



Prepared for consideration by New Hanover County  
as a supplement to the 2006 CAMA Plan Update



# RIVER ROAD SMALL AREA PLAN

Wilmington Metropolitan Planning Organization



**RIVER ROAD**  
small area plan



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## EXECUTIVE SUMMARY

### Introduction

With more people moving into what is geographically the second smallest county in the State, developers are striving to keep pace with the demand for housing and commercial space. The River Road small area, located south of the City of Wilmington and north of Carolina and Kure Beaches, is one of prime locations for this development. Ten site plans are currently approved for development, while several others are in the planning or construction phases. In total, current plans for the area call for the addition of approximately 3,700 to 4,800 new housing units, 580,000 square feet of new commercial/retail space, 360,000 square feet of new office space, and more than 100,000 square feet of additional institutional space.

Due in part to the rapid growth, the County and Transportation Advisory Committee of the Wilmington Metropolitan Planning Organization requested a study to look at the effects of development in the area, particularly on transportation infrastructure. The River Road Small Area Plan is the product of that request.

The River Road small area is bounded by Carolina Beach Road to the east and

northeast, Independence Boulevard to the northwest, the Cape Fear River to the west, and Sanders Road to the south.

Lack of adequate planning in the 1970s and 1980s is partly to blame for a portion of the growing pains being experienced by the Silva Terra and Silver Lake communities today. Rapid commercial growth near Monkey Junction has created a roadway network with multiple signals and service roads with numerous curb cuts. Growth here as well as in Carolina and Kure Beaches helped establish an area dominated by fast-moving, congested thoroughfare corridors and isolated neighborhoods. Local neighborhoods grew with numerous cul-de-sacs and few circuitous connections between one another. Only a few of the newer residential developments have sidewalks, limiting pedestrian and bicycle connections.

With the potential for an additional 4,800 household units being developed in the area, the existing transportation network will not be able to adequately serve River Road neighborhoods. Now is the time to identify a plan that serves not only the interests of existing and future residents and businesses, but also those Wilmingtonians who will find it necessary to travel to and through the area as part of their regular schedule.

### *Problem Statement*

Because developments are planned along River Road from Independence Boulevard south to Sanders Road, an opportunity exists to assess the current status of the community. It will then be possible to determine what steps can be taken to balance the impacts of growth in the area for both existing and new neighborhoods. Most importantly, it is critical to identify what transportation improvements need to be made for both River Road proper as well as other arterials and local streets in the area. With the small area approaching full build-out, it is necessary to consider what improvements will ensure a livable and successful community and to collaborate with the developers on proper implementation.

### *Core Principles/Purpose*

- **Address Travel Safety** — Identify existing locations with crash problems and potential issues regarding safety for motorists, cyclists, and pedestrians.
- **Enhance Access and Mobility** — Ensure adequate facilities are built in conjunction with new development to provide convenient access and transportation options.
- **Protect the Natural Environment** — Minimize impacts to important





environmental features including wetlands, streams, and sand ridges.

- **Address Traffic Capacity Needs** — Identify ultimate cross-sections and improvements at critical intersections to address 2025 traffic volumes.
- **Ensure Aesthetic Quality** — Incorporate features in plans that will highlight scenic nature of riverfront; require design elements for new development and improvements that are visually enhancing.
- **Ensure Constructability** — Present plan that includes improvements that are technically and financially feasible.

## Planning Process

The Wilmington MPO initiated the *River Road Small Area Plan* to evaluate the land use, transportation, and mobility constraints along the corridor given current growth trends. Public involvement — considered crucial to the success of the study — was accomplished during a three-day public design charrette (see side box for more information about a charrette). The design charrette was held February 27 through March 1, 2007, at Mary C. Williams Elementary School, located in the heart of the study area. The charrette intended to solicit input from community members and local stakeholders. The ultimate goal of the charrette was to

generate ideas into a comprehensive plan that aids area development to be safe, efficient, and aesthetically pleasing, for both existing and new neighborhoods. The Wilmington MPO provided oversight for the River Road Small Area Plan charrette.

### *The Charrette*

The project team tailored the River Road charrette to develop a vision and recommendations for the plan in a collaborative and time-sensitive fashion.

**Day 1:** The first day of the charrette was designed to help participants create a vision for making the River Road area safer and more sustainable. Events throughout the day helped orient the project team with the area and integrate the public into the planning process and included:

- Tour of study area by the project team.
- Stakeholder interviews with business owners and developers, local staff, elected officials, school officials, and representatives from NCDOT.
- Work session to development of design concepts and prepare for the first public workshop.
- Public workshop aimed to identify issues and opportunities and establish a vision for the area, with an overview presentation, a large-group discussion, and small group discussion sessions

around maps to provide location-specific issues and recommendations.

**Day 2:** The charrette team reviewed the comments brought up at the meeting, and compared those with the issues identified by stakeholders the previous day. Once they clarified the concerns of the interested parties, the charrette team worked to address the comments and generate response in the plan. The intense session included an assessment of traffic and crash data, land use trends, planned and approved development, environmental constraints, and design options.

**Day 3:** The third day of the charrette focused on blending the comments and ideas from the first two days into a coherent plan that captured the community's vision and core principles. The project team finalized the recommendations and introduced them at the final workshop, once again held at the Mary C. Williams Elementary School.

The public input gained from the charrette process helped make sure that citizen voices were heard, and the concerns of stakeholders were considered as the *River Road Small Area Plan* was developed.



## Evaluation of Existing Conditions

This existing transportation network, land use framework, environmental features, and social characteristics of the River Road area all were considered during the development of this small area plan. Examining these elements have helped establish a foundation for determining critical improvements in the context of current growth and development patterns.

Key findings include:

- Projected traffic growth from 2005 to 2025 for River Road, Independence Boulevard, and Sanders Roads exceed 250%, and on Carolina Beach Road exceed 100% west of College Road.
- Over 480 crashes occurred on Carolina Beach Road between December 2003 and November 2006. The crash rate on Sanders Road exceeds the statewide average for similar facilities by 38%.
- Planned development will add 3,700 to 4,800 homes and apartments, 950,000 to 1.1 million square feet of commercial/ retail and offices, institutional space, a golf course, and a marina to the River Road small area.
- There are a significant number of community facilities and landmarks in the area or nearby, including six

schools, three parks, a county branch library, and a post office.

## Findings & Recommendations

Continued work since the charrette has refined these results based on further research and comments received by stakeholders, citizens, and review agencies.

This report does not recommend an alignment for River Road with the Newland Communities development. The recommendations presented in this report are compatible with both the 1999 approved and 2006 planned alternatives. The decision for approval of the current planned alternative belongs to the New Hanover County commissioners. The County's staff and Commissioners should consider the findings and the area-wide recommendations made within the *River Road Small Area Plan* to aid in the realignment decision.

### ***Transportation*** ***Roadway Projects***

In order to effectively evaluate the area's transportation needs in the planning horizon year of 2025, it was necessary to determine the traffic constraints resulting from a full build-out of all parcels within the study area. Using the projections developed during the course of the study, the following roadway improvements are

recommended in order to meet the traffic capacity needed by 2025:

- **Sanders Road is recommended to be designated as a future four-lane median-divided facility** considered for widening in the 2015 time frame and included in the LRTP.
- **River Road is recommended to become a four-lane section** as the 2025 volumes reach levels near 28,000 to 30,000 AADT. Some segments of the road could initially be rebuilt as a two-lane, median-divided facility with a ditch section within the 100-foot right-of-way. As development is completed and through traffic increases along River Road, the roadway can be improved to four lanes with curb and gutter in order to maintain a 100-foot right-of-way.
- With future connections to the Cape Fear Skyway and an eastern segment slated to be widened to four lanes in the City of Wilmington Capital Improvement Program, **Independence Boulevard should be widened and improved to a four-lane, median-divided facility** to coincide with the Skyway's opening.
- The projected 2025 volumes show that traffic on Carolina Beach Road will continue to grow and exceed capacity before 2025. An upgrade for Carolina





Beach Road is included in the Wilmington LRTP and will consider widening options.

For the River Road small area, efficient traffic flow to and from neighborhoods and local businesses relies heavily on connections at intersections on Carolina Beach Road. In the near term, NCDOT recently performed **an Access Management Study for the Carolina Beach Road corridor** with recommendations for adding new signals, eliminating some existing signals, installing mainline directional crossovers at current median breaks, and closing specific existing median breaks. It is recommended these plans (**Table E.1** and **Figure 12** in the plan) be implemented, including the installation of a signal at Silver Lake Road.

In addition, **it is recommended to evaluate the signal timings for the entire corridor between downtown Wilmington and Carolina Beach to develop an updated signal coordination plan.** While the corridor currently operates with an older coordinated signal system, an updated plan will not only help to decrease the number of stops through the corridor and the resulting rear-end crashes, but also increase the efficiency and capacity of traffic operations along the Carolina Beach corridor.

**Table E.1. NCDOT Carolina Beach Road Access Management Plan**

Intersection with Carolina Beach Road	Current Traffic Control	Proposed Treatment
George Anderson Drive	Signalized	None
Coddington School Entrance	Unsignalized	Closed (Should be Responsibility of Developers)
Fairview Drive	Unsignalized	Signalize (Should be Responsibility of Developers)
St. Andrews Drive	Unsignalized	Offset Directional Lefts
Silva Terra Drive	Signalized	None
Median Break near Riggs Trail	Unsignalized	Southbound Directional Left (Should be Responsibility of Developers)
Horn Road	Unsignalized	Offset Directional Lefts
Silver Lake Road	Signalized (Under Proposed Spot Safety Project)	None
Archmill Way	Unsignalized	Offset Directional Lefts
Median Break north of Antoinette Drive	Unsignalized	Offset Directional Lefts
Antoinette Drive/Wal-Mart Entrance	Signalized	None
Service Road	Unsignalized	Closed
Service Road	Signalized	None
Rosa Parks Lane	Unsignalized	Closed
Median Break at Retirement Home Entrance	Unsignalized	Offset Directional Lefts
Sanders Road	Signalized	None



The study also investigated operations at five crucial intersections in the study area to determine future laneage needed to handle traffic growth. Recommendations included **proposed intersection improvements in laneage, alignment, traffic control, pedestrian facilities, and landscaping at the following intersections:**

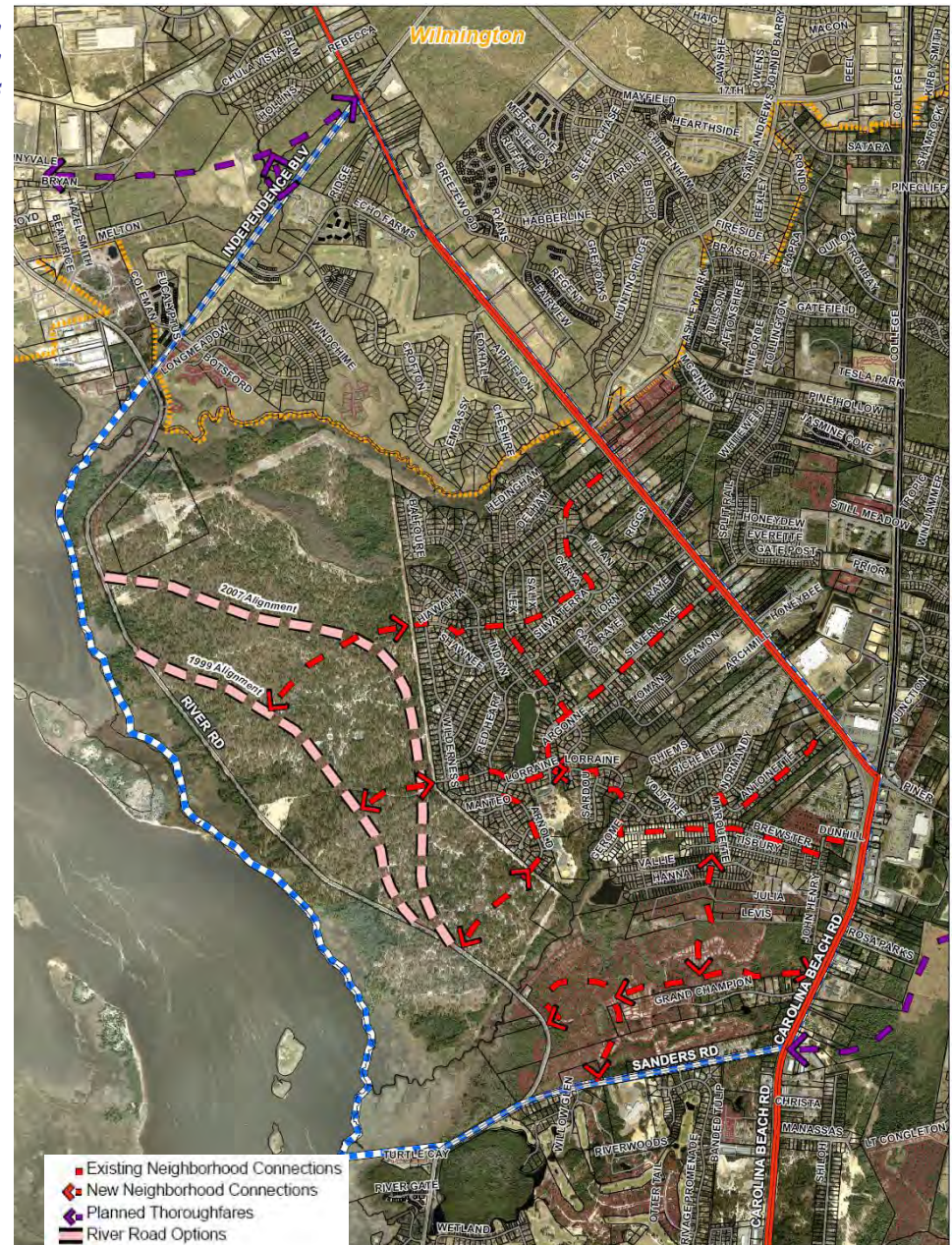
- Independence Boulevard at River Road,
- Sanders Road at River Road,
- Sanders Road at Carolina Beach Road,
- Silva Terra Road at Carolina Beach Road, and
- Silver Lake Road at Carolina Beach Road.

## Connectivity

It is recommended that roadway connections be planned to better link existing neighborhoods to new development as well as each other. **Figure 13** in the plan illustrates the recommended street connections within these cells.

Connections are critical to the River Road small area, and were a source of debate at the public workshops. **It is recommended that development by Newland Communities provide three connections**

## Roadway Connectivity Recommendations







at **Wilderness Road, Lorraine Drive, and Arnold Road**. These links will serve two purposes: 1) provide access to the existing neighborhoods to River Road as an alternate north-south route and 2) provide access from River Road and Newland development to Mary C. Williams School and its adjacent park, as well as Carolina Beach Road.

Improvements at the Silva Terra and Silver Lake intersections as well as along the residential street routes will lessen any detrimental effect of increased traffic along the two routes. The improvements should include the recommended **improvements at Carolina Beach Road intersections, cross-section improvements to upgrade the two facilities to collector streets, and the construction of traffic calming measures to reduce cut-through traffic and speeding**.

It is also recommended the Village at Motts Creek development provided a **direct street connection between River Road and Carolina Beach Road** and an **extension of Marquette Drive to the south**. Internal connections for the existing neighborhoods include **the connection of Lorraine Drive and Lorraine Circle** and, for other new developments, **a street connection between the large residential segments on the west side of River Road** planned by Newland Communities.

#### Bicycle and Pedestrian

Opportunities for greenways along the Cape Fear River and the two tributary creeks should be identified and considered as development occurs in the area. **Figure 14** in the plan illustrates **recommended greenway and sidewalk connections** that would positively enhance the area and link to nearby parks, schools, and retail areas. During the planning process for pedestrian facilities, future transit opportunities should be considered in terms of nodes where significant residential and commercial area are located with a ¼-mile radius of a potential transit stop on the corridor.

#### Land Use

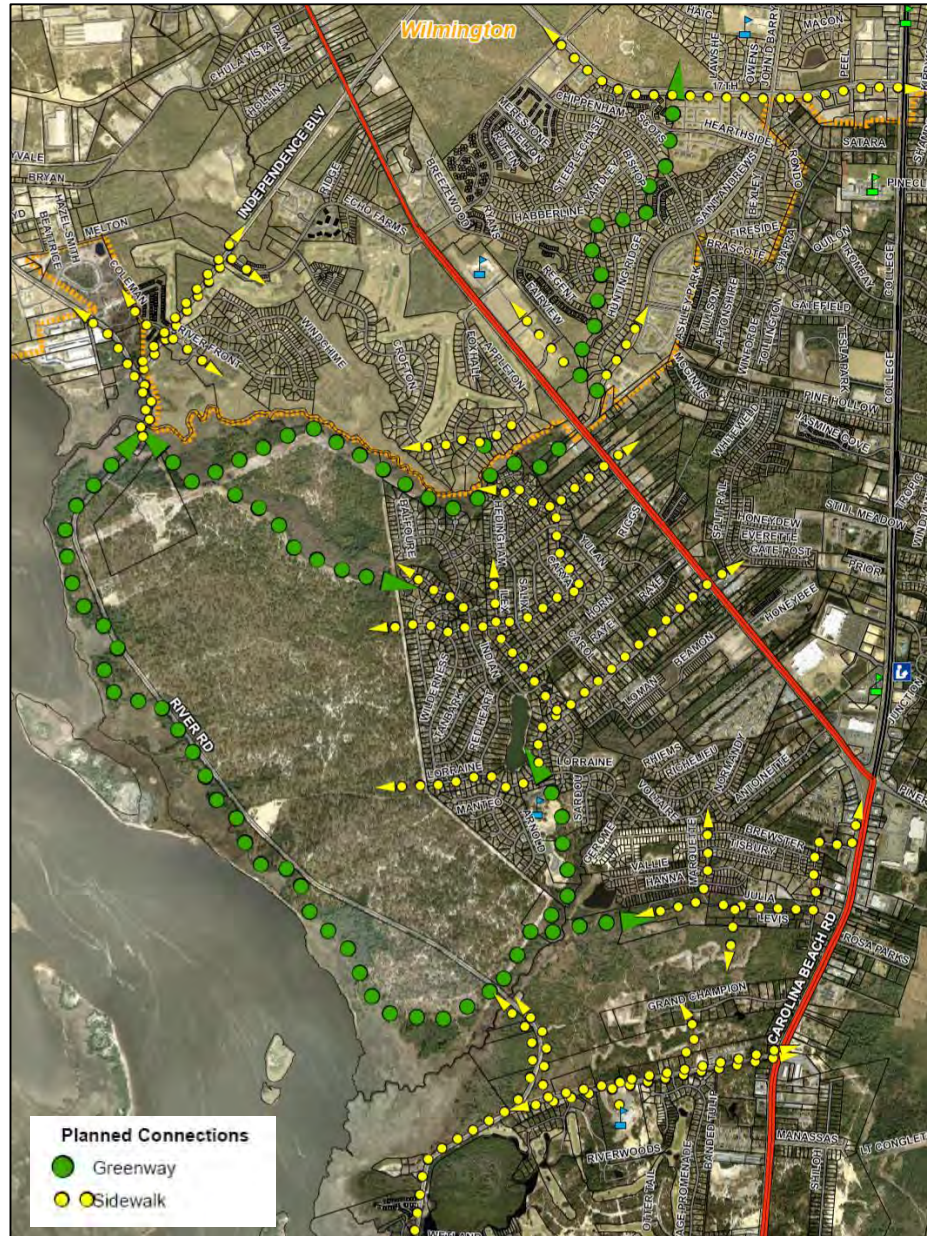
Defining the entrances to new and existing neighborhoods within the study area can help reduce speeding and cut-through traffic on the neighborhood collector streets. **Conceptual designs for the four locations were developed considering landscaping and appropriate design elements:**

- **Independence Boulevard at River Road;**
- **Silva Terra Road at Carolina Beach Road;**
- **Silver Lake at Carolina Beach Road; and**
- **Sanders Road at River Road.**

#### Environment

The recommendations presented in the *River Road Small Area Plan* are intended to avoid environmentally sensitive areas and features in the study area. The proposed improvements are mainly located within developed areas and on existing highway corridors, with the exception of recommended greenways along natural areas through the region. Alternatives exist to provide the proposed wetlands crossings for greenways in an environmentally sensitive fashion.

