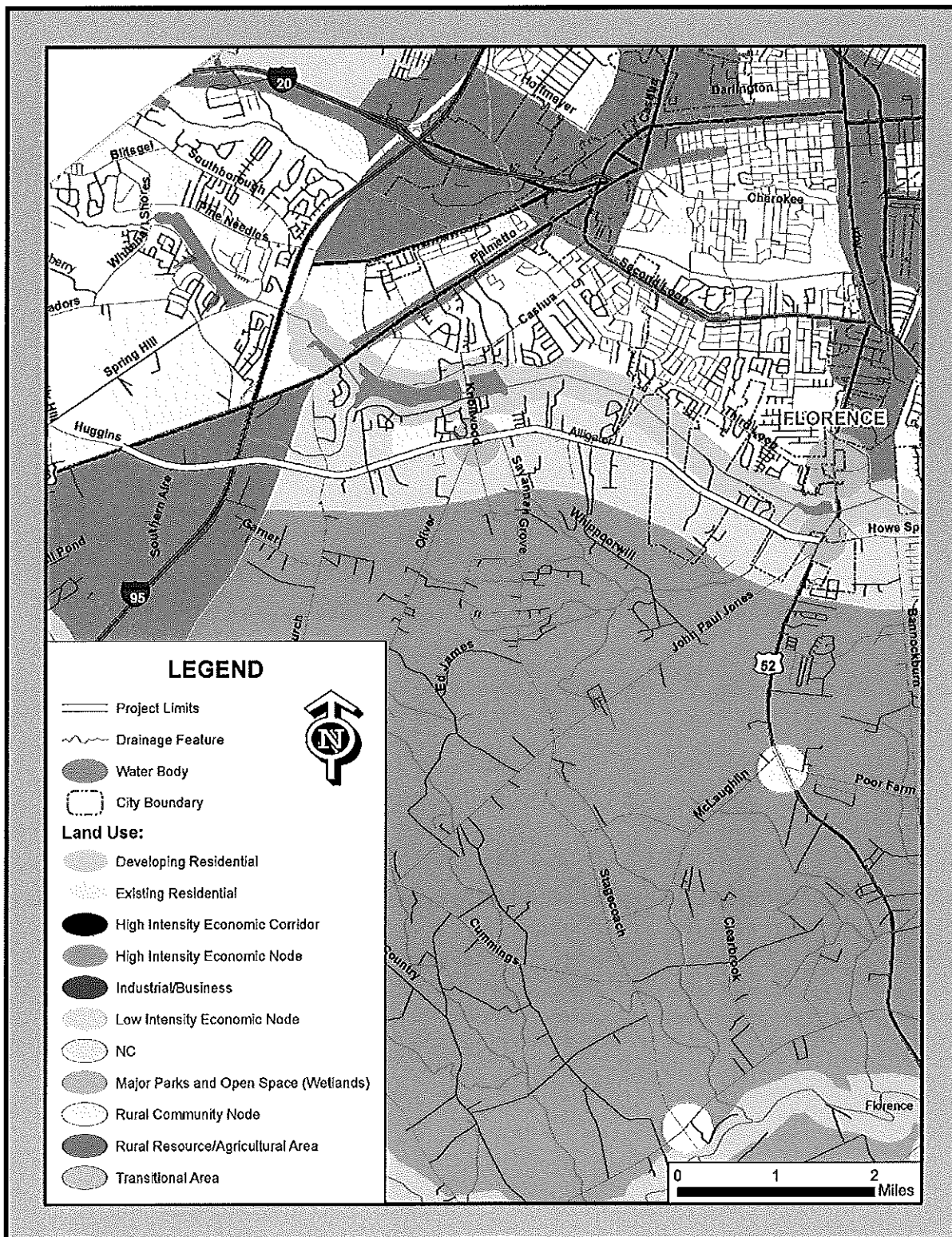
Cluster of mobile homes along Alligator Road.

The only significant concentration of agricultural property along the corridor is located between I-95 and Twin Church Road. Development west of I-95 along the corridor is comprised of a mix of vacant, light industrial and low-intensity commercial land uses.

Future Land Use and Development Patterns

The Florence County Comprehensive Plan has designated much of the land along Alligator Road as Developing Residential, a designation for growing residential areas (**Figure 3**). The Plan also identifies two High Intensity Economic Nodes at the intersections of Knollwood Road and US 52. West of Twin Church Road to US 76 is designated for Industrial/Business, which is consistent with the land uses currently in place. It should be noted that none of the property along Alligator Road is designated for agricultural uses. With a significant amount of vacant and/or agricultural properties remaining along the roadway, a significant level of growth is expected along Alligator Road through 2025.

Figure 3. Future Land Uses along the Alligator Road Corridor



Alligator Road Deficiencies Analysis



This large tract of vacant property along Alligator Road near US 52 is expected to be developed in the near future.



Existing agricultural tracts are planned for future residential, commercial and industrial uses.



This lumber yard is an example of the type of uses planned for Alligator Road west of I-95.

Information from the Florence City-County Planning Commission was obtained to inventory specific development activities that have recently occurred, are planned, or are under development with the potential to impact the Alligator Road corridor. There are currently four residential subdivisions that meet these criteria and all are for single-family housing. A map depicting the location of these developments is provided in **Figure 4**. Of these planned developments, the 128-unit Wild Bird Run and 176-unit Womack Gardens single-family subdivisions would have the most direct impact on the corridor since they are planned to be located directly on Alligator Road. West Lakes, a 302-unit single family subdivision located along US 76 near the Alligator Road intersection, will also impact the roadway. Other new developments that have or will impact the corridor include McLaurin Place and Carolina Trace. The relevant trip generation characteristics of these developments are summarized in **Table 3**.

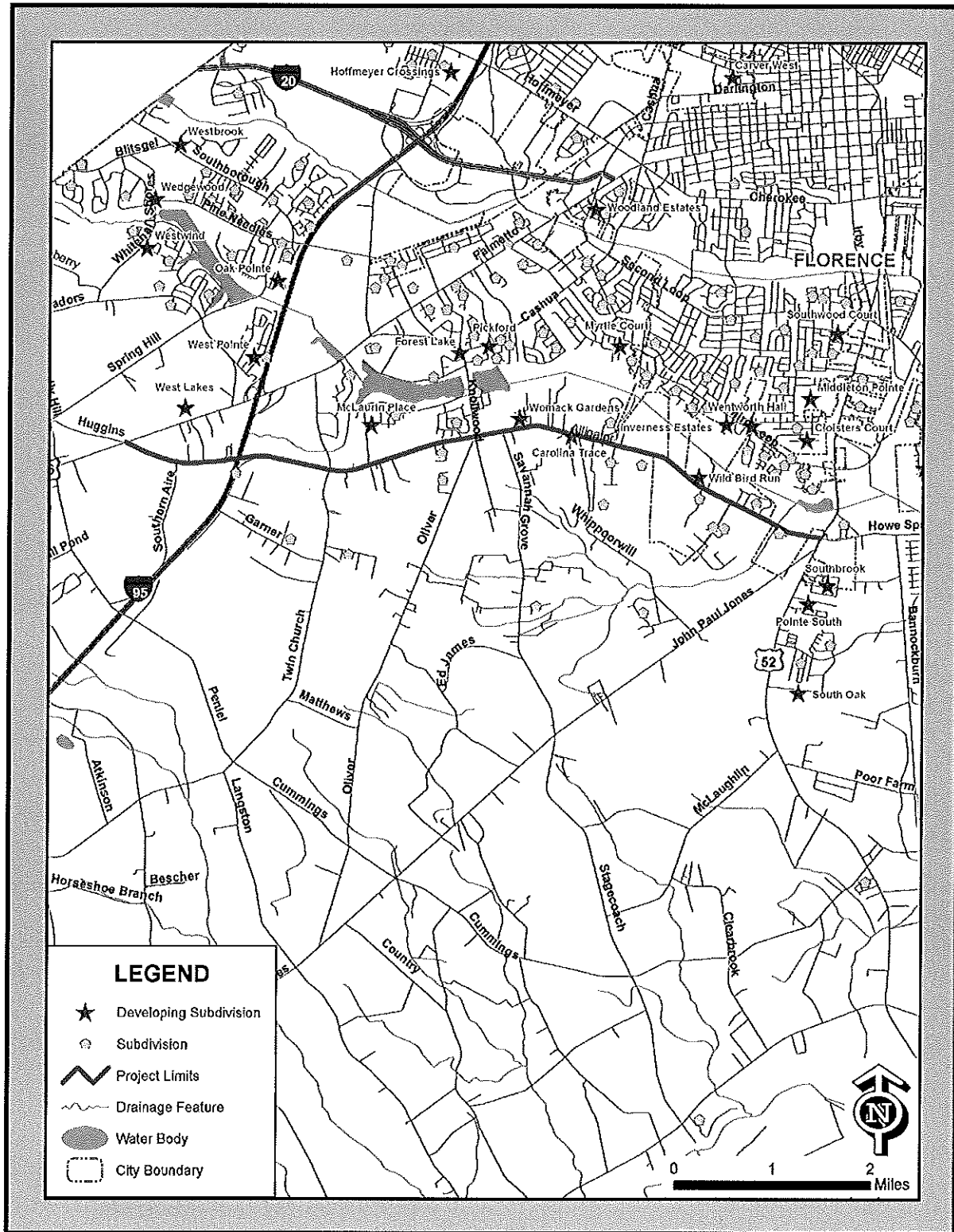
Table 3
Potential Trip Generation from Major Developments

Development	Total Number of Units ¹	Potential Daily Trip Generation ²
Wild Bird Run	128	1,225
Womack Gardens	176	1,684
McLaurin Place	11	105
Carolina Trace	12	115
West Lakes	302	2,890

1 – Source: Florence City-County Planning Commission

2 – Source: Institute of Traffic Engineers (ITE) Trip Generation Manual, 7th Edition

Figure 4. Recent Developments Impacting the Alligator Road Corridor



Section 5: Future Traffic Conditions

Future traffic volumes were identified by forecasting via linear regression of current traffic volume growth along Alligator Road, estimation of potential future growth along the corridor, and examination of the 2025 Transportation Model for the Florence Area Transportation Study (FLATS) developed by the SCDOT. Adjacent links, at or over capacity, and their relationship to existing traffic volumes along the Alligator Road Corridor were also considered. It should be noted that the adopted FLATS model underestimates the forecasted traffic are at the extreme east and west ends of this corridor. The eastern portion of the corridor estimates an average of 9,379 vehicles per day in the year 2025 based on an increase of 67 new dwelling units from 2000. However, this figure is significantly lower than the proposed 304 dwelling units under development in the Wild Bird Run and Womack Gardens subdivisions. On the western end of the corridor, the West Lakes subdivision is under development. While the subdivision is not located directly adjacent to Alligator Road, the higher growth will have an impact on the Alligator Road corridor given its proximity to the roadway. The FLATS model estimates a 2025 dwelling unit count of 123 within this traffic analysis zone, there are currently 302 proposed units under development in the West Lakes subdivision. It is suggested that the FLATS model continue to be used for estimating traffic on Alligator Road with some precaution of additional traffic due to new proposed development in these two areas.

As shown in **Table 4**, the forecasted conditions on Alligator Road suggest over-capacity travel conditions on two of the links. Thus, these links will likely require future improvements to enable them to operate at acceptable levels of service in the future.

**Table 4
Future Link Capacity Analysis**

Alligator Road Segment	2025 Future Peak-Hour Traffic Volumes	
	<u>Volume</u> ^a	<u>LOS</u> ^b
US 76 to Twin Church Road	529	C
Twin Church Road to Knollwood Road	961	E
Knollwood Road to US 52	1,824	E
a =Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 6: Accident Analysis

Accident data from the South Carolina Department of Public Safety for the period of January 1, 2003 through July 22, 2004 was obtained to develop accident rates for Alligator Road. As shown in **Table 5**, there were a total of 87 accidents along the roadway during this timeframe and, of these, 30 were injury accidents which involved two fatalities.

Table 5
Accident Rate Analysis

Alligator Road Corridor Segment	Accidents by Type				Segment Length (Miles)	2003 Volume	Existing Total Accident Rate**	Existing Injury Accident Rate**	2025 Volume	Projected Number of Accidents - 2025
	Injury	Fatality	PDO*	Total						
US 76 to Twin Church Rd	10	1	19	30	2.15	2,400	1021.8	340.6	5,100	41
Twin Ch Rd to Knollwood Rd	7	0	14	21	1.53	4,500	536.0	178.7	9,300	28
Knollwood Rd to US 52	13	1	22	36	3.78	6,900	242.6	87.6	12,100	40
Total	30	2	55	87	7.46	5,111	401.0	138.3	9,508	109