Proposed greenways and multi-use paths along River Road and the Cape Fear riverfront will provide continued access for residents of the Wilmington region to the three scenic vistas along River Road. Any realignment will not affect the Barnard's Creek and Mott's Creek crossings and their associated viewsheds. The one vista, located midway along the segment between the two creeks and just south of the commercial area proposed by Newland Communities, will be along the proposed greenway route fronting the Cape Fear River. The commercial areas of the Newland development will be located on the river and a planned boardwalk would offer residents and customers access to the riverfront. Opportunities like the greenway and the commercial riverfront will increase and improve the scenic quality of the River Road corridor.



### Greenway & Sidewalk Recommendations

## Implementation

All plans are more effective when they include a well-conceived implementation or action plan. While the *River Road Small Area Plan* includes specific recommendations and actions to implement them, it also recognizes that the ability to take action will be contingent on several factors, not the least of which is the ability to secure funding. To adopt and implement the plan, the County Board of Commissioners must work proactively with several key stakeholders, including:

- Citizens and businesses
- Development community
- City of Wilmington
- North Carolina Department of Transportation
- Cape Fear Public Transit Authority (“WAVE” Transit)
- Wilmington Urban Area Metropolitan Planning Organization

Completion of the *River Road Small Area Plan* represents an important step toward implementing multimodal improvements that affect travel safety, mobility, development patterns, and the aesthetics of the area. Some of the recommended improvements will be implemented through the development review process. It is likely that major infrastructure





improvements will be involve local, state, and federal funding. Transportation improvement funds are limited, however, and competition for them is great.

To fully implement the plan, the region must identify stable, timely, and equitable methods of funding. Some municipalities are negotiating with developers to share responsibility for the “cost of growth,” eventually shifting these costs to home buyers and businesses. It is expected that similar debates will occur in other communities within the region before the next update to the state’s Transportation Improvement Program (TIP). Identifying a creative and effective mix of funding from various sources and stakeholders in the economy and transportation system of this region is a worthy goal.

A number of transportation and land development issues were raised by citizens during the course of the public design charrette, some of whom expressed frustration over delays in getting transportation improvements completed. Unfortunately the planning, design, and construction of publicly-funded transportation projects typically takes 10 years or longer in environmentally-sensitive or coastal areas. Local, state, and private partnerships offer strategic advantages to implementing improvements in a timely manner.

The implementation plan for the *River Road Small Area Plan* is designed to recognize and suggest strategies to address each challenge. The following are general recommendations and action strategies to help New Hanover County and the Wilmington MPO achieve its goals. Refer to the Implementation section of the document for greater detail.

#### General Recommendations

- Use this plan as a tool to review proposed development projects and plans as they are implemented in the area.
- Increase the number of collector streets to better facilitate travel between local streets and arterials.
- Improve accessibility to high-density residential areas and activity centers such as the Monkey Junction and Home Depot commercial area, activity nodes, and other planned retail centers such as Fairfield Park.
- Integrate future bikeways, greenway, and trail networks (i.e., Mott’s Creek and Barnard’s Creek) with the *River Road Small Area Plan* to create an interconnected network.
- Avoid and/or minimize impacts to environmentally sensitive areas to preserve the natural environment.

- As the planning area is developed and expanded, minimize impacts that negatively affect the character and integrity of adjacent neighborhoods by introducing gateways or traffic calming improvements.
- Promote alternative modes of transportation through better street design and developer participation.
- Promote interconnectivity and cross-access between existing and proposed developments.
- Develop design and preliminary engineering plans that will provide immediate infrastructure improvements needed for approved development.
- The proposed planting of street trees along existing roadways (e.g., Sanders Road) and collector streets (e.g., Silver Lake Road) will occur outside of the existing right-of-way; however, the acquisition of right-of-way may not be necessary.

#### Recommended Policy Amendments

To firmly establish small area plan principles into day-to-day business activities, several amendments to County policy are recommended.

- Adoption of River Road Small Area Plan
- “Intent” clause to Land Development Ordinance



- Enhanced interconnectivity requirements
- Expanded Traffic Impact Studies requirements
- Incorporation of Changes to the Bicycle and Pedestrian Plan to the CAMA Plan
- Development of additional Small Area Plans
- Greater encouragement and requirements for the construction of sidewalks
- Development of a traffic calming program for neighborhood streets
- Use of curb and gutter at appropriate locations

### ***Phased Improvements***

The following information provides the proposed phasing of implementation. The phasing of project recommendations is addressed in two phases. Projects in Phase I are identified for short- to mid-term implementation. Phase II projects are identified for long-range implementation and require a substantial public investment.

#### Phase I — Short- and Mid- Term Improvements

- **Individual Intersection Improvements** — Construct

streetscape and laneage improvements at River Road/Sanders Road, Silver Lake/Carolina Beach Road, and Silva Terra/Carolina Beach Road

- **Install Traffic Calming Measures** — Install sidewalks, highly visible crosswalks (preferably raised), median islands, street trees, and pedestrian signage and make general roadway improvements along Silver Lake Road, Lorraine Drive, Silva Terra Road, Yulan Drive, and Wilderness Road.
- **River Road Improvements** — Construct a 2-lane divided facility with street trees, sidewalk, and multi-use path with shoulder ditch on 100' right-of-way between Independence Boulevard and Sanders Road, with 8' multi-use path to be constructed outside of 100' ROW.
- **Evaluation of River Road speed limit** — Request NCDOT evaluate the posted speed limit along River Road for a proposed speed limit of 35 mph based on the expected level of pedestrian activity along the corridor.
- **Connectivity Improvements** — Make connections (including roadway, bicycle and pedestrian) to Wilderness Road, Lorraine Drive and Arnold Road.
- **Sanders Road Improvements** — Widen roadway to 4-lane divided with

planted median, street trees, sidewalks, and wide outside lanes between Carolina Beach Road and River Road.

- **Carolina Beach Road Signal Coordination and Access Management Improvements** — Upgrade signal system and install access management measures along Carolina Beach Road based on NCDOT proposed plan.

#### Phase II — Long-Term Improvements

- **Connectivity Improvements** — Make connections using roadway, bicycle, and pedestrian facilities between Marquette Road and the Village at Mott's Landing.
- **Individual Intersection Improvements** — Construct streetscape and laneage improvements at River Road/Independence Boulevard and Carolina Beach Road/Independence Boulevard.
- **River Road Improvements** — Widen River Road from 2-lane to 4-lane divided between Independence Boulevard and Sanders Road, including two new bridges (one each over Mott's Creek and Barnard's Creek).
- **Independence Boulevard Improvements** — Widen Independence Boulevard to 4-lane





divided with planted median, street trees, sidewalks, and wide outside lanes between Carolina Beach Road and River Road with the opening of the Cape Fear Skyway.

- **Carolina Beach Road Improvements** — Consider widening Carolina Beach Road to 6-lane divided with plantable median, street trees, and sidewalks between Independence Boulevard and South College Road.

### *Funding Strategies*

With the planned development in the area, it is expected that the City, County, and NCDOT will expect a fair share of the improvements to be funded by the development community. The level to which developers will be required to aid in the construction of facilities affected by residential and commercial growth will be determined in the application and development review process. Public-private venture agreements also can be leveraged to implement a specific improvement, especially if there are identified benefits or incentives for both parties.

Inevitably, some improvements will not be funded by the development community and fall upon the responsibility of the County and NCDOT. Although funds are limited and generally programmed well in

advance, a few funding categories are potential sources for financing these improvements. Some funding options require local matching funds.

Because the list of recommended improvements contains a variety of projects, it is recommended that both “typical” and innovative funding types be explored and exhausted for each individual improvement.

With the current transportation funding shortfall, the most critical steps for implementation will be carried by “champions for change” identified within the community. In collaboration with state and local officials, their collective efforts will lead to a safe, aesthetically-pleasing community connected through the heart of the River Road small area.



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## INTRODUCTION

New Hanover County and its municipalities are growing and thriving, the result of favorable climate and location, business opportunities, and Southern coastal charm, as well as other influential variables. From 2000 to 2005, the County population grew 12.5% to more than 180,000 residents. The City of Wilmington grew by more than 21,000 people (28.1%) over the same period, with the populations of the beach communities of Carolina Beach and Kure Beach increasing more than 18% and 27% respectively.

With more people moving into what is geographically the second smallest county in the State, developers are striving to keep pace with the demand for housing and commercial space. The River Road small area, located between the City of Wilmington and Carolina and Kure Beaches, is one of prime locations for this development. Ten site plans are currently approved for development, while several others are in the planning or construction phases. In total, current plans for the area call for the addition of approximately 3,700 to 4,800 new housing units, 580,000 square feet of new commercial/retail space, 360,000 square feet of new office space, and more than 100,000 square feet of additional institutional space.

## What Is The River Road Small Area Plan?

Due in part to the rapid growth, the County and Transportation Advisory Committee of the Wilmington Metropolitan Planning Organization requested a study to look at the effects of development in the area, particularly on transportation infrastructure. The *River Road Small Area Plan* is the product of that request.

Small area plans are focused studies commonly undertaken by planning organizations to identify issues and recommendations for distinct geographical areas within a region. Small area plans come in many varieties, including corridor plans, watershed plans, business district plans, neighborhood plans, regional center plans, and special area plans. Small area plans typically serve as interim updates to a city- or countywide comprehensive plan, often containing detailed facility and land use recommendations or establishing policy boundary lines. The recommendations and changes are eventually incorporated into the comprehensive plan in its next update. The *River Road Small Area Plan* is the first of this type to be conducted by the Wilmington MPO, and potentially will serve as an example for similar studies in the future.

The River Road small area is bounded by Carolina Beach Road to the east and northeast, Independence Boulevard to the northwest, the Cape Fear River to the west, and Sanders Road to the south.



*River Road Small Area Plan boundaries*





## Who is the Wilmington MPO?

The Wilmington Urban Area Metropolitan Planning Organization (WMPO) is the regional transportation planning organization made up of elected officials from each of the Wilmington area's local governments as well as the North Carolina Department of Transportation (NCDOT).

The WMPO facilitates the cooperative, comprehensive, and continuing transportation planning process that serves as the basis for the expenditure of all federal transportation funds in the area for streets, highways, bridges, public transit, and bicycle and pedestrian facilities.

The Transportation Advisory Committee (TAC) for the MPO requested this plan and is composed of the following members:

- Mr. Lanny Wilson, Chair, NC Board of Transportation
- Hon. Laura Padgett, Wilmington City Council
- Hon. Bill Saffo, Mayor, City of Wilmington
- Hon. Bill Kopp, New Hanover County Board of Commissioners
- Hon. Chuck Thurlow, Town of Belville Board of Commissioners
- Hon. David Williams, Pender County Board of Commissioners
- Hon. Eulis Willis, Mayor, Town of Navassa
- Hon. Tommy Wallace, Town of Leland Town Council
- Hon. Bill Sue, Brunswick County Board of Commissioners
- Hon. Catherine Brunjes, Town of Wrightsville Beach Board of Alderman
- Hon. Alan Gilbert, Town of Carolina Beach Town Council
- Hon. Tim Fuller, Mayor, Town of Kure Beach
- Hon. Nancy Pritchett, Cape Fear Public Transportation Authority

The area includes the existing neighborhoods of Silver Lake, Silva Terra, and Echo Farms, as well as large residential neighborhoods planned along the Cape Fear River and south of Mott's Creek. Other area communities include Marquis Hills, Arrowhead, Huntington Forest and Linden Ridge, Beau Rivage Plantation, and Sunpointe Estates.

## Background: Corridors and Communities

The peninsula that extends south of the City of Wilmington between the Intracoastal Waterway, the Atlantic Ocean, and the Cape Fear River is served by one main arterial, Carolina Beach Road. Not until the roadway reaches College Avenue at Myrtle Grove Junction (commonly referred to as "Monkey Junction") can traffic use other roadways to access destinations off the peninsula. While some motorists choose to travel along two-lane side streets and parallel north-south routes, the majority of the trips must use Carolina Beach Road.

North of Monkey Junction, traffic volumes make it difficult to turn left from neighborhood side streets without a traffic signal. On the other hand, traffic signals can decrease efficiency on a road responsible for carrying heavy volumes

near or at capacity. Local traffic counts over recent years show annual growth rates ranging from 3% to 4.5%, indicating rapid development activity.

Lack of adequate planning in the 1970s and 1980s is partly to blame for a portion of the growing pains being experienced by the Silva Terra and Silver Lake communities today. Rapid commercial growth near Monkey Junction has created a roadway network with multiple signals and service roads with numerous curb cuts. Growth here as well as in Carolina and Kure Beaches helped establish an area dominated by fast-moving, congested thoroughfare corridors and isolated neighborhoods. Local neighborhoods grew with numerous cul-de-sacs and few circuitous connections between one another. Only a few of the newer residential developments have sidewalks, limiting pedestrian and bicycle connections.

With the potential for an additional 4,800 household units being developed in the area, the existing transportation network will not be able to adequately serve River Road neighborhoods. Now is the time to identify a plan that serves not only the interests of existing and future residents and businesses, but also those Wilmingtonians who will find it necessary



to travel to and through the area as part of their regular schedule.

## Problem Statement

Because developments are planned along River Road from Independence Boulevard south to Sanders Road, an opportunity exists to assess the current status of the community. It will then be possible to determine what steps can be taken to balance the impacts of growth in the area for both existing and new neighborhoods. Most importantly, it is critical to identify what transportation improvements need to be made for both River Road proper as well as other arterials and local streets in the area. With the small area approaching full build-out, it is necessary to consider what improvements will ensure a livable and successful community and to collaborate with the developers on proper implementation.

## Core Principles/Purpose

With these area and regional interests in mind, the *River Road Small Area Plan* is intended to address the following core principles established through stakeholder interviews and citizen meetings:

- **Address Travel Safety** — Identify existing locations with crash problems and potential issues regarding safety for motorists, cyclists, and pedestrians.
- **Enhance Access and Mobility** — Ensure adequate facilities are built in conjunction with new development to provide convenient access and transportation options.
- **Protect the Natural Environment** — Minimize impacts to important environmental features including wetlands, stream, and sand ridges.
- **Address Traffic Capacity Needs** — Identify ultimate cross-sections and improvements at critical intersections to address 2025 traffic volumes.
- **Ensure Aesthetic Quality** — Incorporate features in plans that will highlight scenic nature of riverfront; require design elements for new development and improvements that are visually enhancing.
- **Ensure Constructability** — Present plan that includes improvements that are technically and financially feasible.



*View of Mott's Creek  
south of River Road*



## PLANNING PROCESS

The Wilmington MPO initiated the *River Road Small Area Plan* to evaluate the land use, transportation, and mobility constraints along the corridor given current growth trends. Public involvement — considered crucial to the success of the study — was accomplished during a three-day public design charrette (see side box for more information about a charrette). The design charrette was held February 27 through March 1 at Mary C. Williams Elementary School, located in the heart of the study area. The charrette intended to solicit input from community members and local stakeholders. The ultimate goal of the charrette was to generate ideas into a comprehensive plan that aids area development to be safe, efficient, and aesthetically pleasing, for both existing and new neighborhoods. The Wilmington MPO provided oversight for the River Road Small Area Plan charrette.



### The Charrette

The project team tailored the River Road charrette to develop a vision and recommendations for the plan in a collaborative and time-sensitive fashion.

#### Day 1

The first day of the charrette was designed to help participants create a vision for making the River Road area safer and more sustainable. Events throughout the day helped orient the project team with the area and integrate the public into the planning process.

In the morning, the project team toured the study area and brainstormed design concepts. The afternoon included stakeholder interviews with business owners and developers, local staff, elected officials, school officials, and representatives from NCDOT. These interviews allowed stakeholders to comment on the needs for the River Road area and identify characteristics they wanted to retain or acquire in the future. The information gained from the stakeholder interviews directly informed the conceptual designs.

A work session was held concurrently with these interviews in preparation of the first public workshop. The workshop, held that

### What is a Charrette?

The term “charrette” is a French word that means “cart.” Initially, the term referred to the intense work by artists to finish works before they were collected by proctors and carted to salons for viewing and sale.

Today, the term is commonly used to refer to an intense, interactive community-based planning process. The process brings together citizens, stakeholders, local officials, and design professionals to work as a collective group to develop a shared vision and translate it into viable solutions. The benefits of a charrette include:

- Diverse participation ensures thorough discussion of issues, relationships, and alternatives
- Multidisciplinary design teams create realistic alternatives without having to revise work through multiple iterations
- Compact time frame challenges participants and facilitators to quickly and openly examine issues and progress toward a collective vision
- Public involvement occurs in a transparent, supportive environment conducive to the open discussion of issues and alternatives
- On-site locations enhances the design team’s understanding of local issues and provides the context to the project’s vision
- Creative illustrations convey complex solutions
- Team produces visual results that are viable





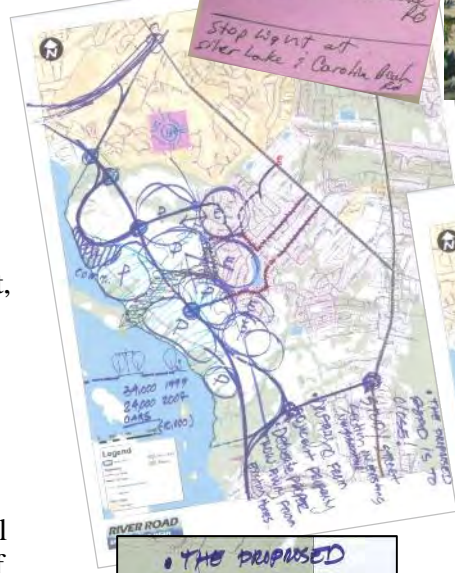
evening in the study area at Mary C. Williams Elementary School, aimed to identify issues and opportunities and establish a vision for the area. The evening began with an open house during which participants viewed a variety of maps that detailed existing conditions in the area.

An overview presentation introduced the purpose of the charrette, described the planning process, defined the River Road study area and a toolbox of techniques available to maximize its potential, and offered ways for the public to remain involved throughout the planning process. Following the presentation, a large-group discussion revealed concerns for the planning process, traffic, new development, and realignment of River Road. Participants then formed small groups around maps to provide location-specific issues and recommendations. The workshop allowed the public to help identify key issues and discuss ways to improve connectivity, aesthetics, and travel safety within the River Road area. Some of the comments from the stakeholder interviews and the first public workshop are displayed on this page.

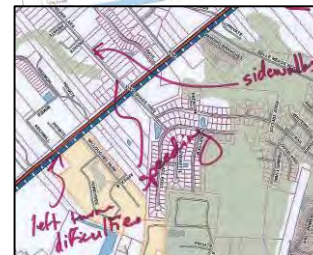
**Figure 1** shows a summary of the comments heard over the first day.

Cannot River Road  
with:  
(1) ARNOLD  
cellarage  
(3) wilderness  
(4) Barnards Lane

ALL WAY STOPS  
on Silver Lake Rd.  
Side walks all the  
Way down Silver Lake Rd  
Stop light at  
Silver Lake & Carolina High



• THE PROPOSED  
ROAD IS TO  
CLOSE!  
• STUDY STREET  
SECTION IN EXISTING  
Neighborhood  
• DRIVING FROM  
ADJACENT PROPERTY  
• DELIVER PROPER  
FLOW AWAY FROM  
EXISTING HOMES.







# What We Heard...

- Even out the sacrifices
- It's about the traffic
- Kids on bikes getting knocked off
- Look at connections to greenways
- Emergency response is important
- Do not support connectivity
- Keep 1999 site plan with 3,300 dwelling units
- Even out the sacrifices/impacts
- Look at Wrightsville Avenue in Carolina Place (one-lane, one-way street with on-street parking, bulb-outs and textured crosswalks)
- Issues with ATVs on vacant land
- Will new development be gated?
- Look at development south of Sander Road
- River Road Park is great
- Issues with illegal dumping on vacant land
- Emergency response is important
- Study street cross-section in existing neighborhood
- Issues with drainage from adjacent property
- How does less housing benefit us?
- Concern for beach season traffic
- Small area plan should improve traffic flow and safety
- The developer is entitled to build more – less impacts to the community – less impacts on traffic and environment
- Schools want better access between River Road and Carolina Beach Road with direct access to stop signs
- Mary C. Williams and Bellamy are at capacity
- What is the “true impact” of the full buildout on transportation – laneage/intersection, etc.?
- Look at “big picture” – 2025
- No policy against walking to school
- Issue: enrollment at school, volume of traffic on Silver Lake and Lorraine and bike/ped traffic safety if a connection was made
- Interconnectivity is needed for public safety and traffic flow, connecting existing development/neighborhoods to new development

## Independence Road:

- What will happen when the new Skyway comes in?
- Intersection at River Road is dangerous for bicycles

## Carolina Beach Road:

- Need sidewalks, crosswalks, and street trees
- Signal needed at Silver Lake Road
- Difficulties making left turns onto Silver Lake Road
- Carolina Beach – 4-lane divided with sidewalks

## River Road:

- Proposed alignment too close to existing homes
- Dedicate proper right-of-way away from existing homes
- Want four-lane divided with landscaped median
- Make sure road will function in future
- Possibility for view sheds from road
- Speed limit is currently too high
- High potential for crashes today
- Curve north of Motts Creek is dangerous
- Look at connection to Sanders Road
- Needs to be usable road
- No obstructions or signals
- Issues with traffic noise
- Used for hurricane evacuation
- Regional importance
- Flooding issues
- Concerned about River Road curves (Bayou Highway)
- We receive complaints about slow buses along River Road
- 20 years from now River Road will be multi-lane

## Sanders Road:

- Analyze possible cross-section
- Currently inadequate
- Look at connection to River Road
- Gated community just west of Carolina Beach Road stops cut-through traffic
- Issues with Bellamy School circulation
- New streets south of Willow Glen
- Road is dangerous – poorly designed with soft shoulders
- Needs to be improved

## Neighborhood Connections:

- Protect existing homes from traffic noise
- More connectivity
- Like proposed roundabout
- Better connectivity between existing neighborhoods and new development
- Relocation of road runs into back yards of existing resident...this needs to be mitigated

## Lorraine and Silver Lakes Road:

- Cut-through traffic if connected to River Road
- Too much traffic
- Too fast/speeding
- Need speed humps
- Signal needed at Silver Lake Road and Carolina Beach Road
- Needs sidewalks
- Curve near lake is dangerous (two crashes)
- Like roundabout at end of Lorraine Drive

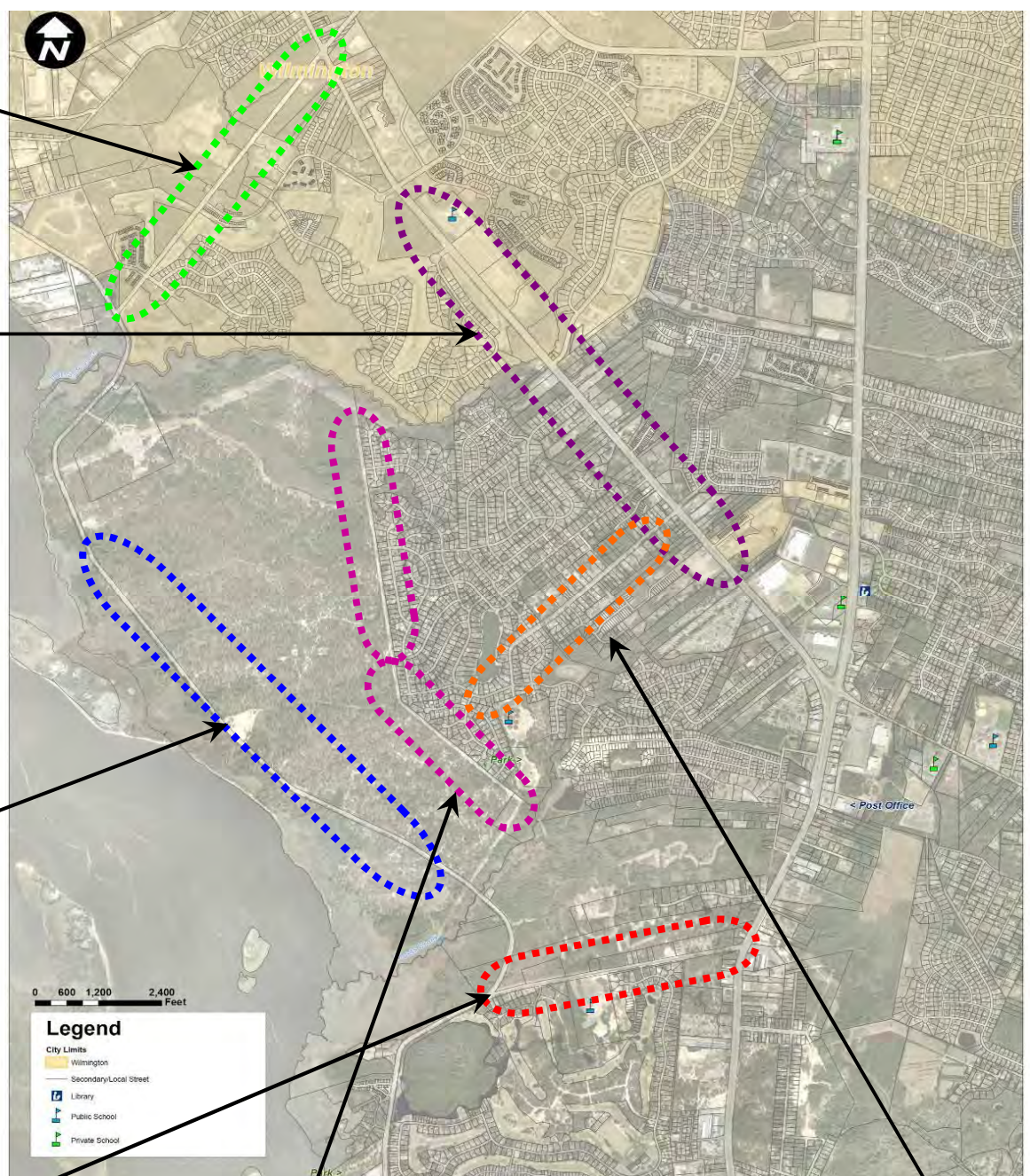


Figure 1 - Comments from Charrette Day #1





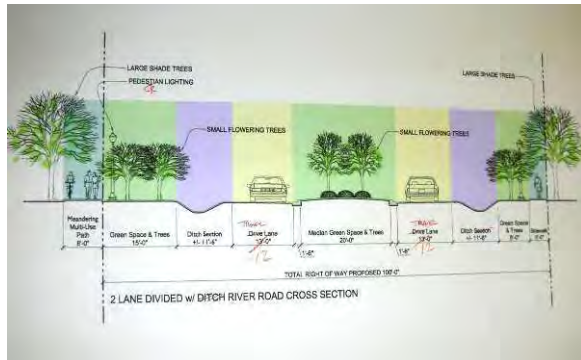
## Day 2

The second day of the charrette allowed the design team to continue exploring underlying issues relevant to the *River Road Small Area Plan*. The charrette team reviewed the comments brought up at the meeting, and compared those with the issues identified by stakeholders the previous day. The main concerns expressed during the first day of the charrette involved several categories:

- How less housing in the Newland development benefits the area
- Traffic flow
- Notification and logistics of the charrette itself

Once they clarified the concerns of the interested parties, the charrette team worked to address the comments and generate response in the plan.

The day-long work session was held at the MPO office to allow the team quick access to MPO and City resources as well as the study area. The intense session included an assessment of traffic and crash data, land use trends, planned and approved development, environmental constraints, and design options.



- Approved development in the area
- Future traffic volumes on River Road
- Future River Road: 2-, 3-, or 4-lane?
- Beach season traffic
- Proposed relocation of River Road:
  - Right-of-way issues
  - Curvature
  - Bridging the wetlands
  - Construction responsibility/financing
  - Permitting authority to allow the developer the right to move road
  - Proximity to existing neighborhoods
  - Community support not to relocate
- What is the MPO?
- North/south arteries for traffic
  - Carolina Beach Road
  - River Road



## Day 3

The third day of the charrette focused on blending the comments and ideas from the first two days into a coherent plan that captured the community's vision and core principles. The project team finalized the recommendations and introduced them at the final workshop, once again held at the Mary C. Williams Elementary School.

Citizens were invited to review maps illustrating the recommendations. Maps and diagrams displayed both large-scale concepts (such as area-wide street connectivity) and location-specific improvements (such as intersection treatments and traffic calming devices). A more structured public review and comment period followed a formal presentation of the week's findings, conclusions, and recommendations. Citizens asked questions that clarified specific components of the *River Road Small Area Plan*.

Comments and concerns on the final night addressed several issues, including the following:

- Who pays for the improvements?
- River Road
  - What is its appearance/use/cross-section?
  - Does it remain state-owned?
- What is the timing of the improvements?
- What is the speed limit?
- Will the roundabout be effective?
- Connectivity
  - Lack of internal connections in new developments
  - Connectivity between old and new development
  - Connections to shopping
  - Linden Ridge impact
  - Practicality of new development solely using Independence/Sanders
- Opposition to the proposed River Road realignment
- Support for the approved realignment
- River Road as alternate route and relief valve to Carolina Beach Road
- Buffers between existing neighborhoods and new development
- Fairness of connections between new and old communities
- Traffic on Silver Lake and connecting roads
- Need for a signal at Silver Lake Road
- Truck restrictions on neighborhood connectors to reduce impacts
- River Road as an evacuation route

The public input gained from the charrette process helped make sure that citizen voices were heard, and the concerns of stakeholders were considered as the *River Road Small Area Plan* was developed.







## EXISTING CONDITIONS

This existing transportation network, land use framework, environmental features, and social characteristics of the River Road area all were considered during the development of this small area plan. Examining these elements have helped establish a foundation for determining critical improvements in the context of current growth and development patterns.

### Transportation

#### *Functional Classification*

Grouping roadways by functional classification helps policy makers, planners, engineers, and citizens communicate the existing conditions and future needs of the transportation system. Classifying streets in terms of design and operational characteristics of the movement of vehicles also provides a general notion of the type of traffic each street is intended to serve.

Distinguishing the function of a roadway requires consideration of its access and mobility. As shown in the figure to the right, arterials provide the most mobility and least access when compared with collectors and locals. The functional classifications explained below include local

examples within or near the River Road study area.

Roadway classified as “arterials” provide high mobility, operate at higher speeds (45 mph and above), provide significant roadway capacity, have a great degree of access control, and serve longer distance travel. While most arterials connect to one another or to collector streets, a few arterials connect to local streets. Arterials can be subdivided into expressways and freeways, principal arterials, and minor arterials. These subcategories can be further defined by urban and rural settings.

In the River Road area, I-40 is the nearest freeway or interstate. Carolina Beach Road (US 421) and S. College Road (NC 132) are classified as urban principal arterials.

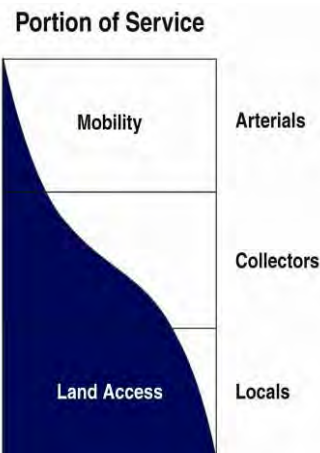
Sanders Road and River Road north of Sanders Road are classified as urban minor arterials.

Roadways classified as “collectors” provide the most balance between access and mobility. Compared with arterials, these streets usually operate at lower speeds (less than 35 mph) and serve shorter



distance travel. Collectors connect with major and minor arterials, other collectors, and local streets. The main purpose of collectors is to gather traffic from neighborhoods and distribute it onto the system of arterials. The state rarely constructs and funds collectors. Instead, the burden usually falls to local governments and private developers. River Road south of Sanders Road and Independence Boulevard between River Road and Carolina Beach Road are classified as urban collectors. Northeast of Carolina Beach Road, the functional classification for Independence Boulevard changes to an urban minor arterial.

Compared with arterials and collectors, “local” streets provide the most access and least mobility. These facilities usually connect to collectors and other locals. Because of the low posted speeds (25 to 35





mph) and high level of access to adjacent parcels, locals serve short distance travel. Most streets in the River Road study area are locals.

### ***Committed and Planned Roadway Projects***

The thoroughfare plan adopted in 2005 identifies Carolina Beach Road, S. College Road, and River Road north of the small area as major thoroughfares (i.e. urban principal and minor arterials). Independence Boulevard is identified as a minor thoroughfare. These existing thoroughfares (arterials) are expected to be supplemented with two proposed roadways. When complete, the Cape Fear Skyway and Sanders Road extension will provide critical links in the regional transportation network.

The Cape Fear Skyway is a proposed freeway which will connect US 17 to the Independence Boulevard/Carolina Beach Road intersection and require a bridge over the Cape Fear River. The Sanders Road extension is a proposed major thoroughfare connecting Sanders Road with Masonboro Loop Road/Myrtle Grove Road.

These roadways are identified in the Wilmington MPO 2005-2030 Long Range Transportation Plan (LRTP). The LRTP

includes transportation projects identified by the MPO as needed projects in the future. The Cape Fear Skyway (TIP Project U-4738) is a potential North Carolina Turnpike Authority Project currently programmed for planning and environmental study. Current figures estimate right-of-way acquisition and construction for the projects will cost \$15.2 million and \$425-950 million, respectively. Neither cost is programmed before FY2012.

### ***Traffic Volumes***

Traffic volumes signify the total number of vehicles traveling along a roadway segment on an average day. **Table 1** and **Figure 2** show existing (2005) average annual daily traffic (AADT). As can be expected, the highest existing traffic volumes in the River Road area are on Carolina Beach Road and South College Road, both of which are urban principal arterials.

**Table 1. Average Daily Traffic Volumes (2005)**

Road	2005 AADT	2025 Projected AADT	% Change	Annual Growth
<b>River Road (2-lane, 55 mph)</b>				
Midway between Independence Boulevard and Sanders Road	5,700	28,000	391.2%	8%
South of Sanders Road	8,900	25,000	180.9%	5%
<b>US 421 Carolina Beach Road (4-lane divided, 55 mph)</b>				
North of Independence Boulevard	27,000	62,000	129.6%	4%
Between McCarley Boulevard and Fairview Drive	33,000	70,000	112.1%	4%
Near Antoinette Drive	31,000	70,000	125.8%	4%
West of intersection with College Road	27,000	62,000	129.6%	4%
South of Piner Road	33,000	55,000	66.7%	3%
South of Sanders Road	38,000	70,000	84.2%	3%
<b>Independence Boulevard (2-lane, 45 mph)</b>				
Southwest of Carolina Beach Road	6,000	26,000	333.3%	8%
Northeast of Carolina Beach Road	14,000	50,000	257.1%	7%
<b>Sanders Road (2-lane, 45 mph)</b>				
West of Carolina Beach Road	6,100	38,000	523.0%	10%
<b>College Road (4-lane divided, 55 mph)</b>				
North of Carolina Beach Rd	44,000	75,000	70.5%	3%



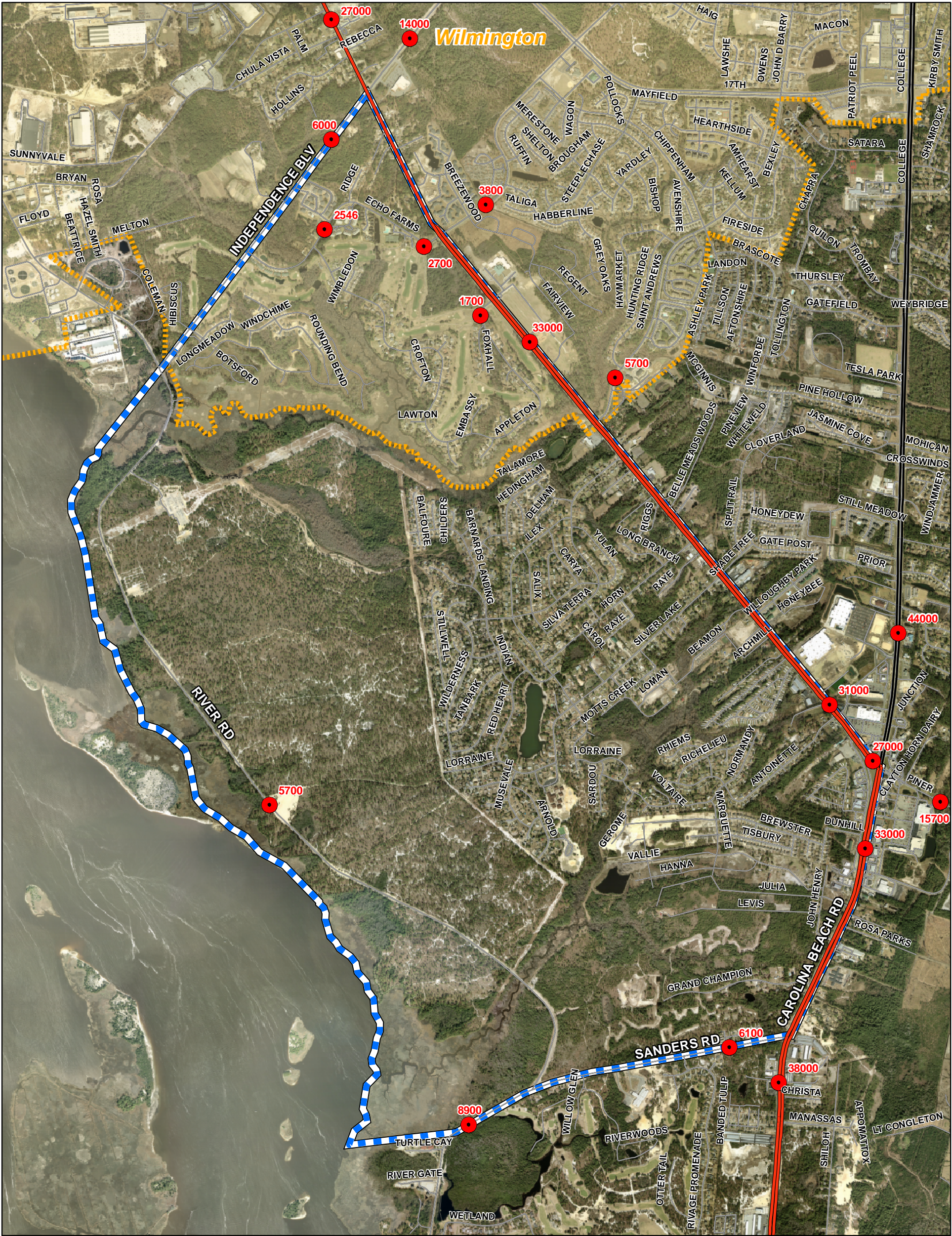
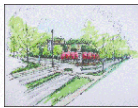
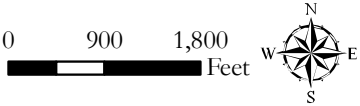


Figure 2 - Existing Traffic

- US Route
- NC Route
- Secondary/Local Street
- Study Area
- Wilmington
- 2005 Average Annual Daily Traffic







The roadways with the greatest projected growth are west of Carolina Beach Road. In particular, traffic volumes on Sanders Road (523%), River Road between Independence Boulevard and Sanders Road (391.2%), and River Road southwest of Sanders Road (180.9%) are projected to increase at a faster rate over the next 20 years. Traffic on Independence Boulevard southwest and northeast of Carolina Beach Road is expected to increase 333.3% and 257.1%, respectively. (A description of the methodology used for forecasting 2025 traffic volumes is included on page 30.)