* PDO = Property Damage Only

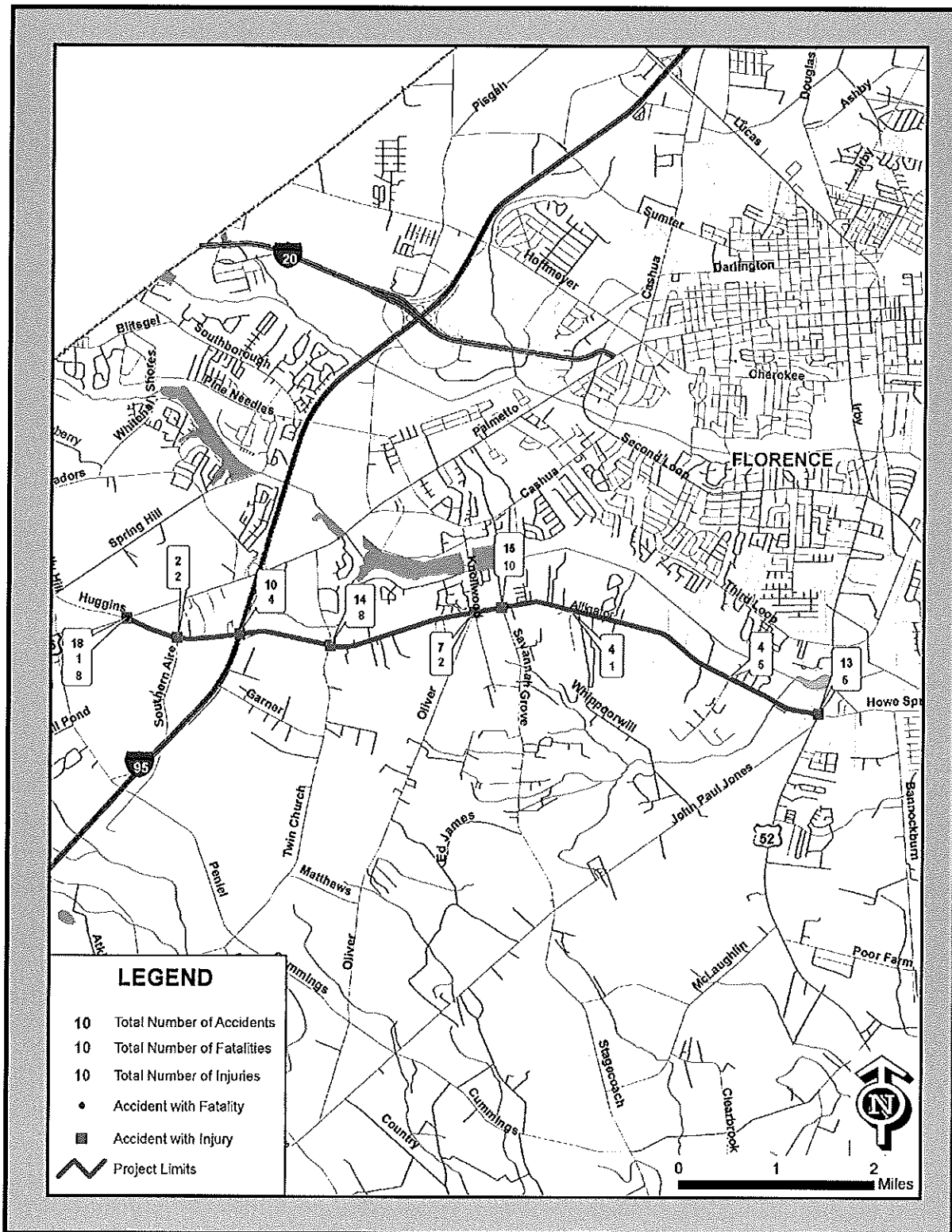
** Accident rates given as accidents per 100,000,000 vehicle-miles traveled on that segment.

As shown in **Table 6**, the rate for total accidents and injury accidents along Alligator Road was 401 and 138 accidents per hundred million vehicle miles, respectively. In 2001, the rate for all accidents and injury accidents for the State of South Carolina on secondary roads was 302 and 157 accidents per hundred million vehicle miles, respectively. Therefore, the accident rates along Alligator Road exceeded the state rate for total accidents and but was slightly less than the state rate for injury accidents.

By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents for the Alligator Road corridor is 109 in 2025.

The segment from US 76 to Twin Church Road had the highest rates for both total accidents and injury accidents along Alligator Road. This can be attributed in large part to a high number of accidents at the intersection with US 76. This segment and that between Twin Church Road and Knollwood Road both had accident and injury accident rates that far exceeded the state average for secondary roads. Besides that at US 76, the intersections at Twin Church Road and Savannah Grove Road were characterized by a high number of accidents. The locations and number of total accidents, injury accidents, and fatality accidents are shown on **Figure 5**.

Figure 5. Accident Locations – Alligator Road Corridor



Section 7: Summary

All links along Alligator Road operate at LOS E (over capacity) except for the segment between US 76 and Twin Church Road, which operates at a LOS C. In addition, the forecasted conditions on Alligator Road suggest over-capacity travel conditions which will require improvements to maintain an acceptable level of service.

It has been noted that the adopted FLATS model was developed in 2000 and underestimates the amount of future development planned at the east and west ends of this corridor. The eastern portion of the corridor projects an increase of only 67 new dwelling units, which is significantly lower than the proposed 304 dwelling units under development in the Wild Bird Run and Womack Gardens subdivisions. On the western end of the corridor, the FLATS model estimates a 2025 dwelling unit count of 123 within this traffic analysis zone, while there are currently 302 proposed units under construction in the West Lakes development located on US 76. In addition to these developments, interviews with local planning staff have indicated that more subdivisions will likely be planned based on recent trends in conjunction with the amount of vacant properties and redevelopment opportunities along the corridor. Therefore, these projections are likely understated and will need to be reevaluated during the next update of the FLATS travel demand model.

The accident rate along Alligator Road exceeds the state rate for secondary roads. It should be noted that much of the property along the Alligator Road near US 76 and US 52 on both sides of the corridor is currently vacant. Therefore, as infill development occurs and the number of ingress and egress points increase along Alligator Road, so will the potential for conflicts along the 2-lane roadway. This is particularly true for the intersection at US 76, which is already characterized by a high rate of accidents.

In conjunction, projected over-capacity conditions, an increase in conflict points due to infill and new development, and a total accident rate that exceeds the state average are sound rationale for increasing the capacity and safety features along the Alligator Road corridor.



FLORENCE COUNTY STATE INFRASTRUCTURE BANK

US 76

Deficiencies Analysis

May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

US 76 Deficiencies Analysis

Section 1: Project Overview

US 76, also known as Palmetto Street, is the traditional east-west thoroughfare through Florence and serves as an important link to cities such as Marion, Sumter and, to a lesser degree, Columbia. Within Florence County, the roadway provides access to Timmonsville and Florence. The limits of the US 76 Deficiencies Analysis are from Main Street in Timmonsville to the I-95 interchange southwest of Florence (**Figure 1**). This segment has a length of approximately 3.5 miles and is a 2-lane urban arterial characterized by a diverse range of residential, commercial, and industrial land uses. The US 76 corridor is located in one of the most rapidly growing areas of Florence County and provides access to a growing number of nearby single-family housing developments.

Purpose

The purpose of this analysis is to:

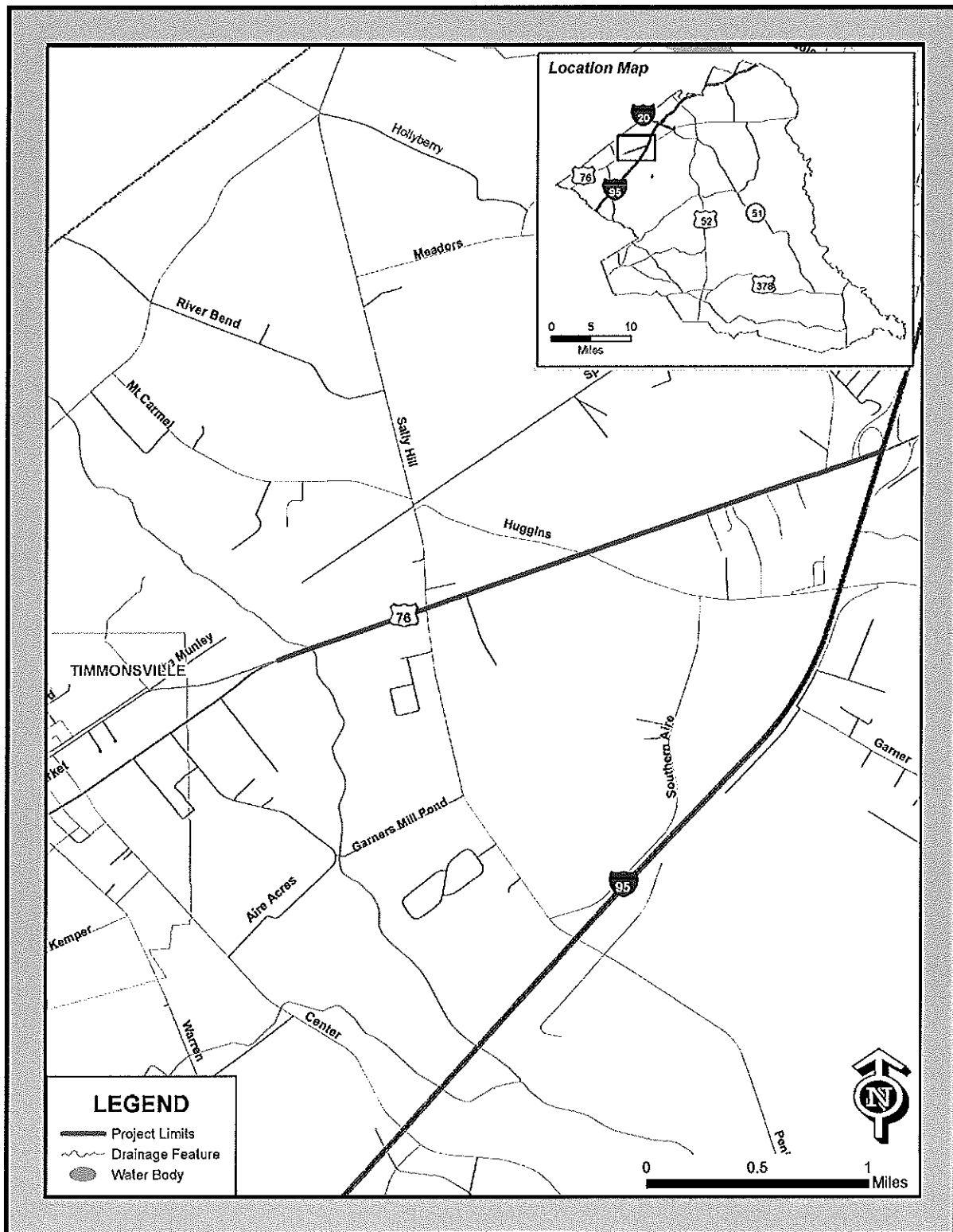
- Identify the existing and projected operational characteristics with respect to capacity and safety along the US 76 corridor.
- Assess current development patterns, and locations of resulting traffic problems, along the US 76 corridor.
- Assess how future population growth and land development will affect traffic conditions along an unimproved US 76.

Report Outline

This report is outlined as follows:

- Section 2 provides an overview of the general characteristics of the corridor, including posted speeds, average volumes, and physical conditions and geometrics.
- Section 3 discusses the existing congestion levels for both intersections and link segments along the corridor.
- Section 4 provides an analysis of the existing development patterns along the corridor and future development patterns based on the Florence County Comprehensive Plan and recent development trends.
- Section 5 provides an analysis of the future congestion levels along the corridor based on transportation models developed by the South Carolina Department of Transportation (SCDOT), future land use plans, and recent development trends.
- Section 6 provides an analysis of the safety conditions along the corridor and a projected number of accidents that would occur given these conditions in 2025.
- Section 7 provides an overall summary of the findings within this analysis.

Figure 1. US 76 Analysis Corridor



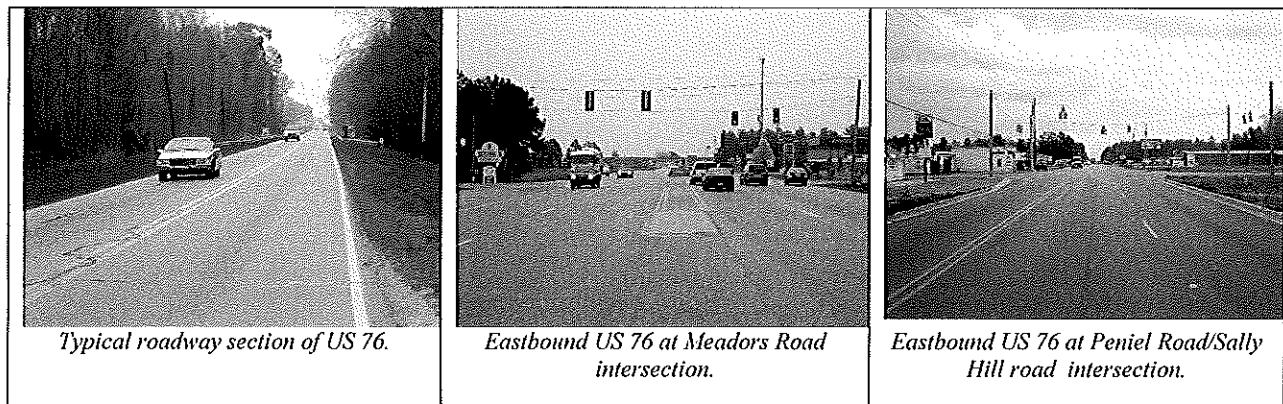
Section 2: Existing Physical Conditions and Geometrics

Existing Road and Surroundings

The US 76 corridor is an east-west two-lane roadway which provides access from I-95 west to Timmonsville. The roadway is under the jurisdiction of the SCDOT and has a posted speed limit of 55 miles per hour through the project area. A 2003 average daily traffic count in the project area provided by the SCDOT showed that US 76 was carrying 10,000 vehicles per day.

The intersections of US 76 at Meadors Road and US 76 at Peniel Road/Sally Hill Road are both signalized. The intersection of US 76 at Alligator Road/Huggins Road is stop-controlled, with stop signs located on Alligator Road and Huggins Road.

The photographs below document the existing physical condition and geometrics of US 76.