### Crashes

A key component of this study involves addressing traffic safety. A thorough examination of crash history and traffic patterns can usually predict key locations where an improvement in traffic safety will be beneficial to both the traveling public and the community as a whole. According to data published by the North Carolina Department of Transportation, the average cost of a crash to the community is typically \$42,000<sup>1</sup>. This cost includes medical care, emergency services, victim work loss, employer cost, traffic delay,

property damage, and the overall quality-of-life.

Three years of crash data — from December 1, 2003 to November 30, 2006 — were analyzed for the major roads in the study area. The following sections describe the crash history for the major roadway facilities within the study area, as shown in **Figure 3**.

**Carolina Beach Road** — During the analysis period, 484 total crashes occurred on Carolina Beach Road from Independence Boulevard to Sanders Road. One fatal crash occurred when two passenger cars traveling in opposing directions collided head-on at an undetermined speed near Solid Hollow Road. In addition, 211 non-fatal injuries occurred during the analysis period. The total crash rate for this segment was 187.92 crashes per 100 million

vehicle miles, slightly lower than the state average (250.45 per 100MVM) for a similar segment of roadway.

This segment of roadway had 13 “hot spot” locations, containing clusters of more than 10 crashes during the analysis period. These “hot spots” include the intersections of Carolina Beach Road with Sanders Road, Monkey Junction service road (southern intersection), College Road/Piner Road, Monkey Junction service road (northern intersection), Antoinette Drive, Silver Lake Road/Shadetree Lane, Horn Road, Silva Terra Drive, St. Andrews Drive, Echo Farms Boulevard, and Independence Boulevard.

**Independence Boulevard** — During the analysis period, 26 total crashes occurred on Independence Boulevard from River Road to Carolina Beach Road. Eleven non-fatal injuries occurred during the analysis period. The total crash rate for this



*Carolina Beach Road at Independence Boulevard*

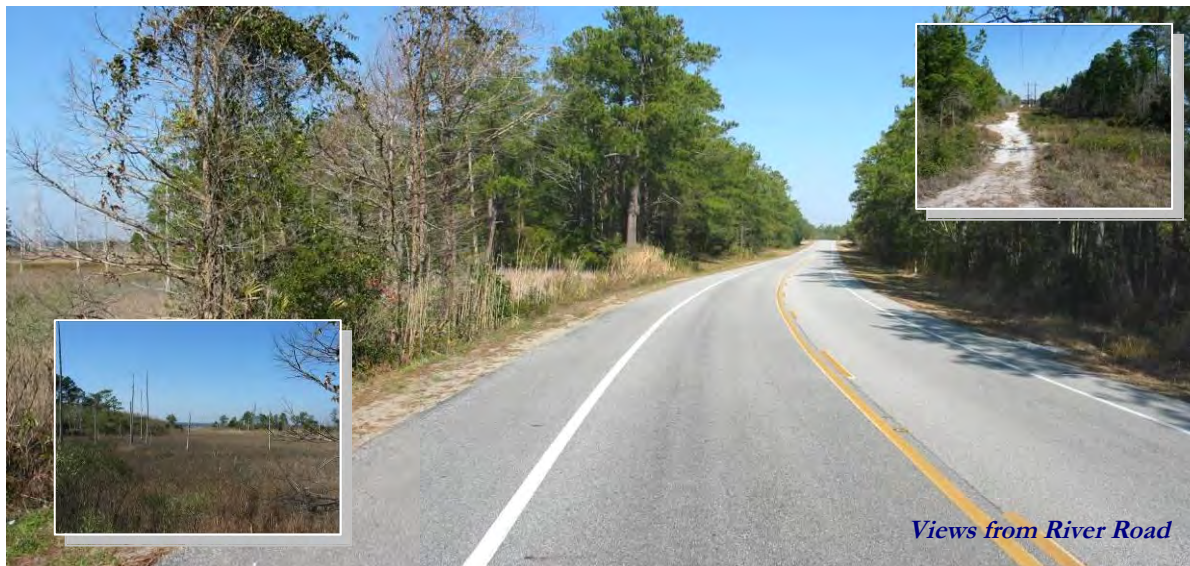
<sup>1</sup> Data for NCDOT Crash Cost based on 2003 dollars (published August 5, 2005)



*Views from Sanders Road*

segment was 225.93 crashes per 100 million vehicle miles, considerably lower than the state average (471.51 per 100MVM) for a similar segment of roadway. This segment had one “hot spot” locations, at the intersection of Independence Boulevard and Carolina Beach Road.

**River Road** — During the analysis period, 73 total crashes occurred on River Road from Independence Boulevard to Sanders Road. One fatal crash occurred when a pick-up truck traveling 55 miles per hour was stuck by a passenger car that crossed the centerline traveling 65 miles per hour.



*Views from River Road*

In addition, 33 non-fatal injuries occurred during the analysis period. The total crash rate for this segment was 242.20 crashes per 100 million vehicle miles, considerably lower than the state average (471.51 per 100MVM) for a similar segment of roadway. This segment had two “hot spot” locations, including the intersection of River Road and Sanders Road.

**Sanders Road** — During the analysis period, 37 total crashes occurred on Sanders Road from River Road to Carolina Beach Road. Eleven non-fatal injuries occurred during the analysis period. The total crash rate for this segment was 652.98 crashes per 100 million vehicle miles,



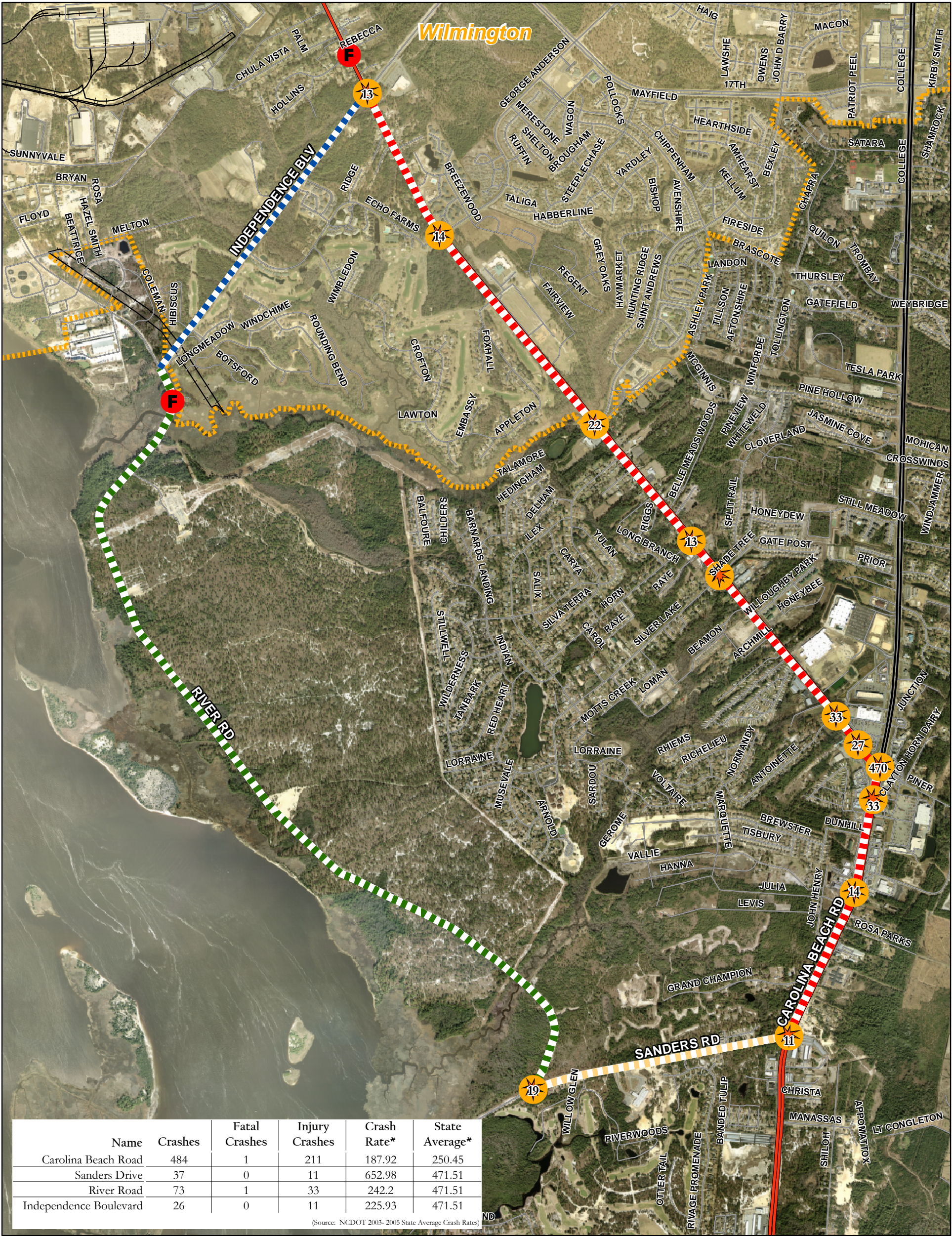
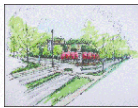


Figure 3 - Crash Analysis



Analyzed Roadway Segments

- Carolina Beach Road
- Independence Boulevard
- River Road
- Sanders Drive

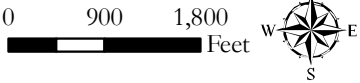


Hot Spot Location\*\*



Fatal Crashes

\* Segment and State Average Crash Rate reflect crashes per 100 million vehicle-miles traveled  
\*\* Crash Hot Spot is defined as a location where at least 10 crashes occurred during the analysis period (12/31/2003 to 11/30/2006)







considerably higher than the state average (471.51 per 100MVM) for a similar segment of roadway. This segment had one “hot spot” locations, at the intersection of Sanders Road and River Road.

### ***Bicycle and Pedestrian Facilities***

A few sidewalks exist in newer neighborhoods in the River Road study area. Other local residential streets have lower travel speeds and traffic volumes that are more accommodating for pedestrians. Currently, two bike routes travel along River Road.

Two North Carolina Bike Routes travel through the Wilmington area via River



Road. The 160-mile Cape Fear Run (NC Bike Route 5) stretches from Apex, NC to Southport on the Atlantic Coast. The route begins in the rolling hills of the Piedmont before passing through the flat lands and swamps of the southeast coastal plain. The 300-mile Ports of Call route (NC Bike Route 3) also utilizes River Road. On its way from South Carolina to Virginia, the Ports of Call route passes by the major ports of the colonial era from Wilmington to Edenton.

### **Land Use**

An inherent relationship exists between land use and transportation. As development occurs and more vehicles take to the road, roadway improvements are needed to reduce traffic congestion. These changes in the roadway often improve access, thus raising land values and attracting more development.

Existing land uses in the River Road area reflect the access provided by the transportation system. The transportation network and scenic appeal of the area also have attracted future developments. To formulate a sustainable vision of growth, development, and transportation infrastructure, existing land uses and development patterns must be examined in tandem with the transportation system.

### ***Existing Land Use***

Most of the land in the River Road area is composed of commercial and residential land uses, as shown in **Figure 4**. In places where direct access to arterials is granted, land use is usually commercial or office and light industrial. In areas where service roads exist — such as the intersection of Carolina Beach Road and South College Road — the commercial, office, and industrial land uses are set back from the arterials. The area’s largest concentration of commercial establishments and offices is located near the aforementioned intersection of Carolina Beach Road and South College Avenue.

Little transition exists between these commercial uses and surrounding residential neighborhoods. Most residential uses within the study area are single family homes. Some apartments are located on Portofino Court off Independence Boulevard, however, and multi-family housing exists on Long Branch Drive, Yulan Drive, and Horn Road.

The largest undeveloped tract of land in the study area is the location of the Newland Communities development. Environmental features such as streams, wetlands, and floodplains limit growth on other undeveloped land within the study area.



## Zoning

An evaluation of the area's zoning is one way to anticipate the potential location, intensity, and character of future land uses. Zoning is the regulation of land and building use by a public entity in order to manage the character of a neighborhood or community. The City of Wilmington and New Hanover County have established numerous residential, commercial, industrial, and service zoning classifications that guide development with the River Road area. These classifications are shown in **Figure 5**.



*Example development in the River Road area*



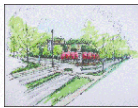
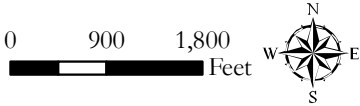


Figure 4 - Existing Land Use

- |                           |                            |                        |            |
|---------------------------|----------------------------|------------------------|------------|
| Single-Family Residential | Industrial                 | US Route               | Study Area |
| Multi-Family Residential  | Utilities & Transportation | NC Route               | Wilmington |
| Commercial                | Resource Industry          | Secondary/Local Street |            |
| Office & Institutional    | Undeveloped                |                        |            |
| Recreational              |                            |                        |            |





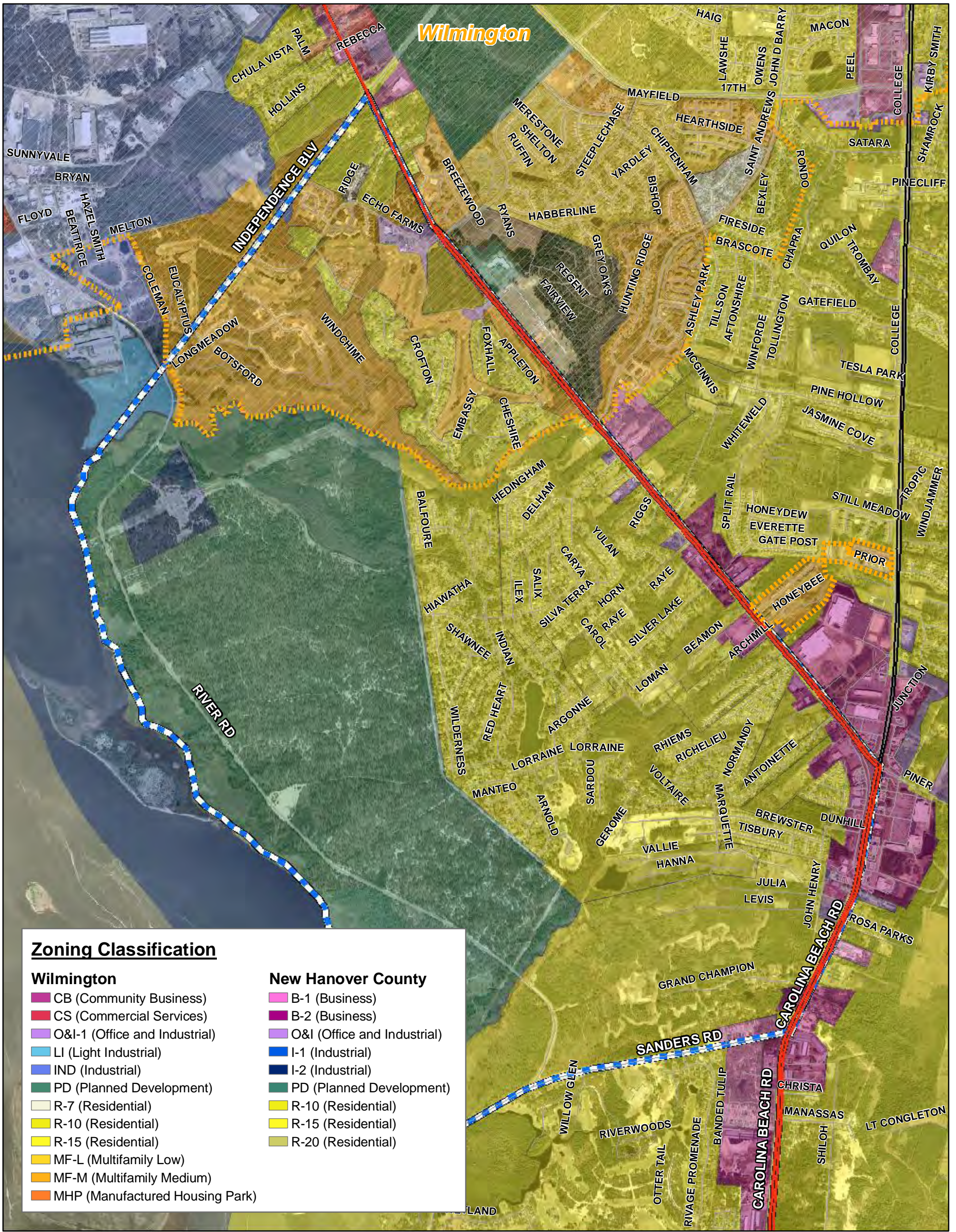


Figure 5 - Zoning

US Route  
NC Route  
Secondary/Local Street

Study Area  
Wilmington





## Planned and Approved Development

Residents and businesses continue to arrive in New Hanover County and its municipalities, taking advantage of the area's mild climate, scenic beaches, and quality of life. Since 2000, the County and Wilmington have added more than 20,000 and 21,000 residents, respectively. The growth trend is expected to continue with 10 sites in various stages of planning, approval, and construction. The sum of these developments will add 3,700 to 4,800 homes and apartments, 950,000 to 1.1 million square feet of commercial/ retail and offices, institutional space, a golf course, and a marina. Planned and approved developments are described in **Table 2** and shown in **Figures 6** and **7**.