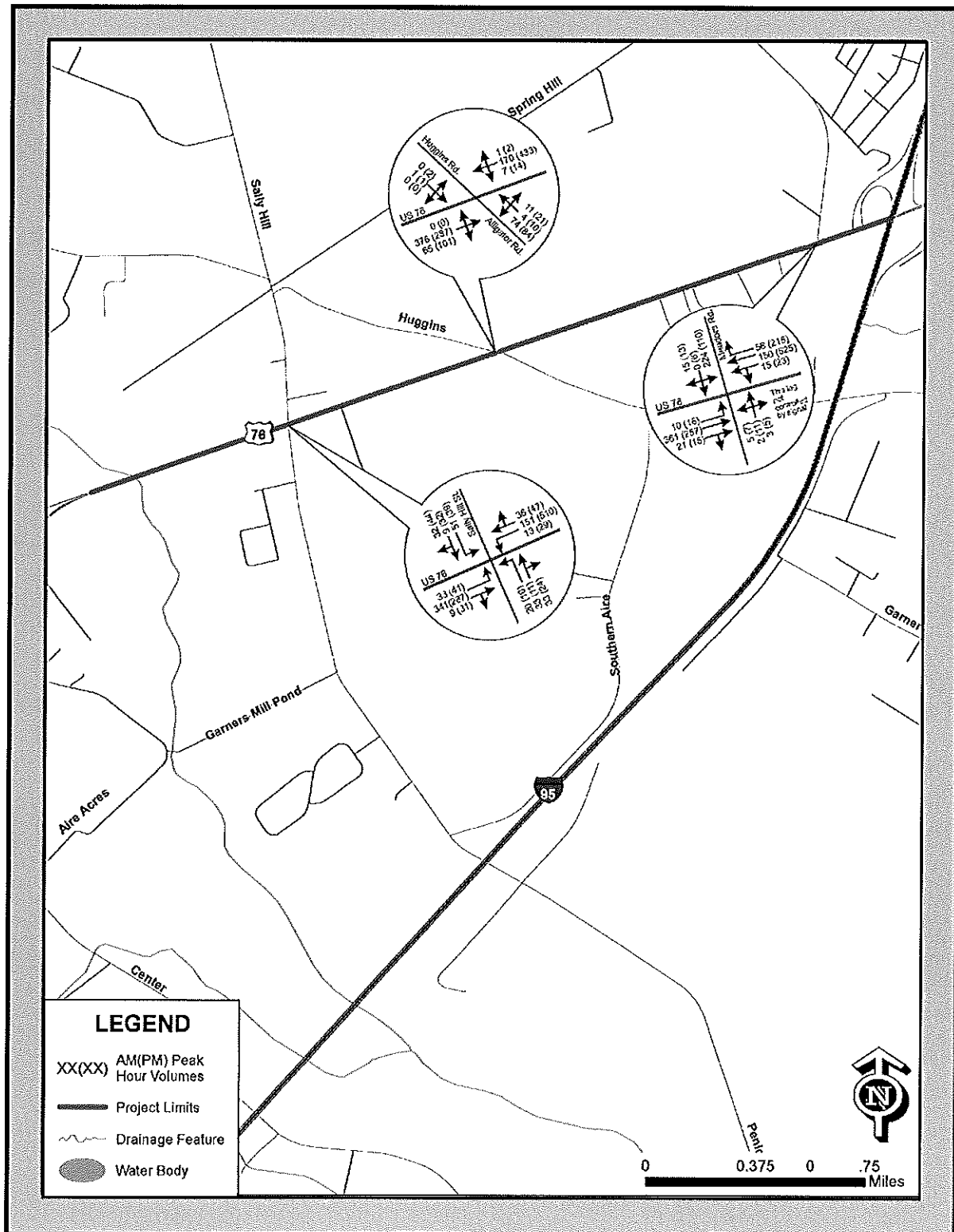
Section 3: Existing Traffic Conditions

Figure 2 illustrates the 2005 AM and PM peak hour turning movement counts at key intersections along US 76, which include the following:

- US 76 at Meadors Road
- US 76 at Alligator Road/Huggins Road
- US 76 at Peniel Road/Sally Hill Road

The critical intersections were analyzed according to the methodologies published in the *2000 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service.

Figure 2. AM and PM Peak Hour Turning Movement Counts – US 76 Corridor



US 76 Deficiencies Analysis

Table 1 depicts the results of the capacity analysis of these intersections in terms of LOS. As shown, the intersections within this corridor are all operating at acceptable levels of service during the peak hours, which suggests that the intersections can accommodate future growth in traffic volume before reaching capacity.

Table 1
Intersection Level of Service

		2005 Existing Conditions		
<u>Significant Intersections</u>	<u>Time Period</u>	<u>VPH^a</u>	<u>LOS^b</u>	<u>Queuing Failures</u>
US 76 at Meadors Road*	AM	862	A	None
	PM	1,205	A	None
US 76 at Alligator Road/Huggins Road	AM	709	A	None
	PM	956	A	None
US 76 at Peniel Road/Sally Hill Road*	AM	761	B	None
	PM	1,112	B	None
* Denotes signalized intersections				
a VPH = Vehicles-per-Hour; volume of traffic entering intersection				
b LOS = Level-of-Service				

The link capacity analysis is based on the *2000 Highway Capacity Manual* methodology for calculating arterial levels of service. This methodology is based on factors such as average speeds, percent-time following, number of lanes and volume of traffic.

Table 2 summarizes the results of the existing link capacity analysis along the US 76 corridor. All links along the corridor operate at LOS D. This suggests that the corridor is performing close to its capacity during the peak hours, but under its daily capacity.

Table 2
Existing Link Capacity Level of Service

US 76 Segment	2005 Existing Peak-Hour Traffic Volumes	
	<u>Volume^a</u>	<u>LOS^b</u>
I-95 to Alligator Road/Huggins Road	833	D
Alligator Road/Huggins Road to Main Street (Timmons ville)	936	D
a =Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 4: Land Use and Development Patterns

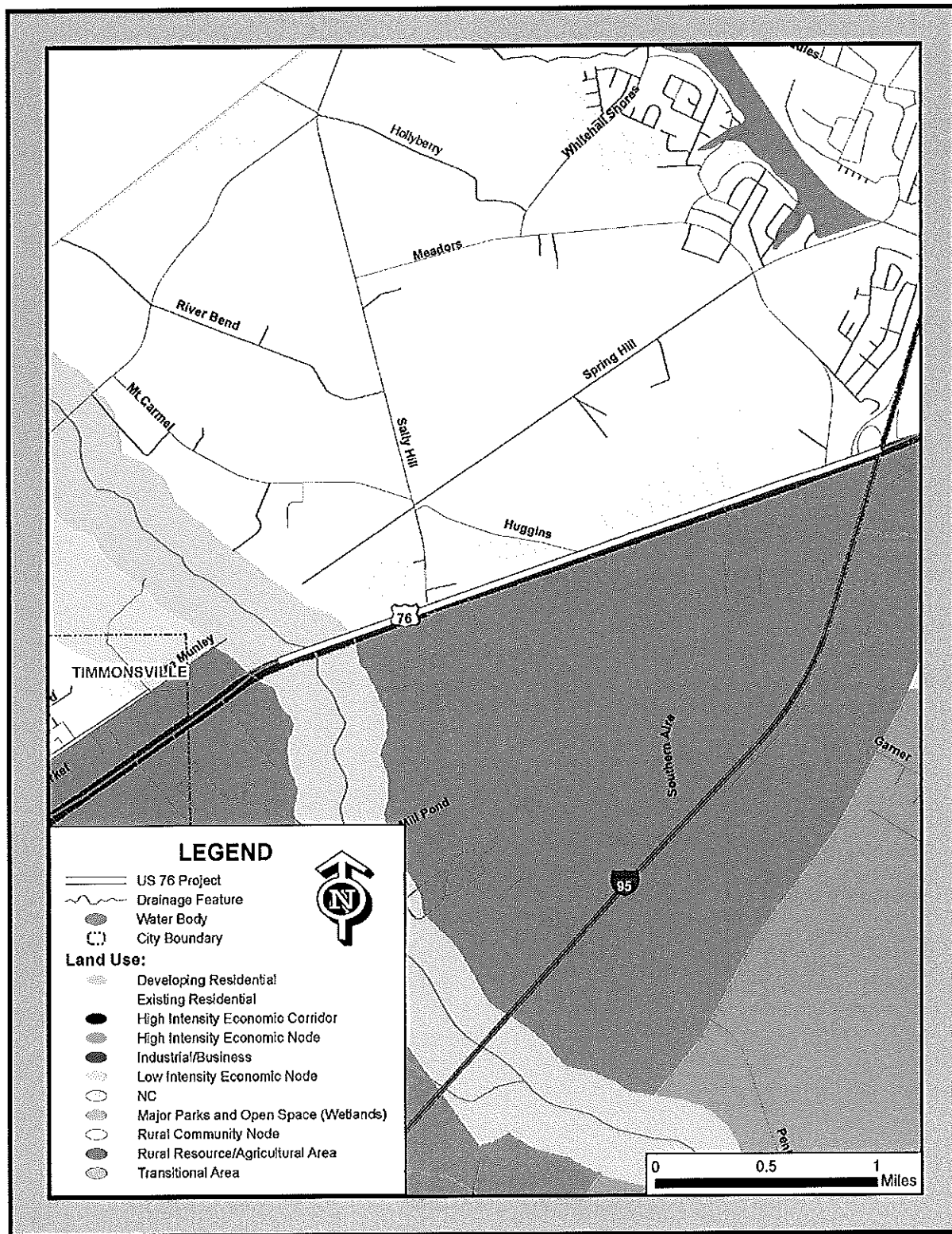
Existing Conditions

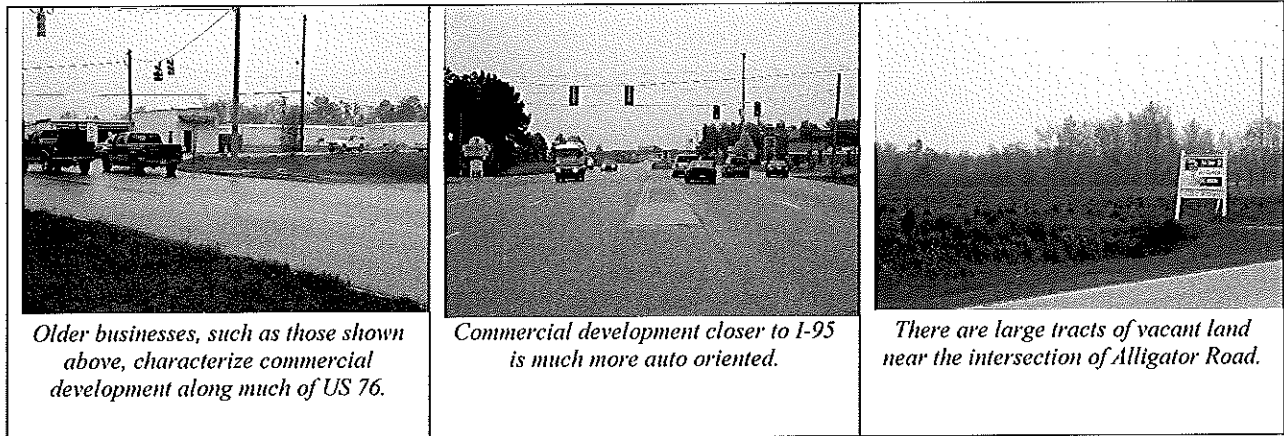
The segment of US 76 between Timmons ville and I-95 is characterized by a diverse mix of commercial, single-family residential, industrial, and agricultural properties. The commercial uses along the corridor consist primarily of free standing businesses as opposed to strip commercial uses that often share ingress and egress. Businesses closer to I-95 are much more auto-oriented and include convenient stores, hotels and restaurants. Further west along the alignment, there are a variety of older commercial uses ranging from service stations to a stock car race track near Timmons ville. The most prominent industrial use along the corridor is an auto salvage establishment located adjacent to the racetrack on the south side of the roadway. The most significant concentration of agricultural and vacant properties is found on the north side of the US 76 alignment in the vicinity of Huggins Road.

Future Land Use and Development Patterns

The Florence County Comprehensive Plan has designated future land uses along the north side of US 76 as Existing Residential, a designation suitable for land currently characterized by residential uses that will be subdivided further and/or likely to be the subject for infill and/or redevelopment. Property along the south side of the US 76 corridor is designated for Industrial/Business. As previously noted, much of the land in this area is currently vacant. With a significant amount of vacant industrial and/or commercial property remaining along the roadway in conjunction with the infill development expected to occur north of the alignment, a significant level of growth is expected along US 76 through 2025. A map of the designated land uses within the US 76 corridor is provided in **Figure 3**.

Figure 3. Future Land Uses along the US 76 Corridor





Information from the Florence City-County Planning Commission was obtained to inventory specific development activities that have recently occurred, are planned, or are under development with the potential to impact the US 76 corridor. There are currently four residential subdivisions that meet this criteria. A map depicting the location of these developments is provided in **Figure 4**. Of these planned developments, the 302-unit West Lakes subdivision would have the most direct impact on the corridor since it is planned to be located directly on US 76 and will create direct ingress and egress along the roadway. Wedgewood, West Pointe and Westwind are the other developments along Meadors Road that have or will impact the corridor. The relevant trip generation characteristics of these developments are summarized in **Table 3**.

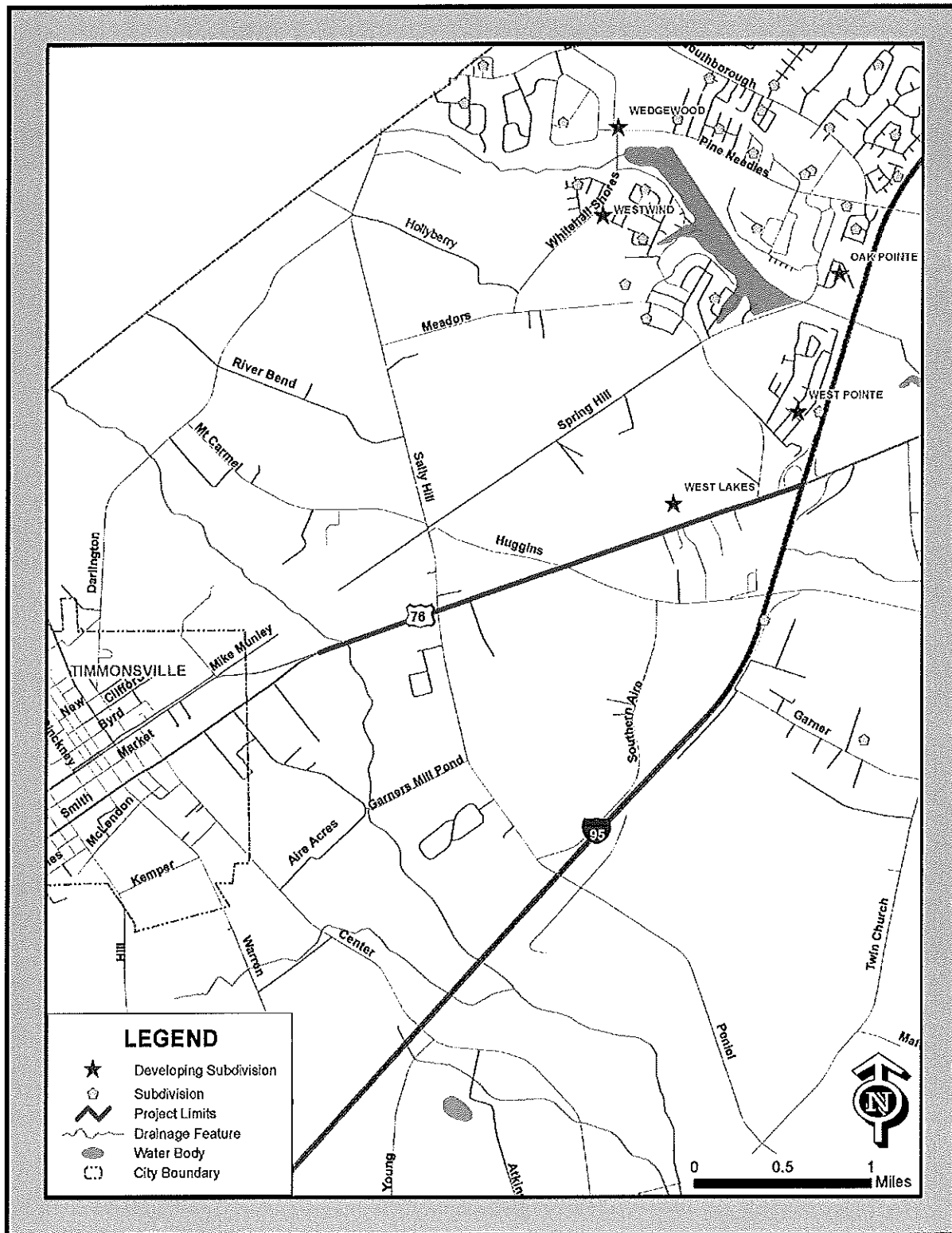
Table 3
Potential Trip Generation from Major Developments

Development	Total Number of Units ¹	Potential Daily Trip Generation ²
West Lakes	302	2,890
Wedgewood	208	1,991
West Pointe	79	756
Westwind	47	450

1 – Source: Florence City-County Planning Commission

2 – Source: Institute of Traffic Engineers (ITE) Trip Generation Manual, 7th Edition

Figure 4. Recent Developments Impacting the US 76 Corridor



Section 5: Future Traffic Conditions

Future traffic volumes were identified by forecasting via linear regression of current traffic volume growth along US 76, estimation of potential future growth along the corridor, and examination of the 2025 Transportation Model for the Florence Area Transportation Study (FLATS) developed by the SCDOT. Adjacent links, at or over capacity, and their relationship to existing traffic volumes along the US 76 Corridor were also considered.

The FLATS model may slightly underestimate the forecasted traffic along this corridor. Within this corridor, the West Lakes subdivision is currently under development. The FLATS model estimates a 2025 dwelling unit count of 123 within the traffic analysis zone adjacent and feeding on to US 76. However, the 302 proposed units in the West Lakes development do not appear to be included in the FLATS model, which was most recently updated in 2000. It is suggested that the FLATS model continue to be used for estimating traffic along this portion of the US 76 corridor with some precaution of additional traffic due to new proposed development in this area.

As shown in **Table 4**, the forecasted conditions on US 76 suggest over-capacity travel conditions. This road is expected to pass its existing capacity and will require improvements to maintain an acceptable level of service.

Table 4
Future Link Capacity Analysis

US 76 Segment	2025 Future Peak-Hour Traffic Volumes	
	<u>Volume^a</u>	<u>LOS^b</u>
I-95 to Alligator Road/Huggins Road	1,620	E
Alligator Road/Huggins Road to Main Street (Timmons ville)	1,705	E
a =Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 6: Accident Analysis

Accident data from the South Carolina Department of Public Safety for the period of January 1, 2003 through July 22, 2004 was obtained to develop accident rates for the segment of US 76 between Timmonsville and I-95. As shown in **Table 5**, there were a total of 57 accidents along this segment during this timeframe and, of these, 14 were injury accidents which involved one fatality.

As shown in **Table 5**, the rate for total accidents and injury accidents along the US 76 corridor was approximately 256 and 63 accidents per hundred million vehicle miles, respectively. In 2003, the rate for all accidents and injury accidents for the State of South Carolina on primary roads was 239 and 74 accidents per hundred million vehicle miles, respectively. Therefore, the accident rate along the US 76 corridor slightly exceeded the state rate for total accidents and but was slightly less than the state rate for injury accidents. The locations and number of total accidents, injury accidents, and fatality accidents are shown on **Figure 5**.

By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents along the US 76 corridor would be 69 in the year 2025.

Table 5
Accident Rate Analysis

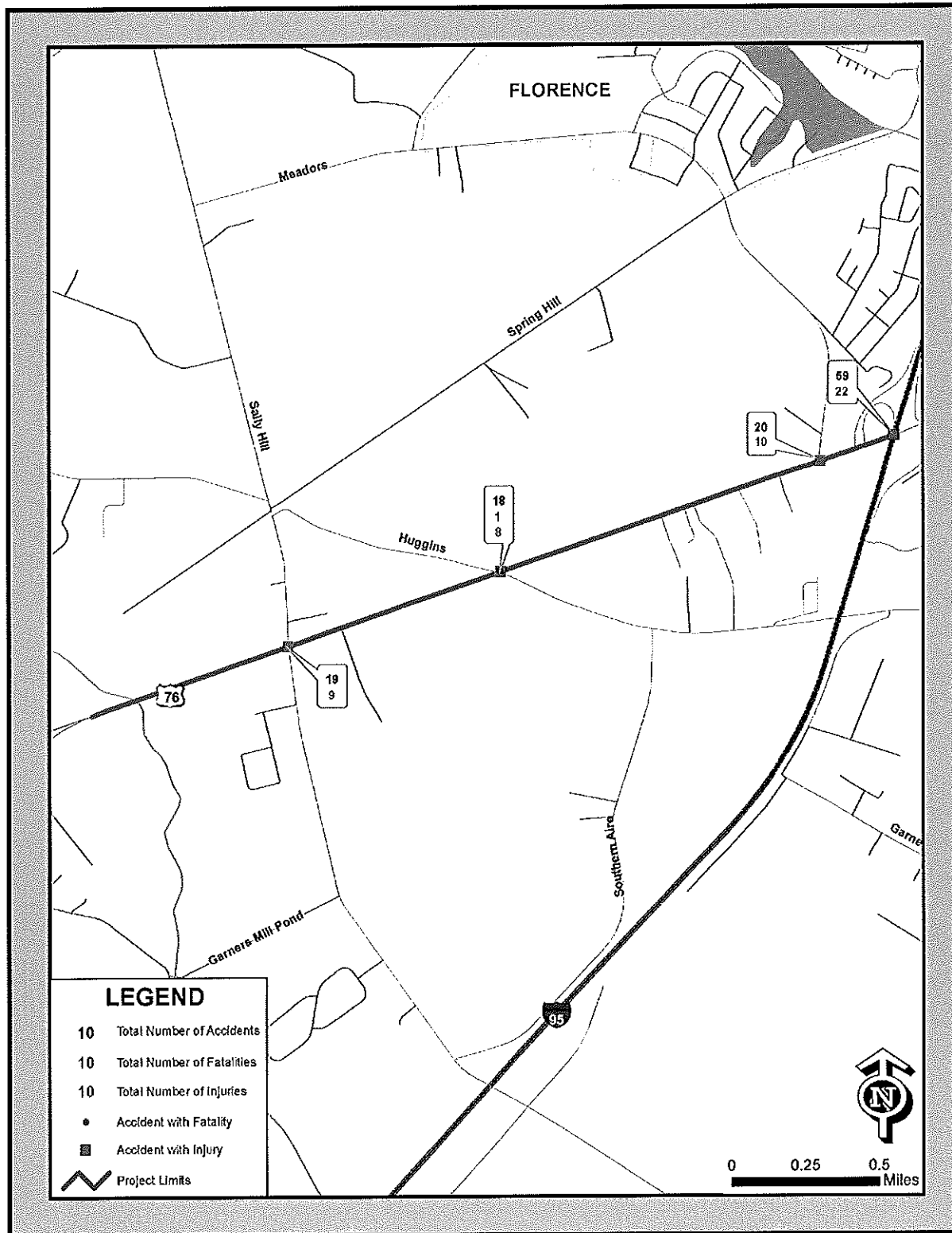
US 76 Corridor Segment	Accidents by Type				Segment Length (Miles)	2003 Volume	Existing Total Accident Rate**	Existing Injury Accident Rate**	2025 Volume	Projected Number of Accidents - 2025
	Injury	Fatality	PDO*	Total						
I-95 to Alligator Rd	4	0	16	20	1.42	10,000	247.5	49.5	19,400	25
Alligator Rd to Timmonsville	10	1	26	37	2.64	9,800	261.2	70.6	18,200	44
Total	14	1	42	57	3.96	9,872	256.3	62.9	18,630	69

* PDO = Property Damage Only

** Accident rates given as accidents per 100,000,000 vehicle-miles traveled on that segment.

Note: Accident data from the interchange of I-95 was not incorporated into this analysis because this portion of US 76 is a four-lane divided roadway.

Figure 5. Accident Locations – US 76 Corridor



Section 7: Summary

While the intersections along the corridor are currently performing well, all segments along the US 76 corridor currently operate at LOS D. This suggests that the corridor is performing close to its capacity at peak hour and under its capacity on a daily basis. However, the forecasted conditions on US 76 suggest over-capacity travel conditions in 2025 that will likely require improvements to US 76 in order to maintain an acceptable level of service.

It should be noted that the FLATS travel demand model estimates a 2025 dwelling unit count of 123 within the traffic analysis zone adjacent and feeding on to US 76. However, there are currently 302 proposed units under development in the West Lakes subdivision that do not appear to be included in the FLATS model. Therefore, these projections are likely understated and will need to be reevaluated during the next update of the FLATS travel demand model.

With a significant amount of vacant industrial and/or commercial property remaining along the roadway in conjunction with the infill development expected to occur north of the alignment, a significant level of growth is expected along US 76 through 2025. There are currently three residential subdivisions under development that will impact the US 76 corridor which collectively comprise an additional 428 units within the area. Of these planned developments, the 302-unit West Lakes subdivision would have the most direct impact on the corridor since it is planned to be located directly on US 76 and will likely have direct access to the roadway.

The accident rates along the US 76 corridor slightly exceeded the state rate for total accidents along primary roadways. It has also been noted herein that much of the property along the US 76 corridor and that portion of Alligator Road near US 76 is vacant. Therefore, as infill development occurs and the number of ingress and egress points increase along US 76, so will the potential for conflicts along the 2-lane roadway. This is particularly true for the intersection at Alligator Road, which is already characterized by a high rate of accidents.

In conjunction, projected over-capacity conditions, an increase in conflict points due to infill and new development, and a total accident rate that exceeds the state average are sound rationale for increasing the capacity and safety features along the US 76 corridor.

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FLORENCE COUNTY STATE INFRASTRUCTURE BANK

Pine Needles Road
Deficiencies Analysis
May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

FOR SALE
Asst 2841
Call 205-233-1111

Pine Needles Road Deficiencies Analysis

Section 1: Project Overview

Pine Needles Road is located in the western edge of the Florence metropolitan area. It is a 2-lane suburban arterial roadway characterized almost exclusively by single-family development along its entire length with the exception of commercial nodes at the intersections of Southborough Road and South Ebenezer Road. The subject of the Pine Needles Road Deficiencies Analysis is the segment of the roadway between these intersections, which is approximately 0.8 miles in length. There are also large tracts of vacant property between I-95 and S. Ebenezer Road that will likely be developed in the near future. Pine Needles Road crosses I-95 and is located in one of the fastest growing areas in Florence County, which makes it a popular route for commuters between Florence and I-20 via Southborough Road.