**Table 2. Planned Developments**

Development	General Location	Development Components	
Beau Rivage Centre	Southwest quadrant of the intersection of Carolina Beach Road and Sanders Road	<ul style="list-style-type: none"> <li>26 condominiums</li> <li>48,000 sq. ft. grocery store</li> </ul>	<ul style="list-style-type: none"> <li>37,000 sq. ft. retail</li> <li>40,000 sq. ft. office</li> </ul>
Bellmeade Woods	Silva Terra Drive east of Carolina Beach Road	<ul style="list-style-type: none"> <li>58 single-family homes,</li> <li>116 retirement units,</li> <li>45,960 sq. ft. grocery store</li> <li>4,590 sq. ft. restaurant</li> </ul>	<ul style="list-style-type: none"> <li>11,280 sq. ft. drugstore</li> <li>20,250 sq. ft. specialty retail</li> <li>31,530 sq. ft. office</li> </ul>
Fairfield Park	Carolina Beach Road between George Anderson Drive and St. Andrews Drive	<ul style="list-style-type: none"> <li>81 single-family homes</li> <li>141 condominiums</li> <li>70,900 sq. ft. church</li> </ul>	<ul style="list-style-type: none"> <li>285,100 sq. ft. office</li> <li>194,550 sq. ft. retail</li> </ul>
Muirfield Townes	Carolina Beach Road between Echo Farms Boulevard and McCarley Boulevard	<ul style="list-style-type: none"> <li>96 townhomes</li> </ul>	
River Road Development	Along River Road between Independence Boulevard and Sanders Road	<ul style="list-style-type: none"> <li>1,351 single-family homes (1,803 approved)</li> <li>939 townhomes (1,563 approved)</li> </ul>	<ul style="list-style-type: none"> <li>218,000 sq. ft. retail (379,000 approved)</li> <li>18-hole golf course</li> <li>75-berth marina</li> </ul>
St. Lawrence Patio Homes	West side of Carolina Beach Road between Echo Farms Boulevard and McCarley Boulevard	<ul style="list-style-type: none"> <li>192 townhomes</li> </ul>	
Tract 6B	Independence Boulevard between River Road and Carolina Beach Road	<ul style="list-style-type: none"> <li>106 townhomes</li> </ul>	
Village at Mott's Creek	Sanders Road between River Road and Carolina Beach Road	<ul style="list-style-type: none"> <li>170 single-family homes</li> </ul>	
Westwood Towns at Echo Phase II	Independence Boulevard between River Road and Carolina Beach Road	<ul style="list-style-type: none"> <li>18 townhomes</li> </ul>	
Willow Glen II at Beau Rivage	Sanders Road between River Road and Carolina Beach Road	<ul style="list-style-type: none"> <li>90 single-family homes</li> <li>104 townhomes</li> </ul>	<ul style="list-style-type: none"> <li>48 condominiums</li> <li>288 apartments</li> </ul>







### Figure 6 - Approved Development

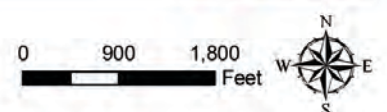
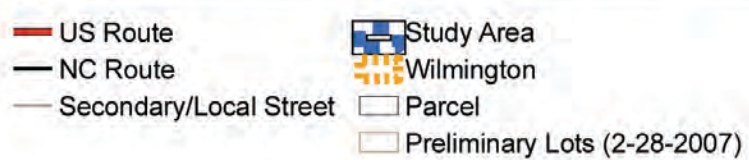






Figure 7 - Planned Development

- US Route
- NC Route
- Secondary/Local Street
- Study Area
- Wilmington
- Parcel
- Preliminary Lots (2-28-2007)





## Environment

Transportation projects and new developments can significantly impact the natural environment. Only through awareness and responsible planning can these impacts be minimized or avoided. By identifying these issues early in the planning process and addressing them throughout the development of the plan, the *River Road Small Area Plan* respects the environmental features that make the area unique.

The Coastal Area Management Act (CAMA) requires coastal counties to adopt a local land use plan with guidelines established by the Coastal Resources Commission. Among the priorities of the CAMA plan is to manage growth issues in light of natural resources (e.g., rare species, wetlands, streams) and productive resources (e.g., farmland, forest resources, fisheries).

The 2006 Wilmington-New Hanover County CAMA Update includes an Environmental Composite Map, which divides all land in the county into one of three land classes based on natural features constraints. These classes are:

- **Class I** — Land containing only minimal hazards and limitations that may be addressed by commonly

accepted land planning and development practices

- **Class II** — Land containing development hazards and limitations that may be addressed by methods such as restrictions on types of land uses; special site planning; or the provision of public services
- **Class III** — Land containing serious hazards for development or lands where the impact of development may cause serious damage to functions of natural systems.

As shown in the figure below, most land in the River Road area falls into Classes II and III. The following section explains how some of the features contribute to the designation of land into one of these more restrictive classes.



## Natural Heritage Elements

The North Carolina Natural Heritage Program housed within the North Carolina Department of Environment and Natural Resources inventories, catalogues, and supports conservation of natural elements and promotes natural diversity. Their efforts include identifying and protecting rare plants and animals as well as significant natural communities that merit special consideration during land-use decision-making.

**Figure 8** shows natural heritage areas and the occurrence of rare plants and animals in the River Road area. The map also illustrates significant water features such as the Cape Fear River, Mott's Creek, Barnard's Creek, and associated wetlands.

## Carolina Bays/Pocosins

While some wetlands such as swamps are easily identified, others are dry during part of the year and harder to recognize as wetlands. Carolina Bays are such a wetland type. In Wilmington and New Hanover County, Carolina Bays, also referred to as pocosins, occur in lower-lying areas. These oval-shaped depressions usually are oriented on a northwest-southeast axis and can range in size from less than an acre to several thousand acres. Vegetation of pocosins in the River Road



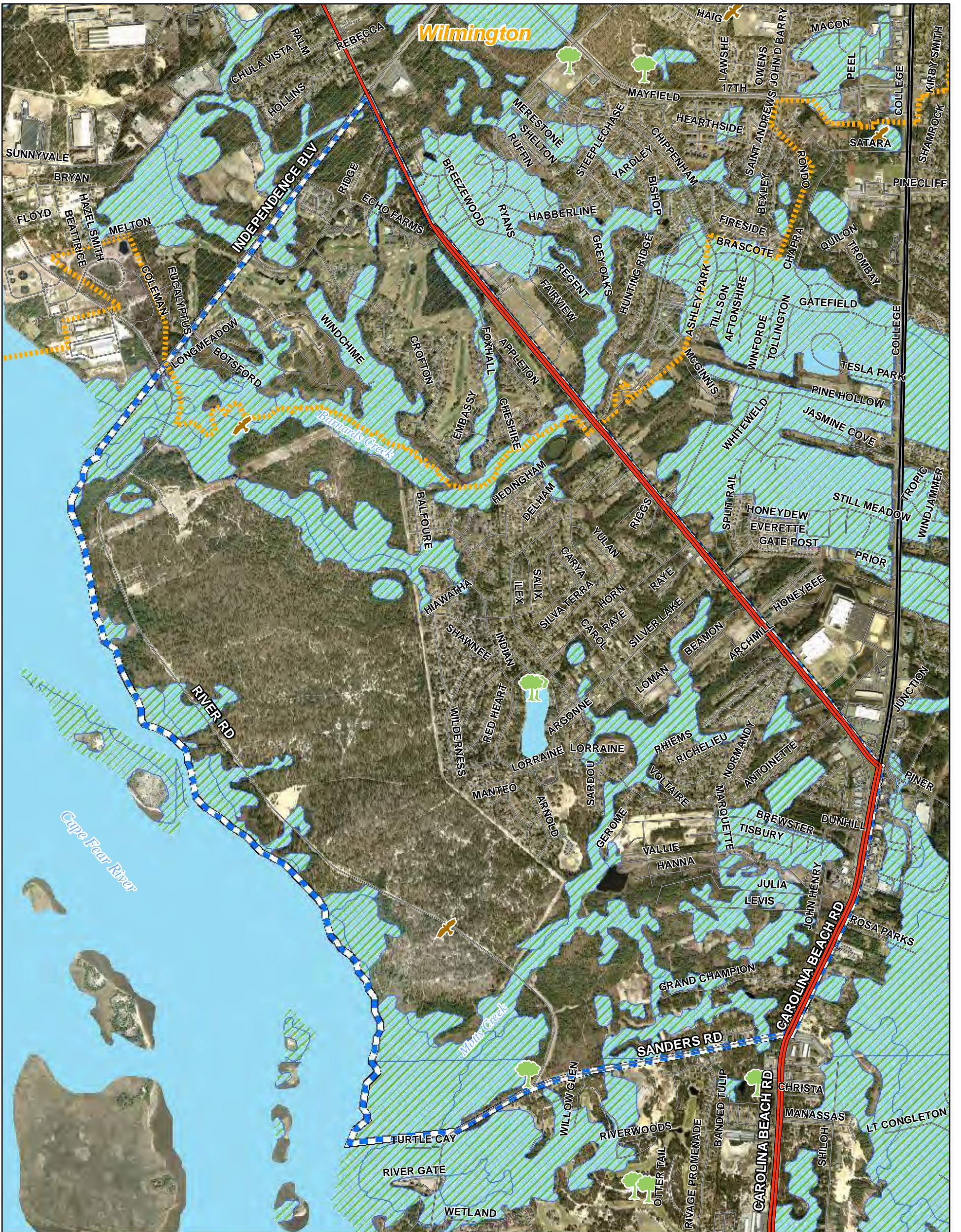


Figure 8 - Natural Heritage Elements

NC Natural Heritage Program  
Species of Concern

Vascular Plant

Vertebrate Animal

US Route

NC Route

Secondary/Local Street

Study Area

Wetland

Body of Water

Wilmington







region includes scattered longleaf pine trees with thick, shrubby areas. A ridge of white sand usually forms on the southeastern end. The image above shows an example of a pocosin near the intersection of Carolina Beach Road and St. Andrews Drive.

### Sand Ridges

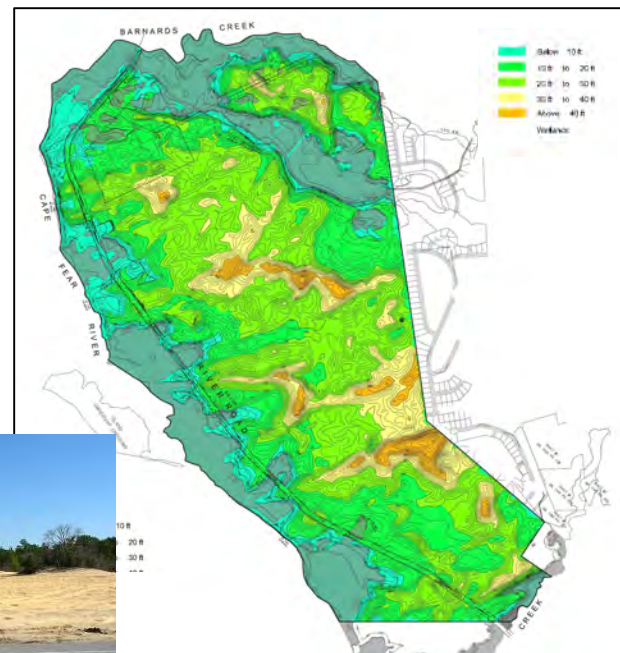
Features unique to the riverfront of the small area are sand ridges or knolls that run approximately perpendicular to the Cape Fear River. These ridges, shown in the topographic image to the right, rise at locations to nearly 60 feet above sea level. Preliminary research suggests these ridges may be the remnants of shoreline dunes left behind as prehistoric sea levels receded to current



levels. In less urbanized areas, these knolls represent important habitat for burrowing animals. Example habitats include red wolf burrow locations, located in Alligator River National Wildlife Refuge in northeastern North Carolina.

### Social Elements

Transportation projects and new development also have the potential to significantly impact disadvantaged populations as well as local social landmarks such as schools, libraries, and parks. The federal government has developed environmental justice



requirements that seek to avoid the use of federal funds for projects, programs, and activities that create disproportionate or discriminatory adverse impacts on minority or low-income communities. While the law applies only to federally funded projects, projects funded from local and private sector sources should recognize that planning for disadvantaged populations is an integral part of long-range planning, as well as the effective design and construction of individual projects.

To make sure the *River Road Small Area Plan* respects the needs, impacts, and benefits to all residents, 2000 Census data was analyzed for minority and Hispanic populations, as well as persons living below poverty. The minority and Hispanic populations were analyzed at the census block level and poverty status was analyzed at the census block group level. The results are shown in **Figures 9 through 11**.

Minorities account for 20.1% of population of New Hanover County and 29.4% of the population of the City of Wilmington. Most census blocks in the vicinity of the River Road study area fall below the County and City average. The sections of the study area with higher percentages of minorities are located off Carolina Beach Road near Archmill Way and Carya Drive.





These locations are closer to the County and city averages.

Hispanic communities also are located near Archmill Way and Carya Drive. Overall, the Hispanic population within and near the River Road area is at or below the rates for the County (2%) and City (2.6%).

A review of poverty statistics show the River Road area fares better than average for New Hanover County and the City of Wilmington. Even the census tract in the study area with the highest percentage of persons living below poverty (11%) falls below the rates for the county (13.1%) and the city (19.6%).

### ***Landmarks***

Local social landmarks such as schools, libraries, post offices, and parks should be preserved and enhanced while planning for future growth. Recommendations to improve access for pedestrians, bicyclists, and motorists should include adequate connections to these social hubs.

The study area boasts a variety of public and private schools. Public schools adjacent to or within the study area include:

- Heyward C. Bellamy Elementary School, 70 Sanders Road (public)

- Dr. John Codington Elementary School, 4321 Carolina Beach Road (public)
- Mary C. Williams Elementary School, 801 Silver Lake Road (public)

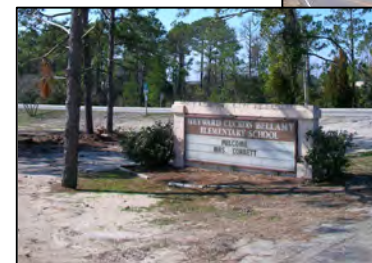
These public schools are supplemented with private academies near the study area such as Cape Fear Academy (3900 South College Road) and Chesterbrook Academy (4905 South College Road). Other schools near the study area include the private Myrtle Grove Christian School and the public Myrtle Grove Middle School. Both of these schools are located on Piner Road.

Stakeholder interviews with staff from New Hanover County Schools and Mary C. Williams Elementary indicated that public schools in the area are near capacity. While no policy prevents walking or biking to school, a high percentage (25 to 33%) rides the bus to school. Many more are driven to school in private automobiles. These trips create a burden on the roadway network, particularly along Silver Lake and North Lorraine Drive.

One issue also identified by neighbors was the queuing that occurs at Bellamy Elementary at the beginning and ending of school day. Layout of the school parking and the number of parents

picking up or dropping off their children create long back-ups out of the school entrance and onto Sanders Road. With Sanders Road having soft sand shoulders, the parents fail to pull off the road in many cases and block traffic on Sanders Road. When the queue is long enough, the problem creeps back to River Road. Motorists traveling northbound on River Road headed to Sanders Road sometimes have to brake aggressively when they come around the curve to find cars backed up in the travel lane. The image below shows an instance of this queuing problem during a typical school dismissal period.

Other important landmarks include the Myrtle Grove Branch of the New Hanover County Public Library at 5155 South College Road, the United States Post Office at 5675 Carolina Beach Road, and a park adjacent to Mary C. Williams Elementary School.