Purpose

The purpose of this analysis is to:

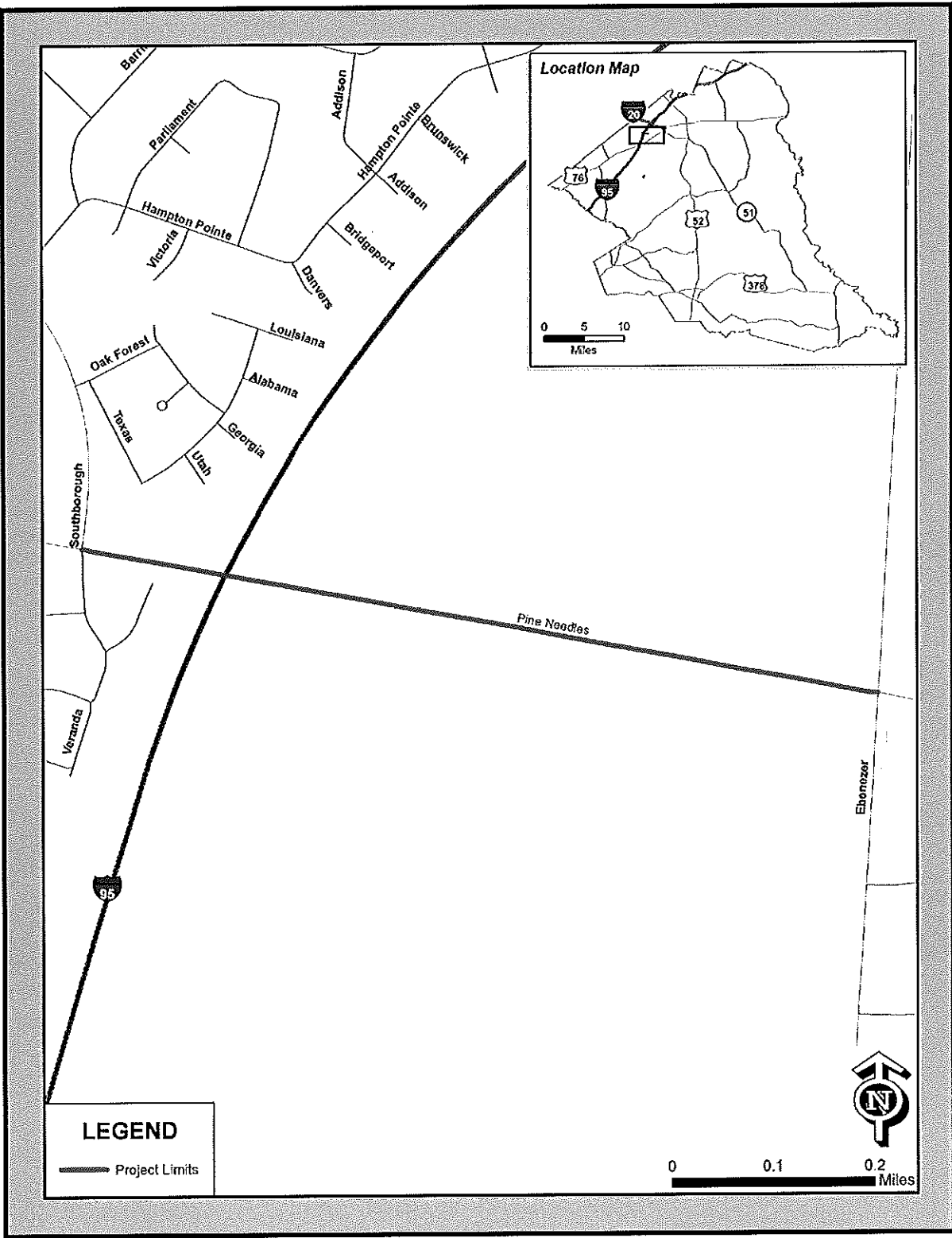
- Identify the existing and projected operational characteristics with respect to capacity and safety along the Pine Needles Road corridor.
- Assess current development patterns, and locations of resulting traffic problems, along the Pine Needles Road corridor.
- Assess how future population growth and land development will affect traffic conditions along an unimproved Pine Needles Road.

Report Outline

This report is outlined as follows:

- Section 2 provides an overview of the general characteristics of the corridor, including posted speeds, average volumes, and physical conditions and geometrics.
- Section 3 discusses the existing congestion levels for both intersections and link segments along the corridor.
- Section 4 provides an analysis of the existing development patterns along the corridor and future development patterns based on the Florence County Comprehensive Plan and recent development trends.
- Section 5 provides an analysis of the future congestion levels along the corridor based on transportation models developed by the South Carolina Department of Transportation (SCDOT), future land use plans, and recent development trends.
- Section 6 provides an analysis of the safety conditions along the corridor and a projected number of accidents that would occur given these conditions in 2025.
- Section 7 provides an overall summary of the findings within this analysis.

Figure 1. Pine Needles Road Analysis Corridor



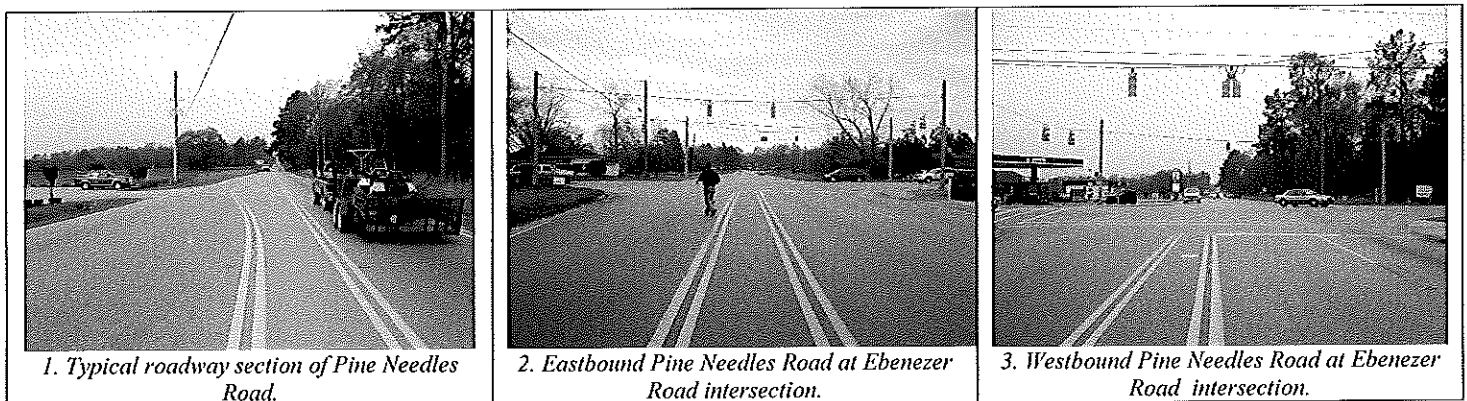
Section 2: Existing Physical Conditions and Geometrics

Existing Road and Surroundings

Pine Needles Road is an east-west 2-lane roadway, which provides access from US 76 via Ebenezer Road to local residences to the west. The roadway is under the jurisdiction of the SCDOT and has a posted speed limit of 45 miles per hour through the project area. A 2003 average daily traffic count provided by the SCDOT showed that Pine Needles Road was carrying 11,500 vehicles per day.

The intersections of Pine Needles Road at Southborough Road and Pine Needles Road at Ebenezer Road are both signalized.

The photographs below document the existing physical condition and geometrics of Pine Needles Road.



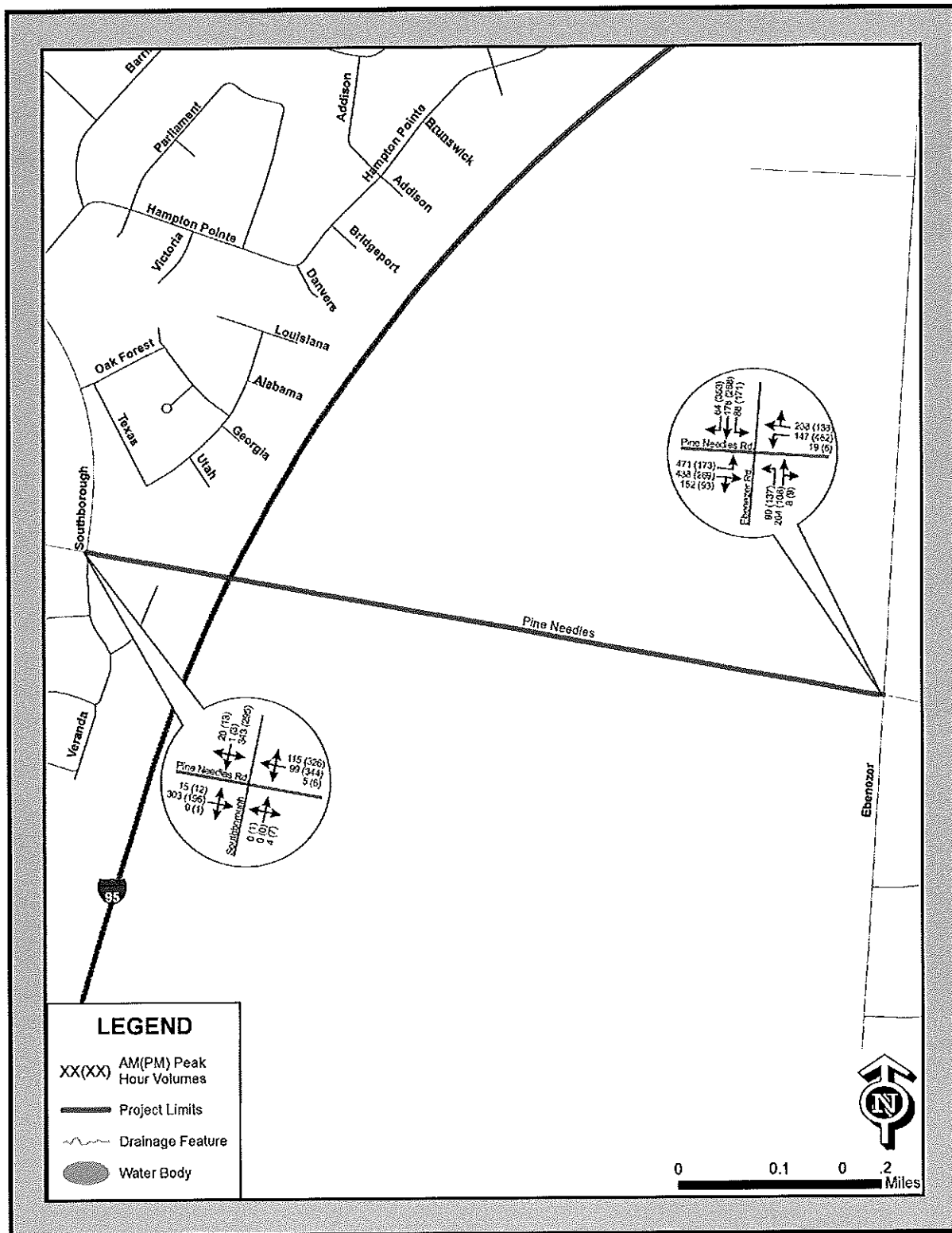
Section 3: Existing Traffic Conditions

Figure 2 illustrates the 2005 AM and PM peak hour turning movement counts at key intersections along Pine Needles Road, which include the following:

- Pine Needles Road at S. Ebenezer Road
- Pine Needles Road at Southborough Road

The critical intersections were analyzed according to the methodologies published in the *2000 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service.

Figure 2. AM and PM Peak Hour Turning Movement Counts



Pine Needles Road Deficiencies Analysis

Table 1 shows that the intersections at S. Ebenezer Road and at Southborough Road are operating at an acceptable level of service during both the AM and PM peak hours; however, the intersection of Pine Needles Road at S. Ebenezer Road is nearing capacity during the AM peak hour. The intersection of Pine Needles Road and Southborough Road operates at LOS B during both the AM and PM peak times, indicating smooth travel conditions. No queuing problems were observed at either intersection.

Table 1
Intersection Level of Service

		2005 Existing Conditions		
<u>Significant Intersections</u>	<u>Time Period</u>	<u>VPH^a</u>	<u>LOS^b</u>	<u>Queuing Failures</u>
Pine Needles Road at S. Ebenezer Road*	AM	2,134	D	None
	PM	2,184	C	None
Pine Needles Road at Southborough Road*	AM	905	B	None
	PM	1,204	B	None
* Denotes signalized intersections				
a VPH = Vehicles-per-Hour; volume of traffic entering intersection				
b LOS = Level-of-Service				

The link capacity analysis is based on the *2000 Highway Capacity Manual* methodology for calculating arterial levels of service. This methodology is based on factors such as average speeds, percent-time following, number of lanes, and volume of traffic. As shown in **Table 2**, the link under analysis operates at LOS E and is exceeding capacity.

Table 2
Existing Link Capacity Level of Service

Pine Needles Road Segment	2005 Existing Peak-Hour Traffic Volumes	
	<u>Volume^a</u>	<u>LOS^b</u>
S. Ebenezer Road to Southborough Road	1,487	E
a =Two-way volume in vehicles-per-hour		
b = Level-of-Service		

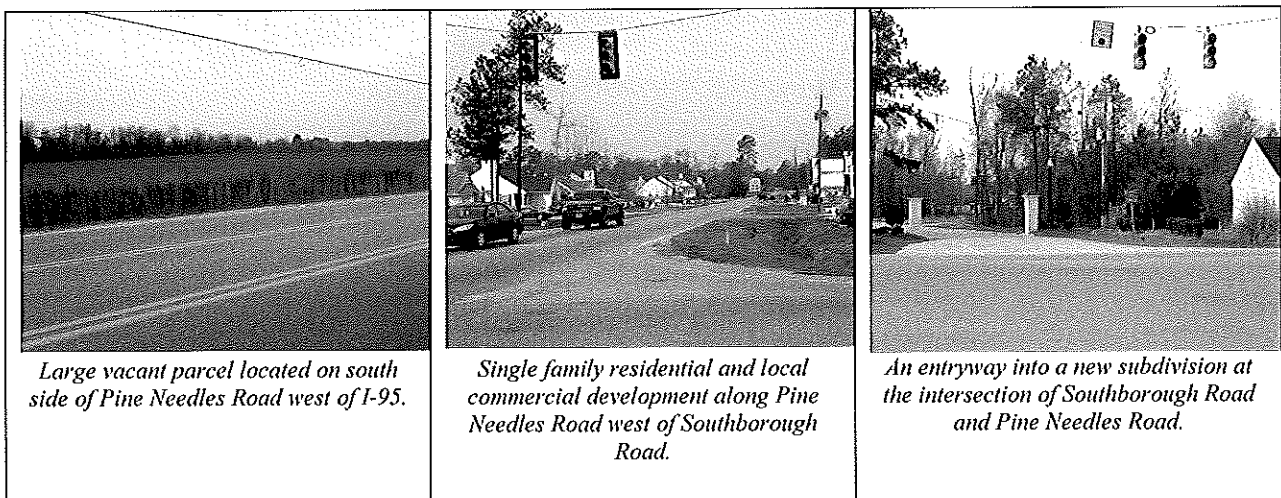
Section 4: Land Use and Development Patterns

Existing Conditions

Development along Pine Needles Road from S. Ebenezer Road to Southborough Road consists almost exclusively of vacant properties, particularly between S. Ebenezer Road and I-95. The exceptions are neighborhood businesses located at each end of the corridor that serve local needs. Beyond Southborough Road to the west, development along Pine Needles Road is almost exclusively single-family residential with vacant parcels soon to be developed with more single-family housing. The same development patterns also exist along Southborough Road north of Pine Needles Road, which extends west to the SC 403 interchange of I-20. To the east of the alignment, there is a recreational complex and fire station located along S. Ebenezer Road.