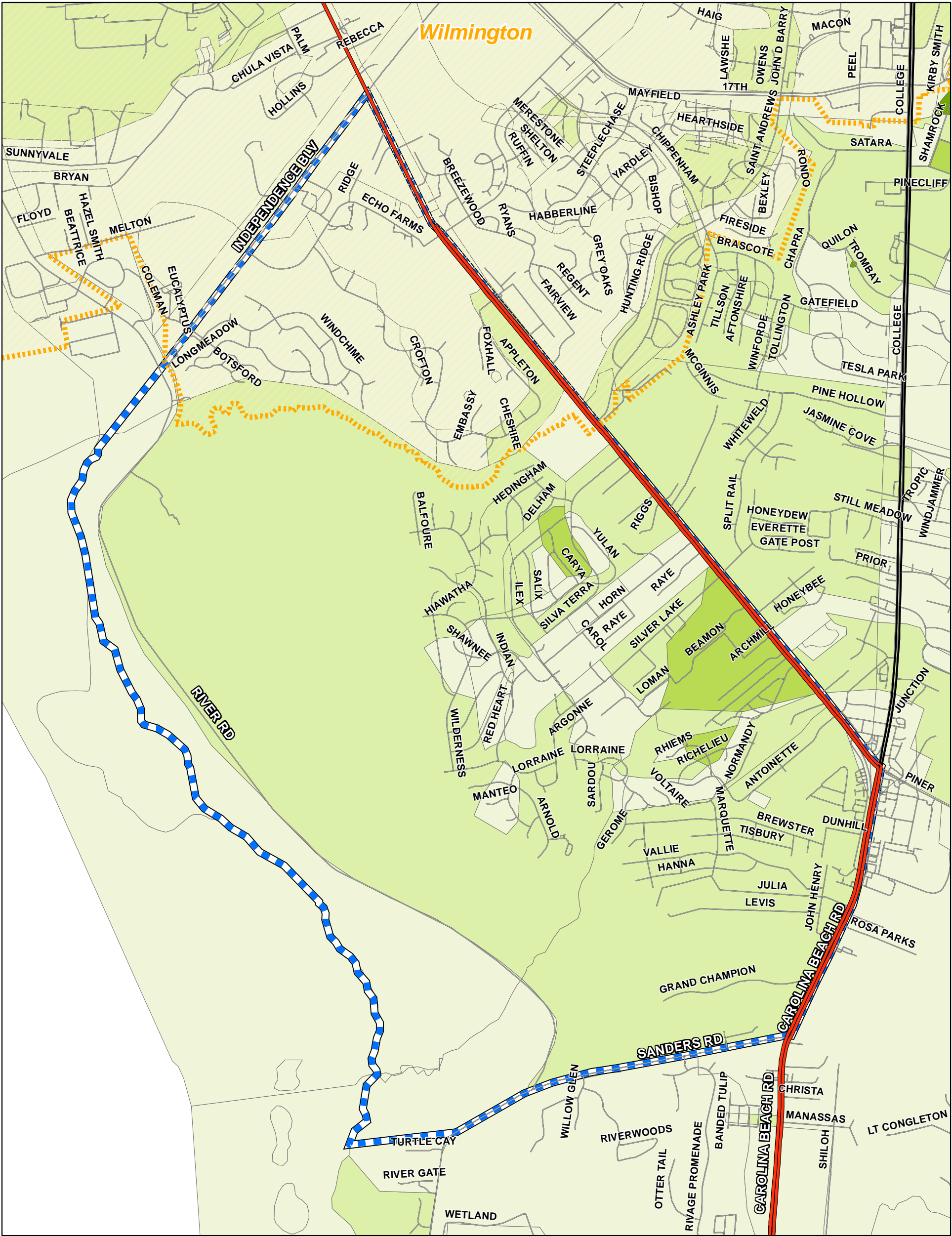


Figure 9 - Percent Minority

Percent Population Minority

- Less than 10%
- 10 to 20%
- 20 to 30%
- More than 30%

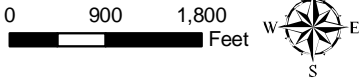
US Route

NC Route

Secondary/Local Street

Study Area

Wilmington





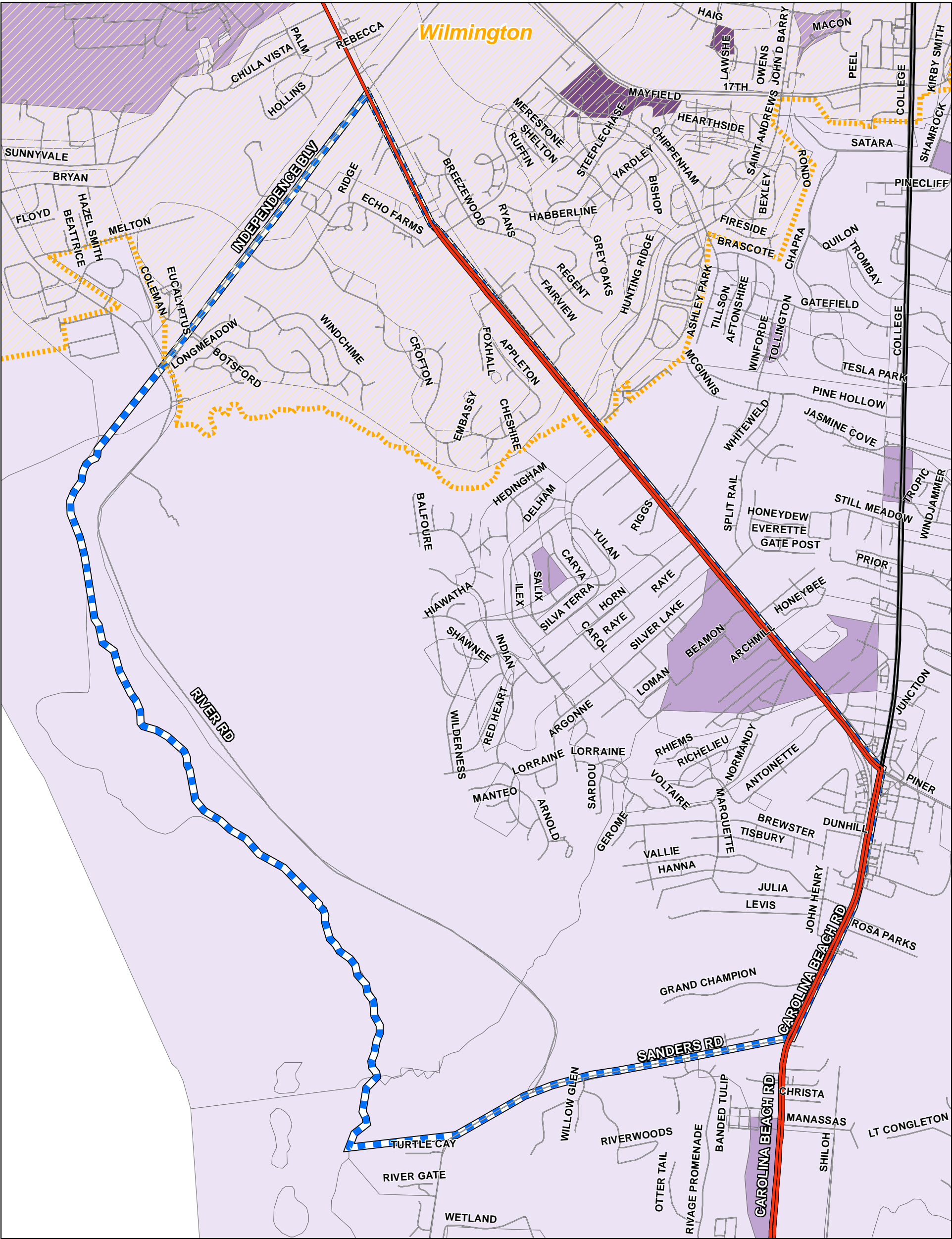


Figure 10 - Percent Hispanic

Percent Population Hispanic

- Less than 5%
- 5 to 15%
- 15 to 40%
- More than 40%

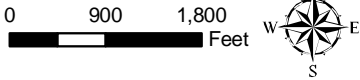
US Route

- NC Route

Secondary/Local Street

Study Area

- Wilmington





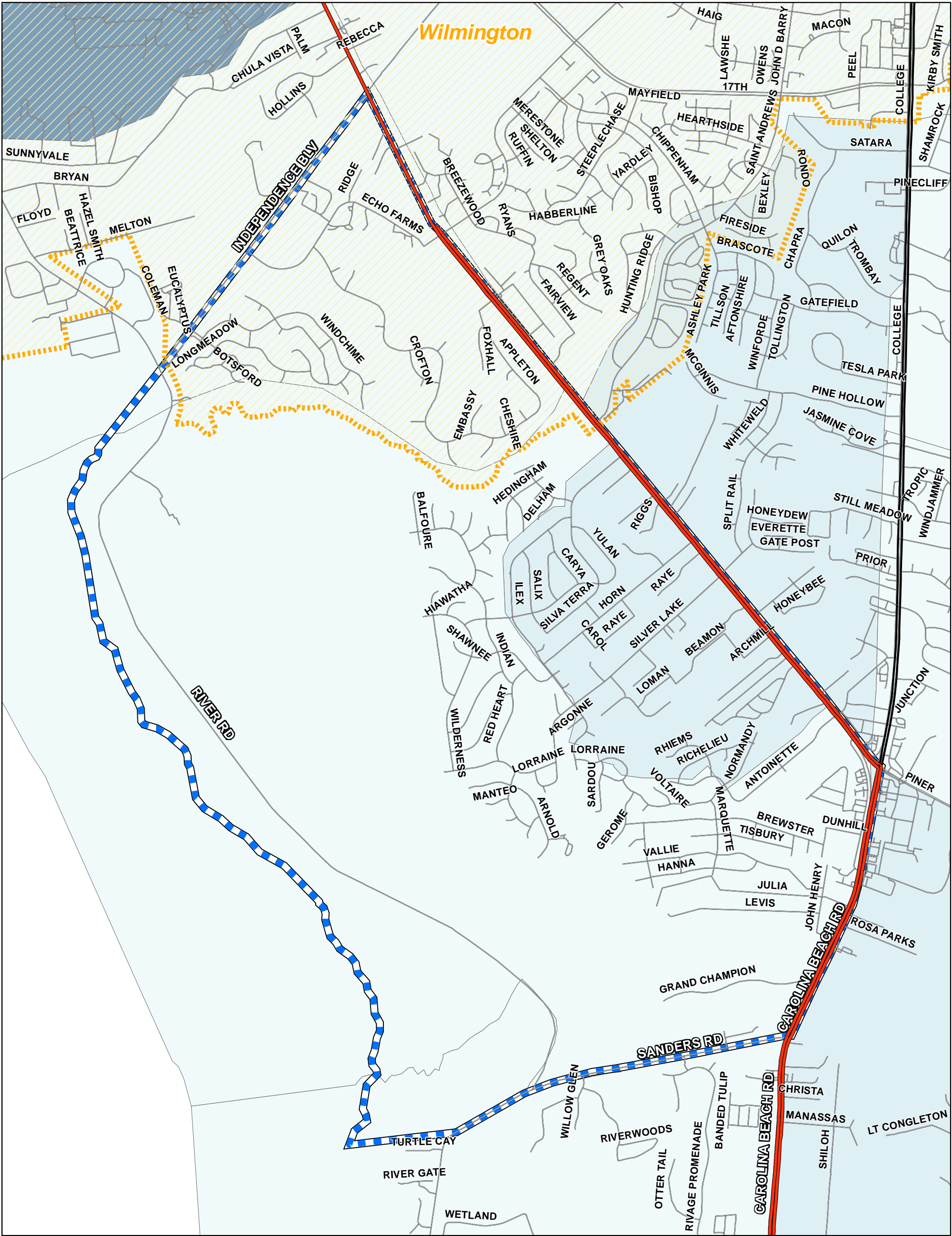


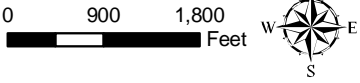
Figure 11 - Percent Below Poverty

Percent Population Below Poverty

- Less than 10%
- 10 to 20%
- 20 to 30%
- More than 30%

- US Route
- NC Route
- Secondary/Local Street

- Study Area
- Wilmington







## FINDINGS & RECOMMENDATIONS

After considering the existing conditions through three intensive days of field visits, interviews, meetings, and design work, the charrette team produced numerous maps, sketches, plans, concepts and recommendations for the River Road area. The following sections cover the ideas and recommendations presented at the March 1 public workshop as a product of the charrette. Continued work since the charrette has refined these results based on further research and comments received by stakeholders, citizens, and review agencies.

It is worth noting that this report does not recommend an alignment for River Road with the Newland Communities development. The recommendations presented in this report are compatible with both the 1999 approved and 2006 planned alternatives. The realignment affects a variety of issues, including transportation, environmental impacts, land values for the existing right-of-way and neighboring lots, road maintenance costs, social impacts (whether real and unduly anticipated by various stakeholders), flooding potential, and economic development. The decision for approval of the current planned alternative belongs

to the New Hanover County commissioners. The County's staff and Commissioners should consider these findings and the area-wide recommendations to aid in the realignment decision.

### Transportation

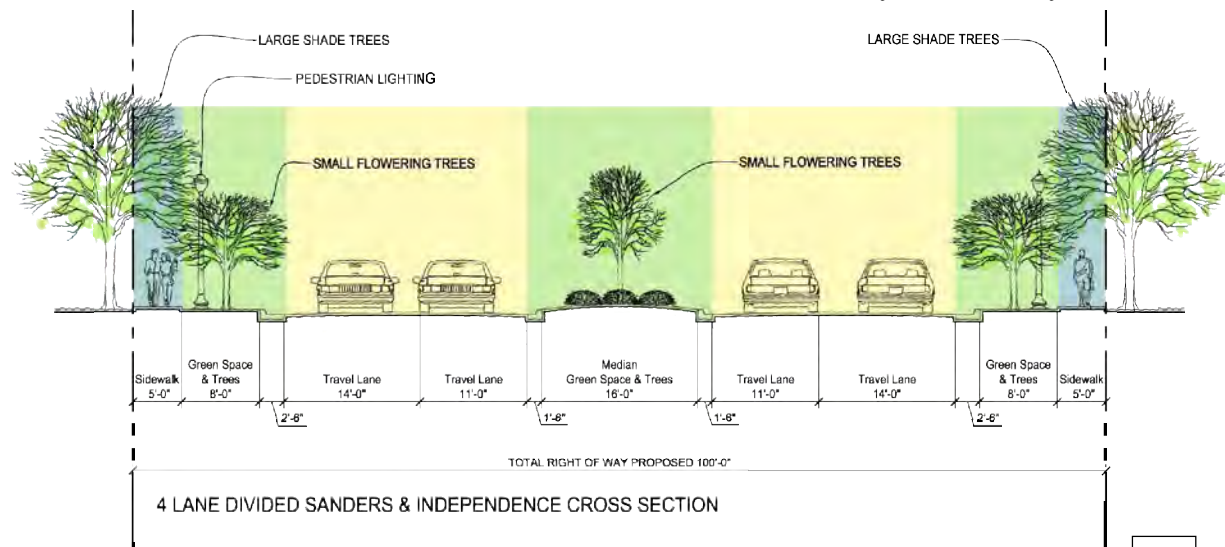
In order to effectively evaluate the area's transportation needs in the planning horizon year of 2025, it was necessary to determine the traffic constraints resulting from a full build-out of all parcels within the study area. With the current rate of development, it is practical to assume that the few remaining undeveloped parcels will be built out by 2025, if not sooner. Since the Wilmington Area Transportation Model is still under development, traffic volumes for 2018 (anticipated year for build-out of the Newland Communities development)

were developed using a 3% annual growth rate applied to 2006 traffic volumes and trip generation for the approved developments in the area.

To determine 2025 traffic levels, the 2018 traffic was grown at 2.5% annually and development for the remaining undeveloped parcels was determined using existing housing densities. Site trips were generated for those residences and commercial areas and added to the system to create the horizon year totals. The AADT volumes are shown on **Figure 12**.

### Capacity Improvements

Reviewing these volumes, it is clear that not only Independence Boulevard and Sanders Road, but also the section of River Road between these two roads will need to be widened by the horizon year of 2025.



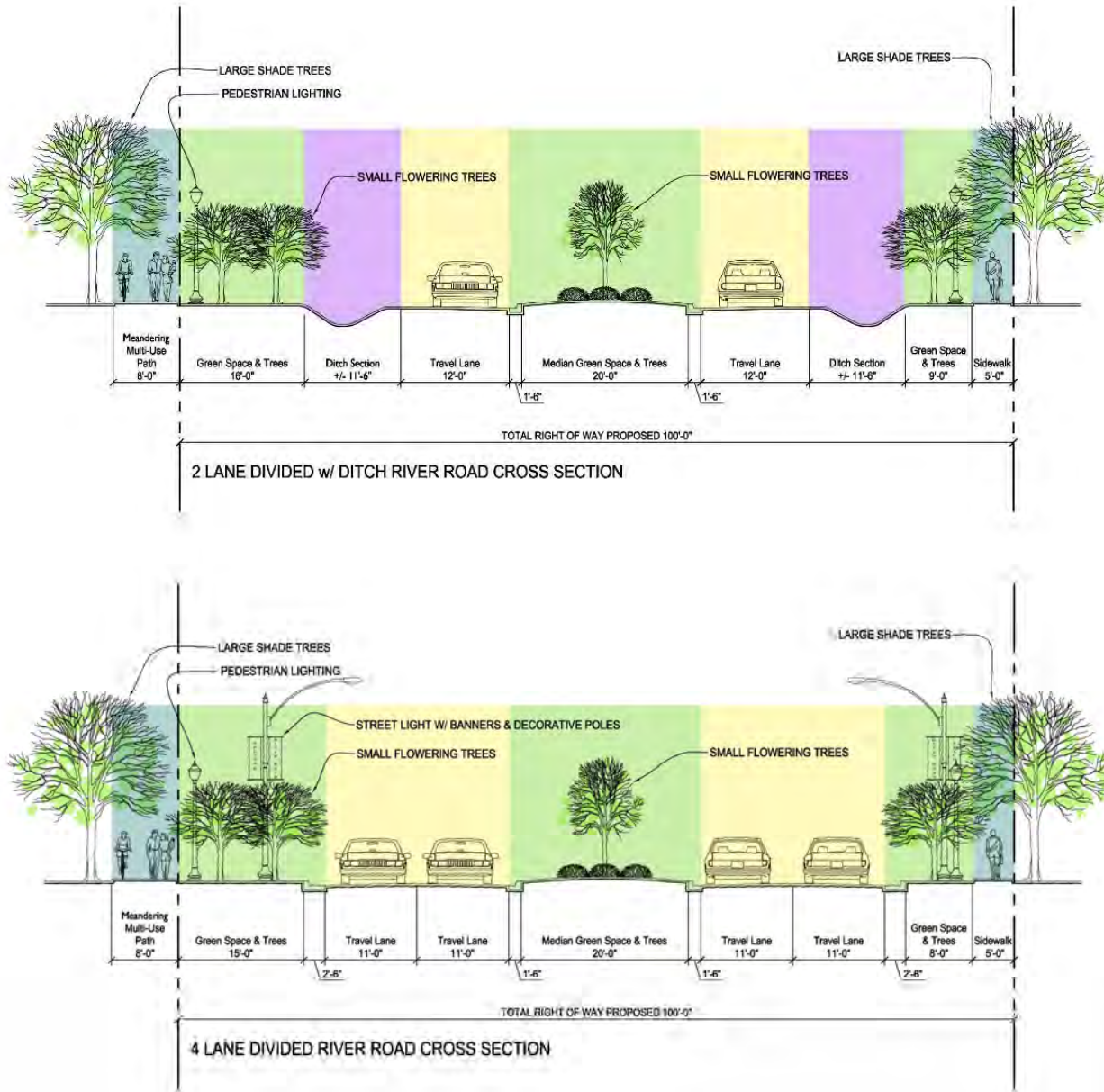




Traffic levels are at or above capacity for a two- or three-lane roadway. Both Sanders and River Roads are designated as urban minor arterials. With the potential for numerous driveways to the parcels on its north side as well, it is recommended that Sanders Road be designated as a future four-lane median-divided facility (see figure below) considered for widening in the 2015 time frame and included in the LRTP.

River Road also is recommended to become a four-lane section as the 2025 volumes reach levels near 28,000 to 30,000 AADT. The projections also show that Carolina Beach Road will be greatly over capacity without widening. In the future, River Road will grow in popularity as an alternate north-south route between Wilmington and Carolina Beach. The anticipated growth along the road, however, does not necessitate the improvements be made all at once. As with similar realignments, the road could initially be rebuilt as a two-lane, median-divided facility with a ditch section within the 100-foot right-of-way. Street trees, landscaping, sidewalks, multi-use paths, and lighting can all be incorporated as common design elements.

As development is completed and through traffic increases along River Road, the







adjacent roadway segment can be improved to four lanes with curb and gutter in order to maintain a 100-foot right-of-way. If the decision is made to use a ditch section in lieu of curb and gutter, the right-of-way will need to be widened to 150 feet. Based on straight line interpolation for projected traffic and a 15,000 AADT threshold, River Road would need to be widened by 2015. This study recommends the widening be phased with the construction of the Newland Communities property.

Current plans developed for the Cameron Tract include two roundabouts on the River Road corridor, with one at the intersection with the extension of Lorraine Drive and another near the commercial area where the new road alignment begins. While the operations of these two intersections were not evaluated for this report, the viability of roundabouts at major/minor intersections (where a two-lane street crosses at four-lane facility) will have to be approved by NCDOT as a part of the development review process. Dual-lane roundabouts are typically 150 to 180 feet in diameter, but their design can be made smaller, particularly at these major/minor crossings.

Independence Boulevard is expected to reach the 20,000 to 25,000 AADT range nearer to the horizon year of 2025 than

Saunders or River Road. Independence Boulevard will connect to the future Cape Fear Skyway when it is completed. Independence Boulevard east of Carolina Beach Road is also slated to be widened to four lanes in the City of Wilmington Capital Improvement Program. With the toll bridge and freeway projected to be delivered by the 2015-2020 timeframe, the new cross-river connection will pull more traffic to River Road and Independence Boulevard to access the facility. As a result, the widening and improvement to a four-lane, median-divided facility similar to Sanders Road should be scheduled to coincide with the Skyway's opening. A four-lane segment will be safer and a more aesthetically pleasing gateway to the River Road area and communities along the boulevard.

### ***Intersection Laneage Improvements***

Ensuring good intersection operations is key to maximizing roadway capacity and reducing crash frequency and rates. For the River Road small area, efficient traffic flow to and from neighborhoods and local businesses relies heavily on Carolina Beach Road. The projected 2025 volumes show that traffic on the highway will continue to grow and exceed capacity before 2025. An upgrade for Carolina Beach Road is included in the Wilmington LRTP and will consider widening options.

In the near term, NCDOT recently performed an Access Management Study for the Carolina Beach Road corridor with the recommendations for adding new signals, eliminating some existing signals, installing mainline directional crossovers at current median breaks, and closing specific existing median breaks. These plans were reviewed for the study (**Table 3**). It is recommended these plans be implemented, as shown both in the table and in **Figure 12** on the following pages. A signal at Silver Lake Road abides by NCDOT Median Crossover Guidelines for signal spacing greater than 1,200 feet on facilities with speed limits of 45 mph or less.

In addition, it is recommended to evaluate the signal timings for the entire corridor between downtown Wilmington and Carolina Beach to develop an updated signal coordination plan. Approximately half of all the crashes for Carolina Beach Road were rear-end crashes, common for congested, higher-speed corridors with numerous signals. Rear-end crashes commonly occur as the result of sudden stops coupled with inadequate following distance. While the corridor currently operates with an older coordinated signal system, an updated plan will not only help to decrease the number of stops through the corridor and the resulting rear-end crashes, but also increase the efficiency and





capacity of traffic operations along the Carolina Beach corridor.

The study also investigated operations at seven crucial intersections in the study area to determine future laneage needed to handle traffic growth. With the planned Cape Fear Skyway terminating at the Carolina Beach/Independence Boulevard intersection, future traffic patterns will be heavily affected by projected traffic on the Skyway. It is likely that the volumes will require the consideration of interchange options. Those options will be studied in detail in planning documents for the Skyway project. Likewise, intersection improvements at Monkey Junction will require further investigation with traffic modeling to determine whether improvements alone are viable or an interchange is justified.

The following pages provide summaries for the other five intersections evaluated in the study. Intersection diagrams for these five are provided in **Appendix A**, detailing the current and future laneage and traffic control. Four of the intersections are recommended for gateway treatments, outlined in the Land Use portion of this section.

**Table 3. NCDOT Carolina Beach Road Access Management Plan**

Intersection with Carolina Beach Road	Current Traffic Control	Proposed Treatment
George Anderson Drive	Signalized	None
Coddington School Entrance	Unsignalized	Closed (Should be Responsibility of Developers)
Fairview Drive	Unsignalized	Signalize (Should be Responsibility of Developers)
St. Andrews Drive	Unsignalized	Offset Directional Lefts
Silva Terra Drive	Signalized	None
Median Break near Riggs Trail	Unsignalized	Southbound Directional Left (Should be Responsibility of Developers)
Horn Road	Unsignalized	Offset Directional Lefts
Silver Lake Road	Signalized (Under Proposed Spot Safety Project)	None
Archmill Way	Unsignalized	Offset Directional Lefts
Median Break north of Antoinette Drive	Unsignalized	Offset Directional Lefts
Antoinette Drive/Wal-Mart Entrance	Signalized	None
Service Road	Unsignalized	Closed
Service Road	Signalized	None
Rosa Parks Lane	Unsignalized	Closed
Median Break at Retirement Home Entrance	Unsignalized	Offset Directional Lefts
Sanders Road	Signalized	None



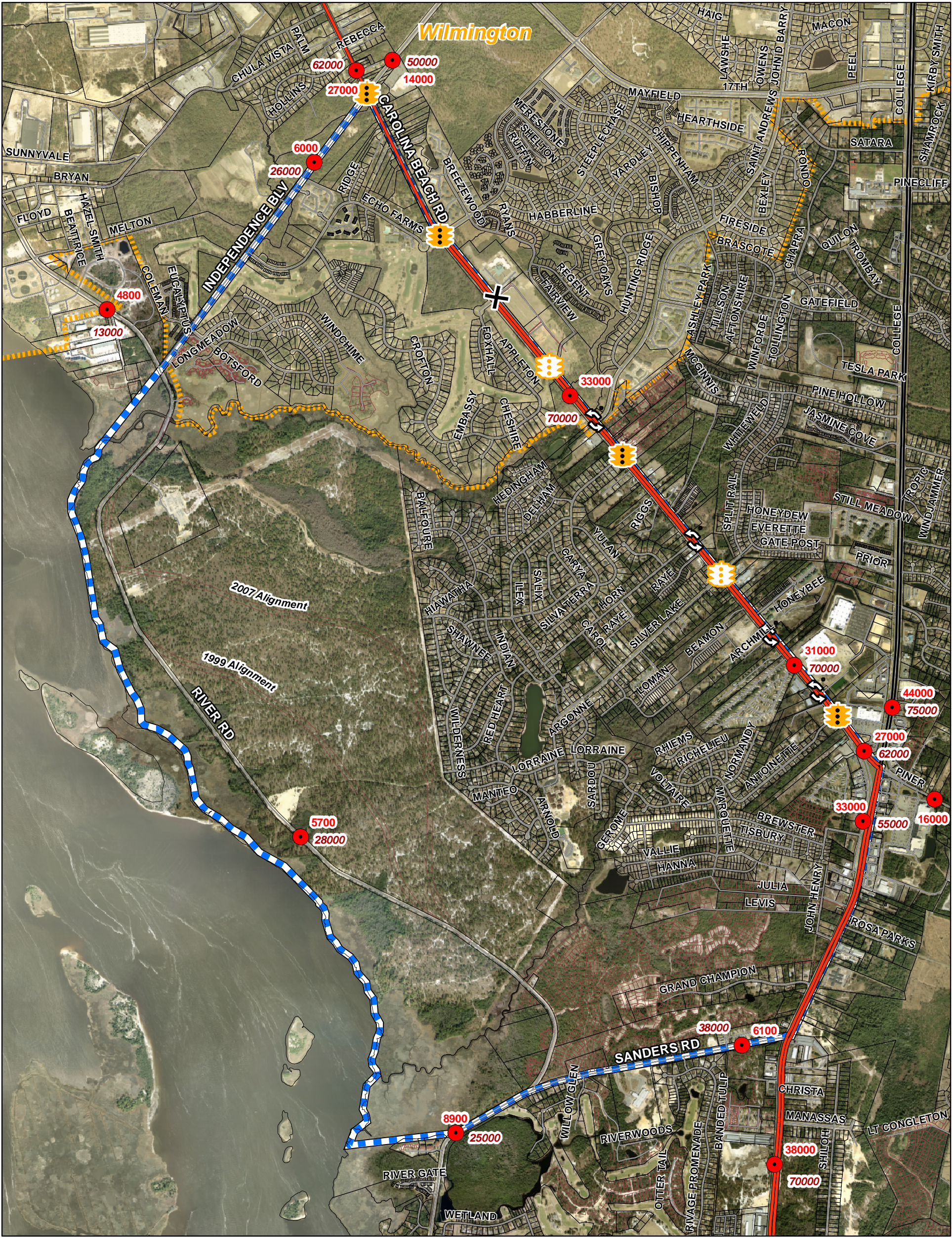
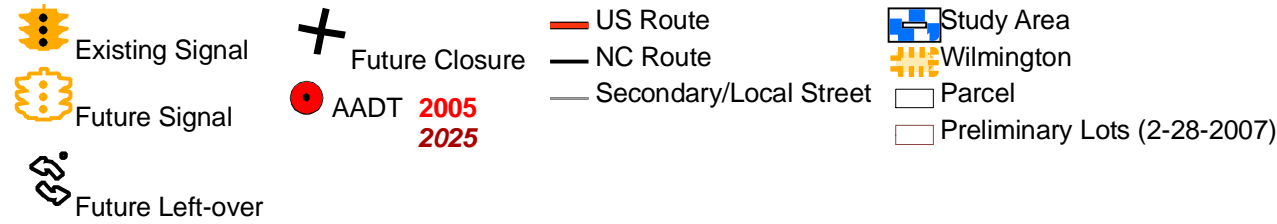


Figure 12 - 2025 Future Traffic

Kimley-Horn and Associates, Inc.

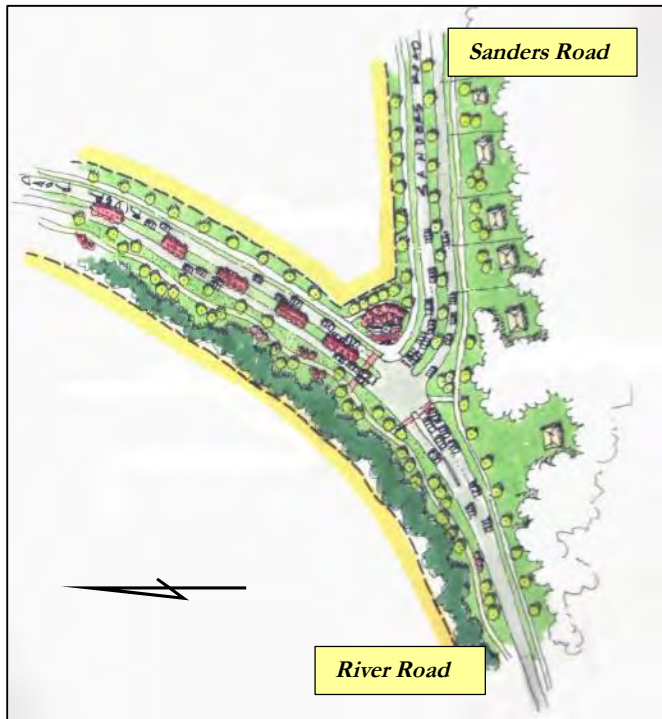






▲ River Road at Saunders Road looking east

Sanders Road realignment intersection to the east ▼



**Sanders Road at River Road** — The current intersection alignment at this location is irregular with an acute angle between the north and east legs. It is recommended that the Sanders Road approach be realigned to the northeast as a T-intersection with River Road. Because the heavier movements are continuous on River Road, River Road is treated as the mainline for the intersection. Future traffic will warrant a signal at the location with two-lane approaches for each leg.

In regards to Bellamy School traffic, NCDOT conducted a study of the situation, determining the issues are internal to the school. The school may consider determining alternative solutions to improve pupil drop-off and pick-up, as well as to remedy the resulting queuing problems occurring on Sanders Road.

**Independence Boulevard at River Road** — Future traffic volumes will warrant a signal at this location. Large peak hour turning movements between Independence Boulevard and River Road to the south will require an exclusive westbound left-turn lane and exclusive northbound right-turn lane. While moderate demand for the

southbound left turn will not require an exclusive lane, traffic may increase with the construction of the Skyway and an exclusive lane should be considered.

**Silva Terra Road at Carolina Beach Road** — Improvements at this intersection by the year 2025 will include signal coordination along Carolina Beach Road and widening of the northbound approach to include dual left-turn lanes and a shared through/right lane. This cross-section will fill the existing right-of-way, but a gateway median as shown in Appendix A could be possible as left-turning vehicles balance between Silva Terra Road and Silver Lake Road when a signal is installed at the second location. Carolina Beach Road should be considered for widening to six lanes in the future.

**Silver Lake Road at Carolina Beach Road** — Improvements at this intersection by the year 2025 will include signalization and coordination on Carolina Beach Road and widening of the northbound approach to include an exclusive left-turn lane and a shared through/right-turn lane. Carolina Beach Road should be considered for widening to six lanes in the future.





### Connectivity

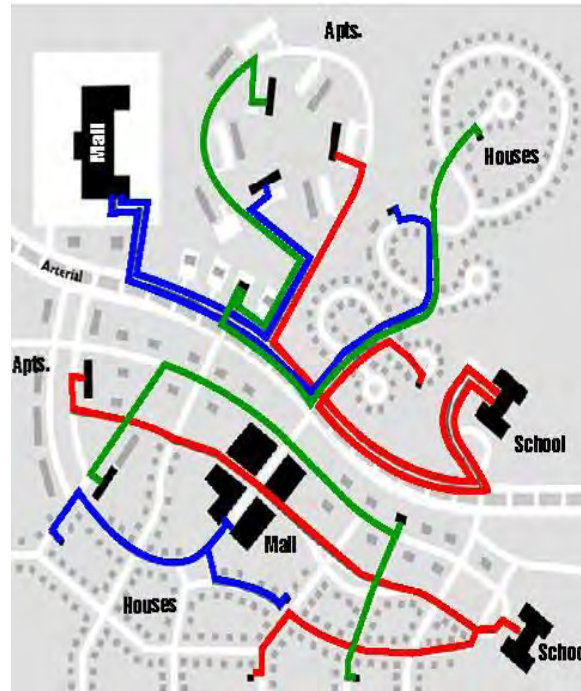
The neighborhoods within the River Road area suffer from a lack of connectivity, impacting traffic conditions on Carolina Beach Road. In order to access nearby commercial areas, a resident must get in a car, leave the neighborhood, and drive along Carolina Beach Road to get to travel anywhere nearby. As illustrated in the top portion of the figure to the right, this land use style funnels all trips onto one main arterial and induces more congestion than those more connected street networks, like the ones illustrated on the lower portion of the image.

It is recommended that roadway connections be planned to better link existing neighborhoods to new development as well as each other.

Unfortunately, north-south connections are limited to River Road and Carolina Beach Road on the perimeter due to the inability to cross surrounding wetlands, as well as Barnard's and Mott's Creeks. The two creeks split the area into three cells where east-west connections can be enhanced.

**Figure 13** illustrates the recommended street connections within these cells.

North of Barnard's Creek, the existing and planned street networks for Echo Farms provide almost optimal connectivity considering environmental factors.



Apartment and single-family home neighborhoods are connected to one another, with the eastern portion providing access on both Carolina Beach Road and Independence Boulevard.

Connections across the central cell, between the two creeks, are critical to the River Road small area, and were a source of debate at the public workshops. It is recommended that development by Newland Communities provide three connections at Wilderness Road, Lorraine Drive, and Arnold Road. These links will

serve two purposes: 1) provide access to the existing neighborhoods to River Road as an alternate north-south route and 2) provide access from River Road and Newland development to Mary C. Williams School and its adjacent park, as well as Carolina Beach Road.

Two collector routes — one along Lorraine Drive and Silver Lake Road and the other along Wilderness, Yulan, and Silva Terra Roads — will experience increased traffic but at levels compatible within neighborhoods. The volumes will lessen the peak hour demands at the Carolina Beach Road intersections with Independence Boulevard and Sanders Road by allowing more mainline green time. The development of the existing neighborhoods planned for these connections, as evident by the numerous stub-outs along the southern side that allow for these recommended connections.

Improvements at the Silva Terra and Silver Lake intersections as well as along the residential street routes will lessen any detrimental effect of increased traffic along the two routes. At Carolina Beach Road, the intersection improvements discussed in the previous section are recommended to help traffic operations overall. In addition, cross-section improvements to upgrade the two facilities to collector streets are





Figure 13 - Roadway Connectivity

- Existing Neighborhood Connections
- New Neighborhood Connections
- Planned Thoroughfares
- River Road Options
- US Route
- NC Route
- Secondary/Local Street
- Study Area
- Wilmington
- Parcel
- Preliminary Lots (2-28-2007)







recommended, with a typical cross section as shown on this page. Traffic calming options beyond typical speed bumps should be considered for short- and long-term improvements to reduce cut-through traffic and speeding and can include the following measures:

- **Gateway features with center median islands** to define neighborhood areas and slow entering traffic
- **Small neighborhood roundabouts** to slow speeds at intersections and provide right-of-way to motorists on side streets
- **Street trees** and other landscaping to provide vertical features near the road and visually narrow the corridor
- **Sidewalks and crosswalk improvements** to enhance the pedestrian environment and encourage walking and activities, and
- **Increased enforcement**

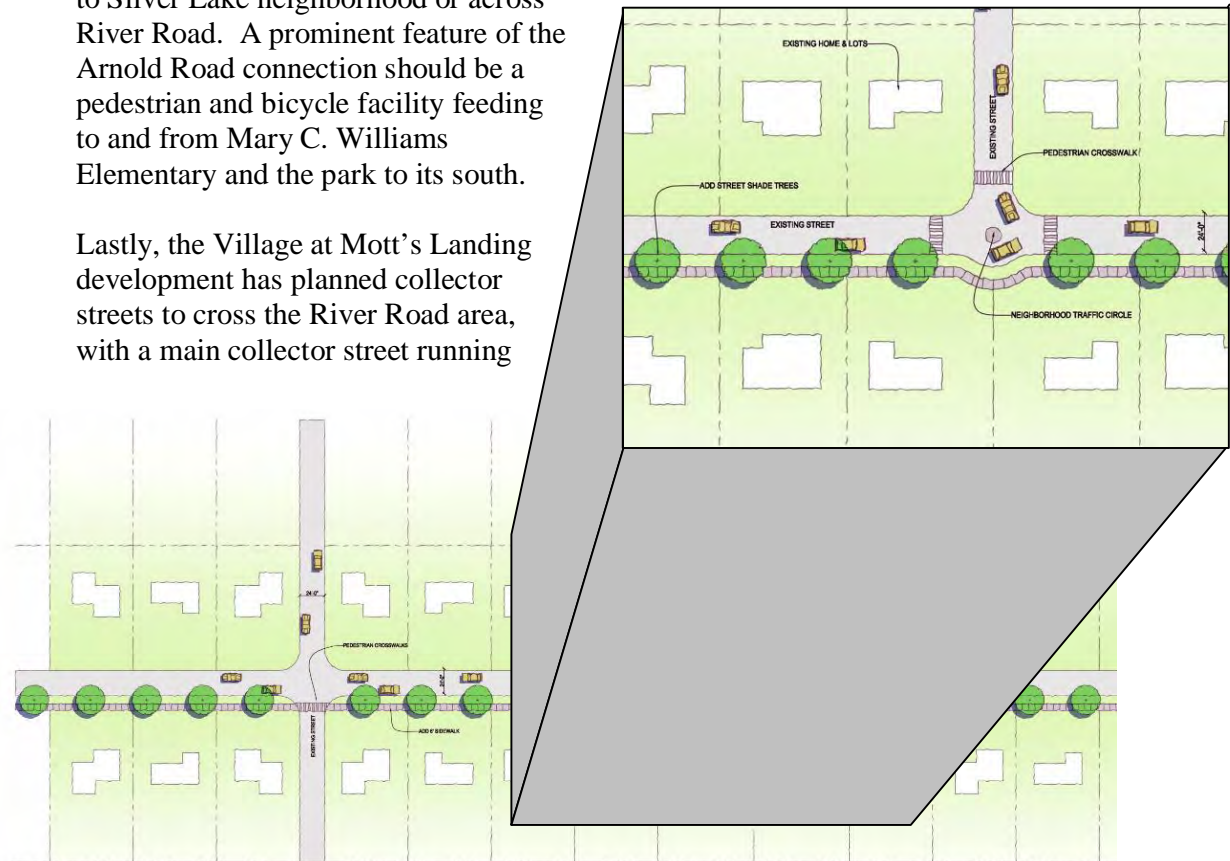
Truck restrictions and speed limit reductions were also considered but are not currently supported by NCDOT without additional study.