Future Land Use and Development Patterns

The Florence County Comprehensive Plan has designated the land along Pine Needles Road west of I-95 designated as Existing Residential, a designation suitable for land currently characterized by residential uses that will be subdivided further and/or likely to be the subject for infill and/or redevelopment (**Figure 3**). Property along Southborough Road is also designated for the same future land use. The land along Pine Needles Road from I-95 to Ebenezer Road is designated for Industrial/Business. As previously noted, much of the land in this area is currently vacant. With a significant amount of vacant industrial and/or commercial property remaining along the roadway in conjunction with future infill development expected west of I-95, a significant level of growth is expected along Pine Needles Road through 2025.



Pine Needles Road Deficiencies Analysis

Information from the Florence City-County Planning Commission was obtained to inventory specific development activities that have recently occurred, are planned, or are under development with the potential to impact the Pine Needles Road corridor. There are currently five residential subdivisions that meet this criteria. A map depicting the location of these developments is provided in **Figure 4**. Of these planned developments, the 208-unit Wedgewood subdivision would have the most direct impact on the corridor since it would be located directly on Pine Needles Road. Oak Pointe, Westwind, Westbrook, and, to a lesser degree, West Pointe are other new developments that have or will impact the corridor. The relevant trip generation characteristics of these developments are summarized in **Table 3**.

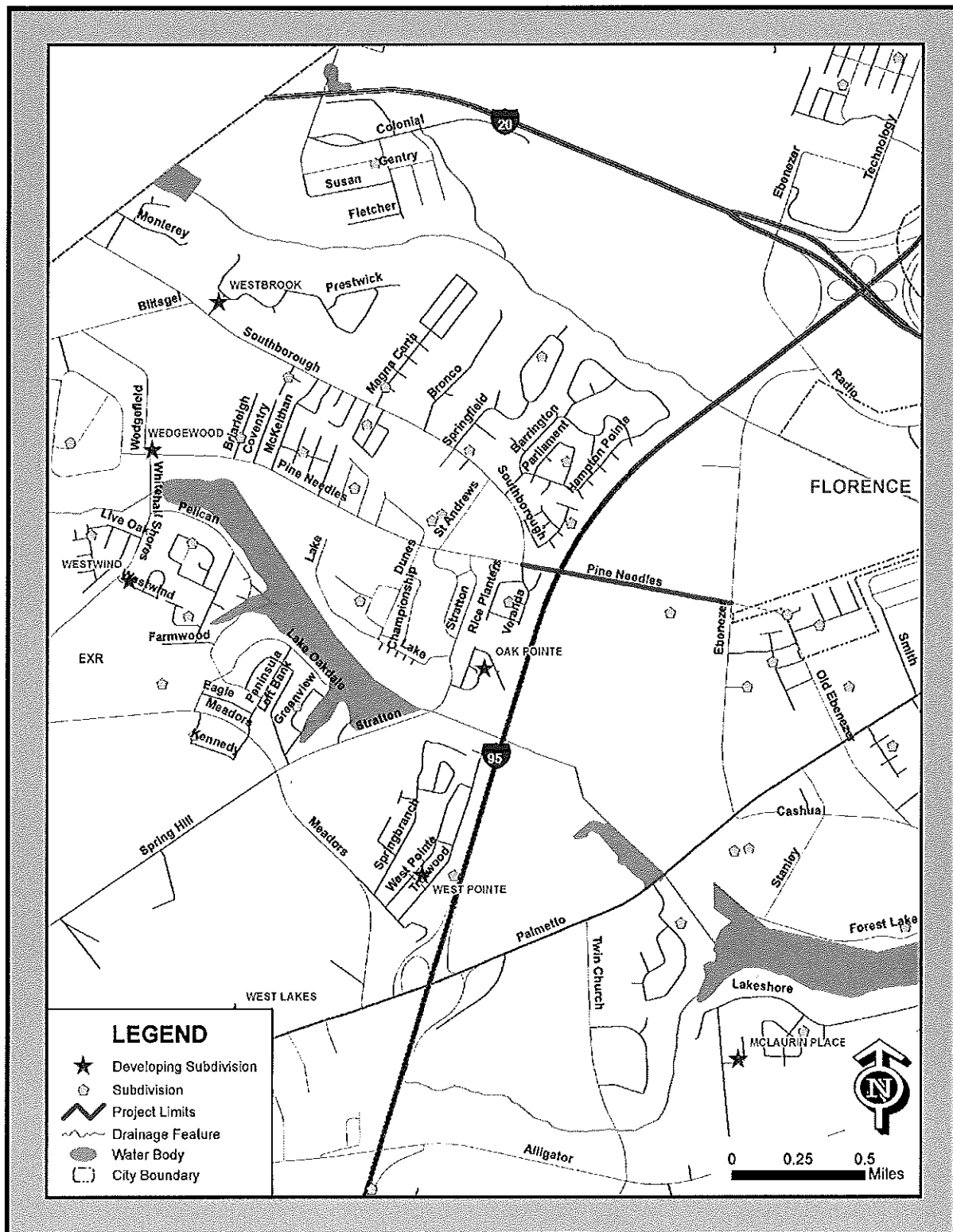
Table 3
Potential Trip Generation from Major Developments

Development	Total Number of Units ¹	Potential Daily Trip Generation ²
Wedgewood	208	1,991
Oak Pointe	45	431
Westbrook	30	287
Westwind	47	450
West Pointe	79	756

1 – Source: Florence City-County Planning Commission

2 – Source: Institute of Traffic Engineers (ITE) Trip Generation Manual, 7th Edition

Figure 4. Recent Developments Impacting the Pine Needles Road Corridor



Section 5: Future Traffic Conditions

Future traffic volumes were identified by forecasting via linear regression of current traffic volume growth along Pine Needles Road, estimation of potential future growth along the corridor, and examination of the 2025 Transportation Model for the Florence Area Transportation Study (FLATS) developed by the SCDOT. Adjacent links, at or over capacity, and their relationship to existing traffic volumes along the Pine Needles Road corridor were also considered. It was determined that the current FLATS model demographic data closely estimates the projected dwelling units within the Pine Needles Road Corridor and should be considered valid for estimating 2025 traffic volumes in within this corridor.

As shown in **Table 4**, the forecasted conditions on Pine Needles Road suggest over-capacity travel conditions. This road is expected to pass its existing capacity and will require improvements to maintain an acceptable level of service.

Table 4
Future Link Capacity Analysis

Pine Needles Road Segment	2025 Future Peak-Hour Traffic Volumes	
	<u>Volume</u> ^a	<u>LOS</u> ^b
S. Ebenezer Road to Southborough Road	2,262	E
a =Two-way Volume in vehicles-per-hour		
b = Level-of-Service		

Section 6: Accident Analysis

Accident data from the South Carolina Department of Public Safety for the period of January 1, 2003 through July 22, 2004 was obtained to develop accident rates for the segment of Pine Needles Road from Southborough Road to Ebenezer Road. As shown in **Table 5**, there were a total of 15 accidents along this segment during this timeframe and, of these, three were injury accidents.

As shown in **Table 5**, the rate for total accidents and injury accidents along the Pine Needles Road corridor was approximately 287 and 57 accidents per hundred million vehicle miles, respectively. In 2001, the rate for all accidents and injury accidents for the State of South Carolina on secondary roads was 302 and 157 accidents per hundred million vehicle miles, respectively. Therefore, the accident rates along the Pine Needles Road corridor were below the state rates for both total accidents and injury accidents. This can be attributed primarily to an abundance of vacant property and, thus, a minimal amount of potential conflict points along the roadway. All but one of the 15 accidents on the corridor occurred at the intersections with S. Ebenezer Road and Southborough Road, as shown in **Figure 5**.

By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents along Pine Needles from Southborough Road to S. Ebenezer Road would be 15 accidents per year by 2025.

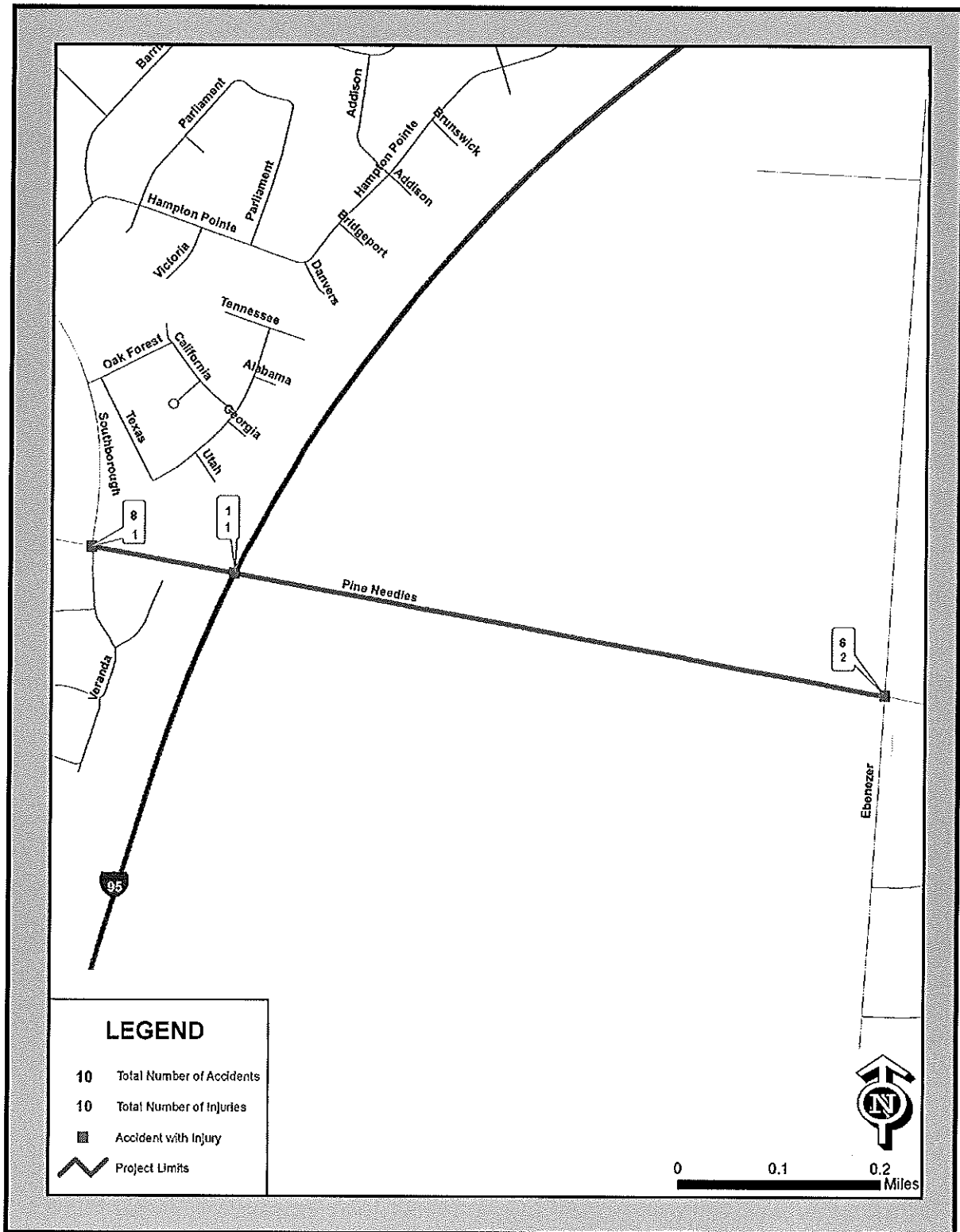
Table 5
Accident Rate Analysis

Pine Needles Road Corridor Segment	Accidents by Type				Segment Length (Miles)	2003 Volume	Existing Total Accident Rate**	Existing Injury Accident Rate**	2025 Volume	Projected Number of Accidents - 2025
	Injury	Fatality	PDO*	Total						
Southborough to S. Ebenezer	3	0	12	15	0.8	11,500	286.5	57.3	17,500	15
Total	3	0	12	15	0.8	11,500	286.5	57.3	17,500	15

* PDO = Property Damage Only

** Accident rates given as accidents per 100,000,000 vehicle-miles traveled on that segment.

Figure 5. Accident Locations – Pine Needles Road Corridor



Section 7: Summary

The segment of Pine Needles Road from S. Ebenezer Road to Southborough Road is currently exceeding capacity. Furthermore, the intersection of Pine Needles Road at S. Ebenezer Road is nearing capacity during the AM peak hour and the forecasted conditions on Pine Needles Road suggest over-capacity travel conditions. Therefore, this road is expected to require improvements to maintain an acceptable level of service.

The accident rates along the Pine Needles Road corridor were lower than the statewide rates for both total accidents and for injury accidents on secondary roads. However, it should be noted that development along the Pine Needles Road corridor consists almost exclusively of vacant properties, particularly between S. Ebenezer Road and I-95. Therefore, as infill development occurs and the number of ingress and egress points increase along Pine Needles Road, so will the potential for conflicts along the 2-lane roadway.

In conjunction, projected over-capacity conditions and an increase in conflict points due to infill and new development are sound rationale for increasing the capacity and safety features along the Pine Needles Road corridor.

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FLORENCE COUNTY STATE INFRASTRUCTURE BANK

US 378

Deficiencies Analysis

May 6, 2005



ENGINEERS
PLANNERS
ECONOMISTS

Wilbur Smith Associates

US 378 Deficiencies Analysis

Section 1: Project Overview

US 378 is a major route through southern Florence County and South Carolina as a whole. The roadway serves as an important commercial route between the Grand Strand and cities further along its alignment such as Sumter and Columbia. Within Florence County, the roadway provides access to Olanta, Lake City, Hannah, and Kingsburg. The limits of the US 378 Deficiencies Analysis are the segment from US 52 near Lake City to SC 41 in Kingsburg (Figure 1). This segment is approximately 19.2 miles in length and is primarily a 2-lane rural arterial characterized by low density residential development and agricultural uses.

Purpose

The purpose of this analysis is to:

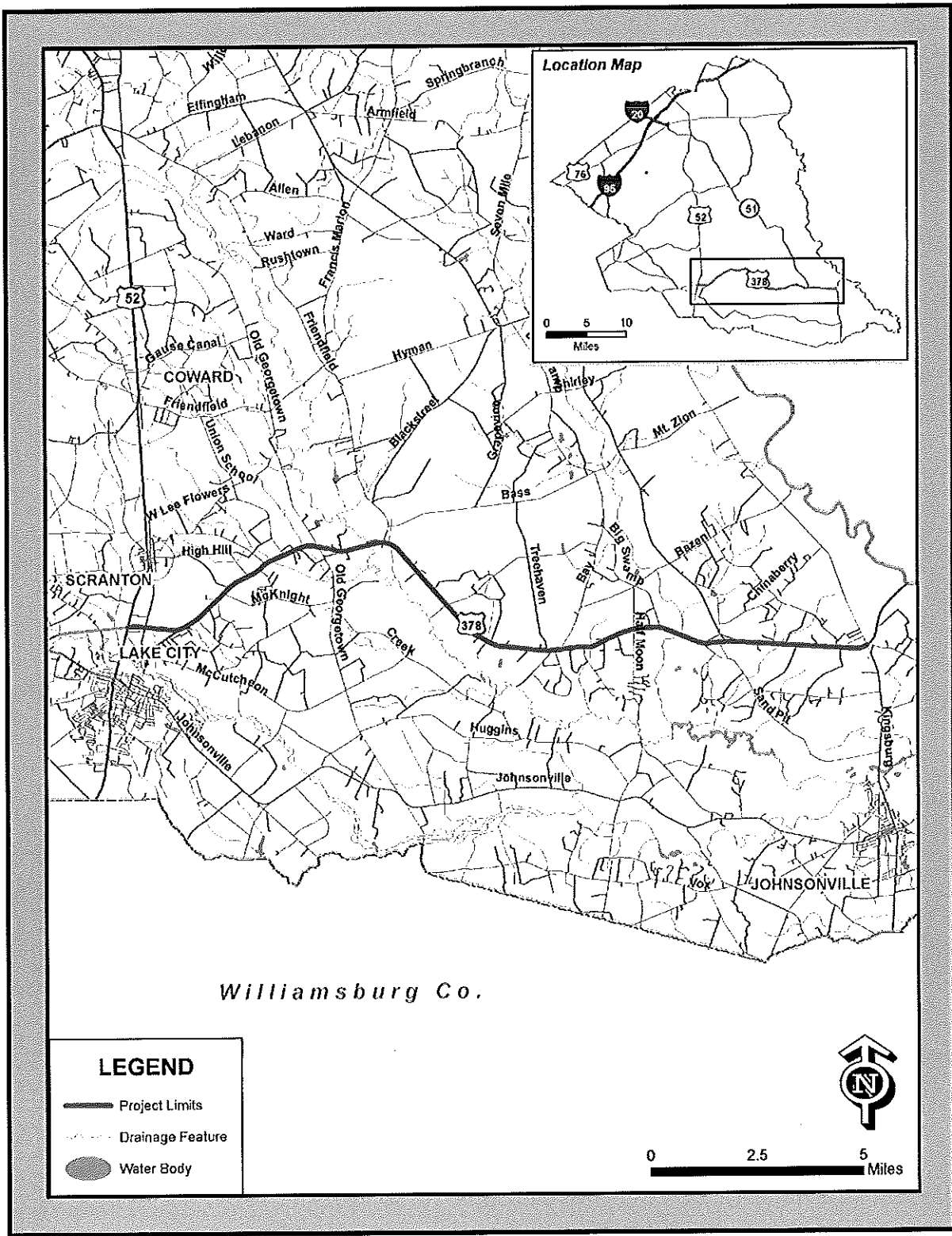
- Identify the existing and projected operational characteristics with respect to capacity and safety along the US 378 corridor.
- Assess current development patterns, and locations of resulting traffic problems, along the US 378 corridor.
- Assess how future population growth and land development will affect traffic conditions along an unimproved US 378.

Report Outline

This report is outlined as follows:

- Section 2 provides an overview of the general characteristics of the corridor, including posted speeds, average volumes, and physical conditions and geometrics.
- Section 3 discusses the existing congestion levels for both intersections and link segments along the corridor.
- Section 4 provides an analysis of the existing development patterns along the corridor and future development patterns based on the Florence County Comprehensive Plan and recent development trends.
- Section 5 provides an analysis of the future congestion levels along the corridor based on transportation models developed by the South Carolina Department of Transportation (SCDOT), future land use plans, and recent development trends.
- Section 6 provides an analysis of the safety conditions along the corridor and a projected number of accidents that would occur given these conditions in 2025.
- Section 7 provides an overall summary of the findings within this analysis.

Figure 1. US 378 Analysis Corridor



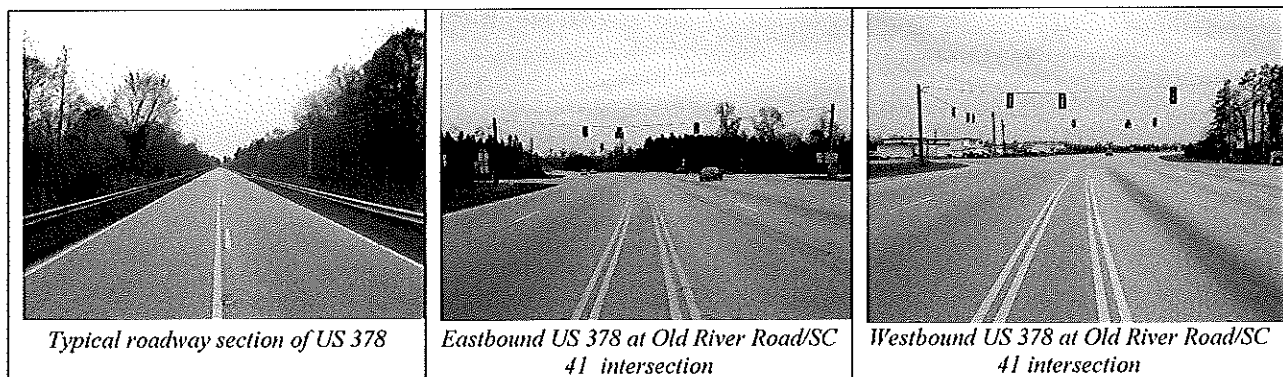
Section 2: Existing Physical Conditions and Geometrics

Existing Road and Surroundings

US 378 is an east-west 2-lane roadway in the corridor providing access between Lake City and Kingsburg. The roadway is under the jurisdiction of the SCDOT and has a posted speed limit of 55 miles per hour through the project area. A 2003 average daily traffic count provided by the SCDOT showed that US 378 was carrying between 5,000 and 5,500 vehicles per day in the corridor.

The intersections of US 378 at US 52, US 378 Business, Old Georgetown Road, Friendfield Road, Half Moon Road, and Pamlico Highway/Sandpit Road are all stop-controlled, with stop signs located on the side streets. The intersection of US 378 at Old River Road/SC 41 is signalized.

The photographs below document the existing physical condition and geometrics of US 378.

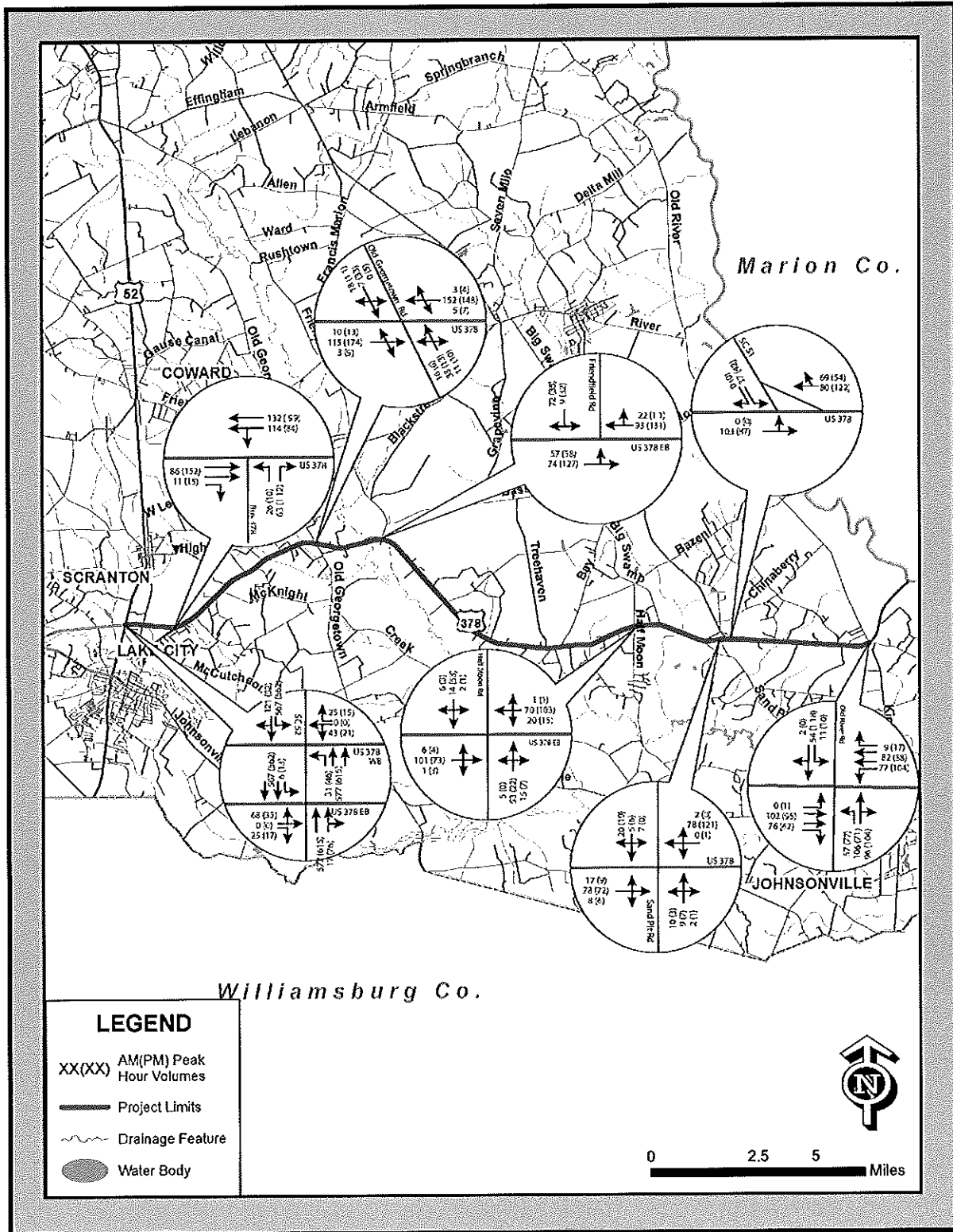


Section 3: Existing Traffic Conditions

Figure 2 illustrates the 2005 AM and PM peak hour turning movement counts at key intersections along US 378, which include the following:

- US 378 Bypass at US 52
- US 378 at US 378 Bypass
- US 378 at Old Georgetown Road
- US 378 at Friendfield Road
- US 378 at Half Moon Road
- US 378 at Pamlico Highway (SC 51)
- US 378 at Sand Pit Road
- US 378 at Old River Road / Kingsburg Highway (SC 41)

Figure 2. AM and PM Peak Hour Turning Movement Counts – US 378 Corridor



US 378 Deficiencies Analysis

The critical intersections were analyzed according to the methodologies published in the *2000 Highway Capacity Manual*. The analysis determines the "Level of Service" (LOS) of the intersections and is based on factors such as the number and types of lanes, signal timing, traffic volumes, pedestrian activity, etc. Levels of service are expressed in a range from "A" through "F," with "A" being the highest level of service, and "F" representing the lowest level of service.

As shown in **Table 1**, all intersections within the US 378 Corridor are currently operating at high levels of service during the peak periods of the day. Each intersection has capacity available to accommodate future traffic growth.

Table 1
Intersection Level of Service

		2005 Existing Conditions		
<u>Significant Intersections</u>	<u>Time Period</u>	<u>VPH^a</u>	<u>LOS^b</u>	<u>Queuing Failures</u>
US 378 Bypass at US 52	AM	1,480	A	None
	PM	1,452	A	None
US 378 at US 378 Bypass	AM	432	A	None
	PM	472	A	None
US 378 at Old Georgetown Road	AM	373	A	None
	PM	433	A	None
US 378 at Friendfield Road	AM	329	A	None
	PM	394	A	None
US 378 at Half Moon Road	AM	294	A	None
	PM	285	A	None
US 378 at Pamplico Highway (SC 51)	AM	289	A	None
	PM	305	A	None
US 378 at Sand Pit Road	AM	236	A	None
	PM	245	A	None
US 378 at Old River Road / Kingsburg Highway (SC 41)*	AM	672	A	None
	PM	757	A	None
* Denotes signalized intersections				
a VPH = Vehicles-per-Hour; volume of traffic entering intersection				
b LOS = Level-of-Service				

US 378 Deficiencies Analysis

The link capacity analysis is based on the *2000 Highway Capacity Manual* methodology for calculating arterial levels of service. This methodology is based on factors such as average speeds, percent-time following, number of lanes, and volume of traffic.

Table 2 summarizes the results of the existing link capacity analysis along the US 378 corridor. All links throughout this corridor operate at LOS C. This suggests that the corridor itself is performing at its current capacity but may begin to show levels of congestion as development, residential and otherwise, continues.

Table 2
Existing Link Capacity Level of Service

US 378 Segment	2005 Existing Peak-Hour Traffic Volumes	
	<u>Volume</u> ^a	<u>LOS</u> ^b
US 52 to Old Georgetown Road	447	C
Old Georgetown Road to Half Moon Road	348	C
Half Moon Road to Old River Road / Kingsburg Highway (SC 41)	323	C
a = Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 4: Land Use and Development Patterns

Existing Conditions

The development along US 378 primarily consists of agricultural uses with a mix of single-family homes, and mobile homes. Much of this housing is located in clusters accessed with individual driveways, cul-de-sacs, and shared dead end streets or shared driveways. Low-intensity commercial uses are also scattered along the corridor and are clustered near Friendfield and Kingsburg Highway. There are also two industrial developments near the intersection of Kingsburg Highway; however, one is vacant. Examples of typical development along US 378 are provided below.

Future Land Use and Development Patterns

The Florence County Comprehensive Plan has designated most of the land along US 378 as Rural Resource/Agricultural Area, a designation for lands designated for agricultural and low density residential uses (**Figure 3**). A small portion of property along the roadway is designated as Developing Residential, a designation for growing residential areas, to accommodate for future growth in the Lake City and Scranton areas. The Plan also identifies three Rural Community Nodes at the intersections of Friendfield Road, Pamplico Highway and SC 41 for local commercial uses. Therefore, with the exception of those areas near Lake City, the uses planned for the US 378 Corridor through 2025 are very much as they are today.

Pursuant to information from the Florence City-County Planning Commission, there are no specific development activities either planned or under development with the potential to impact the US 378 corridor.

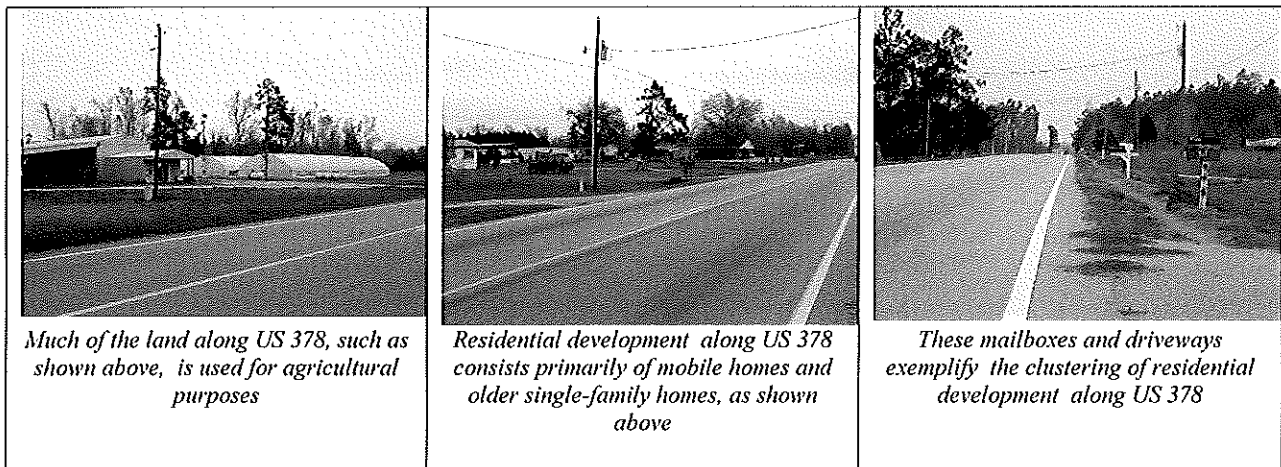
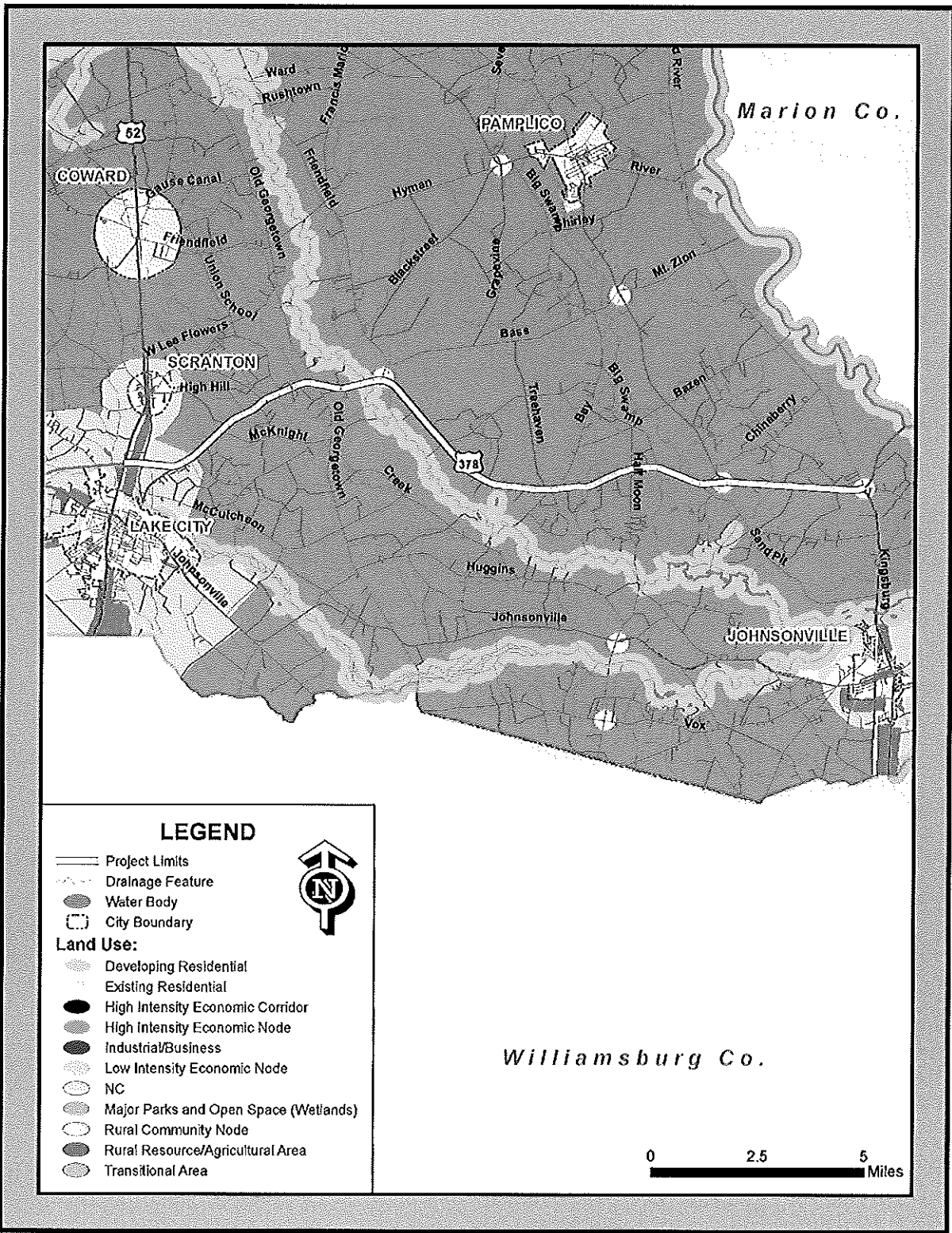


Figure 3 Future Land Uses along the US 378 Corridor



Section 5: Future Traffic Conditions

Future traffic volumes were identified by forecasting via linear regression of current traffic volume growth along US 378, estimation of potential future growth along the corridor, and examination of the 2025 Statewide Transportation Model developed by the SCDOT. Adjacent links, at or over capacity, and their relationship to existing traffic volumes along the US 378 Corridor were also considered. With close examination of recent and proposed residential development, it is suggested that the SCDOT statewide model remains a valid tool for estimating future traffic flows within this corridor. It is also suggested that a closer examination of retail and other commercial development be evaluated when planning an increase in capacity within this corridor.

As shown in **Table 3**, all links throughout this corridor will operate at an acceptable level of service in the future. The link from Half Moon Road to Old River Road/Kingsburg Highway (SC 41) will operate at LOS D and should be monitored as it approaches capacity.

Table 3
Future Link Capacity Analysis

US 378 Segment	2025 Future Peak-Hour Traffic Volumes	
	<u>Volume</u> ^a	<u>LOS</u> ^b
US 52 to Old Georgetown Road	677	C
Old Georgetown Road to Half Moon Road	680	C
Half Moon Road to Old River Road / Kingsburg Highway (SC 41)	907	D
a = Two-way volume in vehicles-per-hour		
b = Level-of-Service		

Section 6: Accident Analysis

Accident data from the South Carolina Department of Public Safety for the period of January 1, 2003 through July 22, 2004 was obtained to develop accident rates for the segment of US 378 between US 52 and SC 41. As shown in **Table 4**, there were a total of 41 accidents along this segment during this timeframe and, of these, 16 were injury accidents which involved one fatality.

Table 4
Accident Rate Analysis

US 378 Corridor Segment	Accidents by Type				Segment Length (Miles)	2003 Volume	Existing Total Accident Rate**	Existing Injury Accident Rate**	2025 Volume	Projected Number of Accidents - 2025
	Injury	Fatality	PDO*	Total						
US 52 to Old G'town Rd	5	1	8	14	5.15	5,500	86.9	31.0	8,300	14
Old G'town Rd to Half Moon Rd	8	0	10	18	8.55	5,300	69.8	31.0	10,400	23
Half Moon Road to SC 41	3	0	6	9	5.57	5,000	66.8	18.9	14,000	16
Total	16	1	24	41	19.27	6,267	71.0	27.7	10,879	62

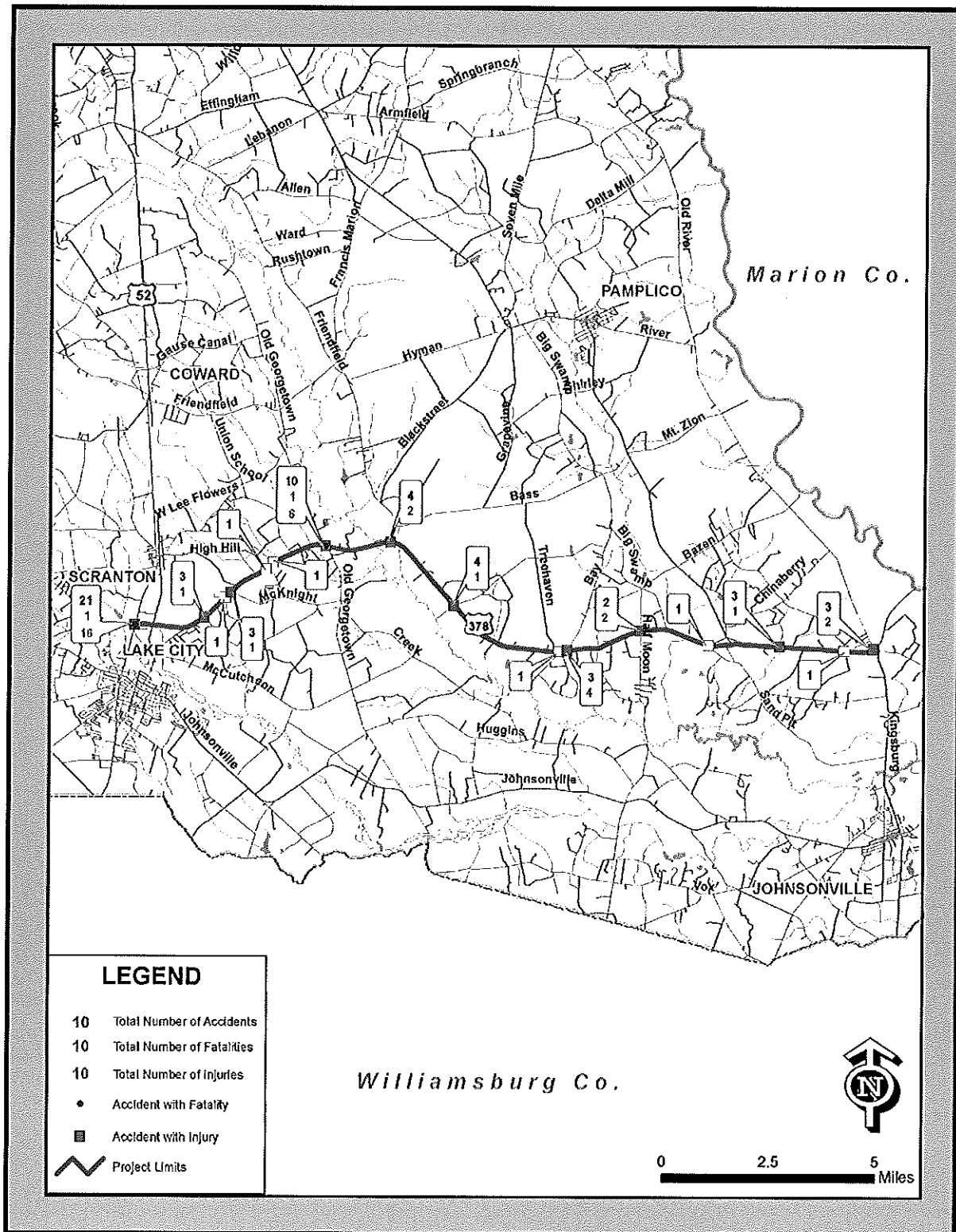
* PDO = Property Damage Only

** Accident rates given as accidents per 100,000,000 vehicle-miles traveled on that segment.

As shown in **Table 4**, the rate for all accidents and injury accidents along the US 378 corridor was approximately 71 and 28 accidents per hundred million vehicle miles, respectively. In 2003, the rate for all accidents and injury accidents for the State of South Carolina on primary roads was 239 and 74 accidents per hundred million vehicle miles, respectively. Therefore, the accident rate along US 378 was below the state rate for both total accidents and injury accidents. The locations and number of total accidents, injury accidents, and fatality accidents are shown on **Figure 4**.

By applying these accident rates to the projected daily volumes along the corridor, the projected number of accidents along the US 378 corridor would be 62 in the year 2025.

Figure 4. Accident Locations – US 378 Corridor



Section 7: Summary

All of the segments along the US 378 corridor currently operate at a level of service of C, which would suggest that the corridor is performing at its current capacity but may begin to show levels of congestion as development, residential and otherwise, continues. Furthermore, all links throughout this corridor will operate at an acceptable level of service in the future. The link from Half Moon Road to Old River Road/Kingsburg Highway (SC 41) will operate at LOS D and should be monitored as it approaches capacity.

As there are no specific development activities either planned or under development with the potential to impact the US 378 corridor, it has been determined that the 2025 Statewide Transportation Model developed by the SCDOT remains valid in forecasting 2025 traffic flows along this corridor.

In conjunction, future travel demand, planned development, and accident rates along the roadway do not provide justification for increasing the capacity along the US 378 corridor solely on the basis of roadway operations.



Florence County Forward Project Map