The diagram to the right illustrates a typical cross-section with neighborhood roundabout. It also demonstrates the minimal right-of-way impacts at the

intersection and the deflection in the travel path.

These same options also are viable for the third connection at Arnold Road, although it may not be feasible or worthwhile until new development is realized at the southern end of the large parcel, either adjacent to Silver Lake neighborhood or across River Road. A prominent feature of the Arnold Road connection should be a pedestrian and bicycle facility feeding to and from Mary C. Williams Elementary and the park to its south.

Lastly, the Village at Mott's Landing development has planned collector streets to cross the River Road area, with a main collector street running







east to Carolina Beach Road and running west to connect to both Sanders and River Roads. This connection will help alleviate pressure on the Sanders Road/Carolina Beach Road intersection. An additional connection is recommended north-south across the central portion of the cell to Marquette Drive and Brewster Lane. The aforementioned traffic calming options should be considered for these collector street corridors as well.

The aforementioned new streets are among several recommended internal collectors which will facilitate better linkages within the boundary. These internal connections allow for travel between neighborhoods without having to access the arterial on the edges of the area. They also require no additional right-of-way. The Marquette extension south allows for neighborhood trips between Mott's Landing and Silver Lake via Normandy Drive, Lorraine Circle, and Ilex Drive. A connection between

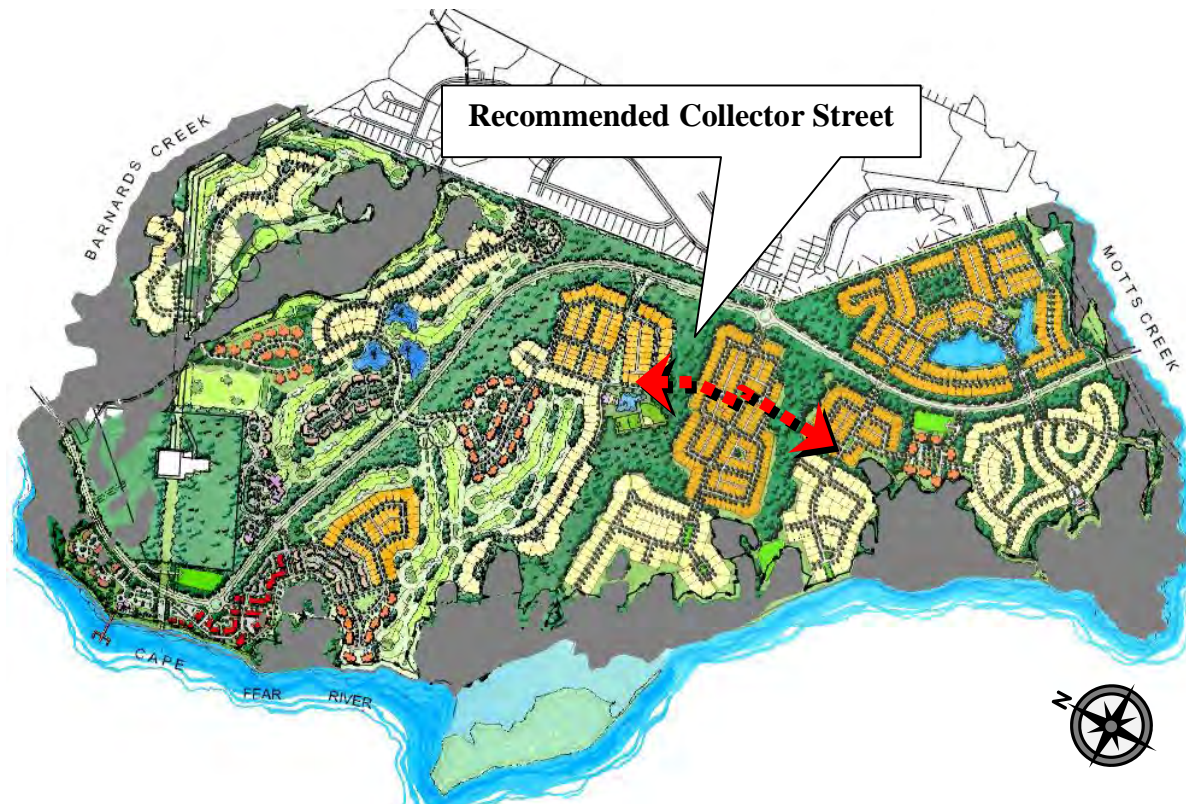
Lorraine Drive and Lorraine Circle across the existing right-of-way also would enable residents in the western part of the community to forgo the circuitous route using Ilex Drive.

Internal connections are not only good for existing residential areas, but also should be planned in new development. The 2006 plan presented by Newland Communities illustrates residential development segmented in large cul-de-sacs. Particularly along the western developments, a single connection between the individual groupings midway between River Road and the riverfront could be established with minimal disruption to the sand ridges. The connections would facilitate better emergency vehicle response as well as access to community facilities and parks without having to go to River Road.

It is recommended that New Hanover County continue to enforce its adopted connectivity index for new developments to make sure area residents have options when traveling in and out of their neighborhoods.

### ***Bicycle and Pedestrian***

The **Existing Conditions** section identified the numerous schools, parks, and community facilities in the River Road







small area. Some of the new development also includes plans for parks, greenways, multi-use paths, and commercial areas. The study area includes a section approximately 3 miles long and 2 miles wide which presents a great opportunity to improve pedestrian and bike connections, facilitating non-motorized transportation within the area.

**Figure 14** illustrates recommended greenway and sidewalk connections that would positively enhance the area and link to nearby parks, schools, and retail areas. Opportunities for greenways along the Cape Fear River and the two tributary creeks should be identified and considered as development occurs in the area.

During the planning process for pedestrian facilities, future transit opportunities should be considered in terms of nodes where significant residential and commercial area are located with a ¼-mile radius of a potential transit stop on the corridor. In the future, a more complete evaluation of transit options should be considered based on demand to and from area.

## Land Use

### *Intersection Gateways*

Defining the entrances to new and existing neighborhoods within the study area can

help reduce speeding and cut-through traffic on the neighborhood collector streets. Considering important locations in the area, the study team examined gateway opportunities on River Road at Sanders Road and Independence Road, as well as how the feature could “announce” a residential area’s entrance. Two other gateway opportunities became evident upon examining the Silver Lake and Silva Terra neighborhoods, particularly when designs addressed how to calm traffic entering from busy roadways like Carolina Beach and River Roads.

Conceptual designs for the four locations were developed considering landscaping and appropriate design elements. Brief descriptions of each location’s designs are provided below, in addition to illustrative sketches created for each in **Figures 15** through **18**.

- **Independence Boulevard at River Road** — Gateway features high-visibility crosswalks, mast arm-mounted signals, sidewalks, street trees, gateway features, banners, and landscaping.
- **Silva Terra Road at Carolina Beach Road** — Gateway features center island medians on the side street, sidewalks, high-visibility crosswalks,

gateway signing, street trees, and landscaping.

- **Silver Lake at Carolina Beach** — Gateway features center island medians on the side street, sidewalks, high-visibility crosswalks, gateway signing, street trees, and landscaping.
- **Sanders Road at River Road** — Gateway features high-visibility crosswalks, sidewalks, mast arm-mounted signals, street trees, gateway features, banners, and landscaping.

These gateway features should be considered as new development and intersection improvements are planned at these locations.

## Environment

The recommendations presented in the *River Road Small Area Plan* are intended to avoid environmentally sensitive areas and features in the study area. The proposed realignment of River Road would provide an opportunity in three locations to reconnect wetland areas that straddle the current alignment. Proposed improvements in the plan are primarily located within developed areas and on existing highway corridors, with the exception of recommended greenways along natural areas through the region. Alternatives exist to provide the proposed wetlands crossings



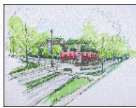


Figure 14 - Sidewalks and Greenways

Planned Connections

- Greenway
- Sidewalk

- US Route
- NC Route
- Secondary/Local Street
- Wilmington
- Parcel

- Public School
- Private School
- Library

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Feet







for those greenways in an environmentally sensitive fashion, such as the example shown above.

Proposed greenways and multi-use paths along River Road and the Cape Fear riverfront will provide continued access for residents of the Wilmington region to the three scenic vistas along River Road. Any realignment will not affect the Barnard's Creek and Mott's Creek crossings and their associated viewsheds. The one vista, located midway along the segment between the two creeks and just south of the commercial area proposed by Newland Communities, will be along the proposed greenway route fronting the river. The commercial areas of the Newland development will be located on the river and a planned boardwalk would offer residents and customers access to the riverfront. Opportunities like the greenway and the commercial riverfront will improve the scenic quality of the River Road corridor.



*Pictured are the three existing viewsheds of the Cape Fear River marshes from River Road*







**Figure 15. Independence Boulevard/River Road Gateway**

(Note: Exhibit developed for charrette to represent gateway and landscaping features, and may not represent final transportation laneage and traffic control.)





**Figure 16.** Silva Terra Road/Carolina Beach Road Gateway

(Note: Exhibit developed for charrette to represent gateway and landscaping features, and may not represent final transportation laneage and traffic control.)





**Figure 17. Silver Lake Road/Carolina Beach Road Gateway**

(Note: Exhibit developed for charrette to represent gateway and landscaping features, and may not represent final transportation laneage and traffic control.)





**Figure 18. Sanders Road/River Road Gateway**

(Note: Exhibit developed for charrette to represent gateway and landscaping features, and may not represent final transportation laneage and traffic control.)





## IMPLEMENTATION

All plans are more effective when they include a well-conceived implementation or action plan. While the *River Road Small Area Plan* includes specific recommendations and actions to implement them, it also recognizes that the ability to take action will be contingent on several factors, not the least of which is the ability to secure funding. To adopt and implement the plan, the County Board of Commissioners must work proactively with several key stakeholders, including:

- Citizens and businesses
- Development community
- City of Wilmington
- North Carolina Department of Transportation
- Cape Fear Public Transit Authority (“WAVE” Transit)
- Wilmington Urban Area Metropolitan Planning Organization

Completion of the *River Road Small Area Plan* represents an important step toward implementing multimodal improvements that affect travel safety, mobility, development patterns, and the aesthetics of the area. Some of the recommended improvements will be implemented

through the development review process. It is likely that major infrastructure improvements will be involve local, state, and federal funding. Transportation improvement funds are limited, however, and competition for them is great.

To fully implement the plan, the region must identify stable, timely, and equitable methods of funding. Some municipalities are negotiating with developers to share responsibility for the “cost of growth,” eventually shifting these costs to home buyers and businesses. It is expected that similar debates will occur in other communities within the region before the next update to the state’s Transportation Improvement Program (TIP). Identifying a creative and effective mix of funding from various sources and stakeholders in the economy and transportation system of this region is a worthy goal.

A number of transportation and land development issues were raised by citizens during the course of the public design charrette, some of whom expressed frustration over delays in getting transportation improvements completed. Unfortunately the planning, design, and construction of publicly-funded transportation projects typically takes 10 years or longer in environmentally-sensitive or coastal areas. Local, state, and

private partnerships offer strategic advantages to implementing improvements in a timely manner.

The implementation plan for the *River Road Small Area Plan* is designed to recognize and suggest strategies to address each challenge. The following are general recommendations and action strategies to help New Hanover County and the Wilmington MPO achieve its goals.

### Responsible Agencies

To successfully implement this plan, agencies have been identified that have influence and authority to enact recommendations. For the most part, policy and program initiatives will occur at the local level. Some of the proposed transportation improvements will encompass right-of-way that is owned by public or private agencies. Some improvements will occur as a result of development and redevelopment opportunities. Implementing most of these recommendations, however, will require a coordinated effort between NCDOT, New Hanover County, and the Wilmington MPO.





## Action Plan

The action items identified below list not only the appropriate steps for local leaders to implement the recommendations of this plan, but also key agencies that should be involved with the task. The nature of the recommendations does not require that all improvements be completed in unison. This should allow the County, NCDOT, and MPO the flexibility to implement changes in several phases while employing multiple funding sources to complete the improvements.

Beyond the tasks listed below, it is vital to the success of this plan that the County and MPO continue to work with and educate local citizens and businesses. While public support can encourage faster implementation, opposition can significantly delay a project.

### General Recommendations

The following recommendations apply to the overall vision for the River Road Small Area Plan as expressed by the local citizenry and elected officials. These recommendations can be initiated throughout the planning process and prior to any physical infrastructure improvements.

- Use this plan as a tool to review proposed development projects and

plans as they are implemented in the area.

- Increase the number of collector streets to better facilitate travel between local streets and arterials.
- Improve accessibility to high-density residential areas and activity centers such as the Monkey Junction and Home Depot commercial area, activity nodes, and other planned retail centers such as Fairfield Park.
- Integrate future bikeways, greenway, and trail networks (i.e., Mott's Creek and Barnard's Creek) with the *River Road Small Area Plan* to create an interconnected network.
- Avoid and/or minimize impacts to environmentally sensitive areas to preserve the natural environment.
- As the planning area is developed and expanded, minimize impacts that negatively affect the character and integrity of adjacent neighborhoods by introducing gateways or traffic calming improvements.
- Promote alternative modes of transportation through better street design and developer participation.
- Promote interconnectivity and cross-access between existing and proposed developments.



- Develop design and preliminary engineering plans that will provide immediate infrastructure improvements needed for approved development.
- The proposed planting of street trees along existing roadways (e.g., Sanders Road) and collector streets (e.g., Silver Lake Road) will occur outside of the existing right-of-way; however, the acquisition of right-of-way may not be necessary.

### Recommended Policy Amendments

To firmly establish small area plan principles into day-to-day business activities, several amendments to County policy are recommended.

- 1) ***River Road Small Area Plan*** — New Hanover County should adopt the





*River Road Small Area Plan.* The County, in cooperation with NCDOT and the Wilmington MPO, will serve as the lead agency to implement the small area plan, using all available strategies to obtain rights-of-way, ensure connectivity, approve requested variations, and secure funding agreements, where appropriate.



2) **Land Development Ordinance** —

The County should adopt an ordinance that requires developers to implement the “intent” of recommended improvements for the *River Road Small Area Plan*, including flexible approaches to access and design in order to fit individual development schemes.

3) **Interconnectivity** — The County should include connectivity requirements between abutting commercial and residential properties as shown on the *River Road Small Area Plan*. This should include requiring dedication of connector street right-of-way for redevelopment or rezoning applications.

4) **Traffic Impact Studies** — The County development review requirements include traffic impact studies to be prepared by a professional engineer and accompany all development applications, but should be expanded for commercial development or when any of the following are identified:

- An increase of 100 or more peak hour vehicular trips
- When existing safety conditions or deficiencies are identified, the New Hanover County Planning Department

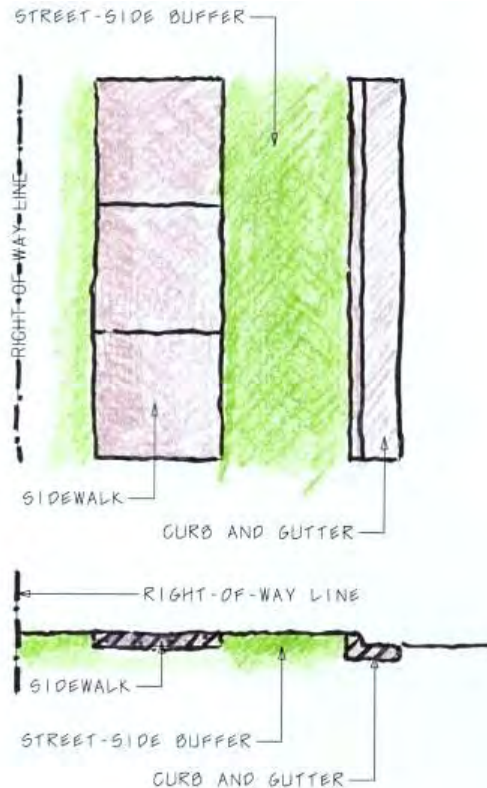
should reserve the right to require a study

5) **Bicycle and Pedestrian Plan** — The County should incorporate bicycle and pedestrian changes into the 2006 *CAMA Land Use Plan*. An interconnected system of signed bicycle routes, on-road bike lanes, and off-street multi-use paths can serve popular walking and bicycling destinations such as schools, parks, libraries, community centers, and shopping areas. The bicycle and pedestrian improvements should take advantage of low-volume, low-speed residential local and collector streets to the extent possible.

6) **Additional Small Area Plans** — Small area plans for the Monkey Junction area, the portion of New Hanover County south of the River Road small area and Piner Road, and Northern New Hanover County could serve as helpful tools to evaluate the future needs for residents and businesses located in the fast-growing area. The County should consider undertaking these planning efforts.

7) **Sidewalks** — The County should encourage or require the inclusion of pedestrian accommodations throughout the River Road planning





area where appropriate and work with NCDOT to construct sidewalks along NCDOT streets to create more “complete streets.” Priority should be given to collector streets and developments with any of the following criteria:

- Developments within or adjacent to designated or non-designated activity centers,

including institutional and commercial land uses

- The property is adjacent to public schools, parks, libraries, or other pedestrian-related public facilities
- The property has access to or is adjacent to existing or designated greenway corridors (access to these corridors should be incorporated into the overall development plan)
- Development is connecting to an adjacent development with pedestrian accommodations (a consistent cross-section is recommended for connecting streets)

Sidewalks should be a minimum of 5 feet wide on collector streets. Where curb and gutter is planned, a verge with a width of at least 2.5 feet (5-foot utility strip preferred) should separate the back-of-curb from the edge of sidewalk.

- 8) **Traffic Calming** — The County should work cooperatively with NCDOT on the development and adoption of a residential traffic calming program and policy. The program should address the retrofit of existing residential streets (like Silver Lake and Silva Terra Road) while the

policy should relate to developer requirements as new residential streets are built. The intent of the policy should be to eliminate the need for retrofits on future streets as the County continues to grow and build new residential neighborhoods.

- 9) **Curb and Gutter Use** — The River Road planning area lies within the Cape Fear River Basin. Best management practices suggested by the North Carolina Division of Water Quality (DWQ) as well as other technical resources suggest that curb and gutter be used sparingly within the unincorporated areas of the County. Recommended locations where curb and gutter should be considered include:

- Activity centers where storm water runoff can be captured







and controlled through the use of approved water quality/quantity devices prior to release

- Along streets where on-street parking is desired (likely in activity centers and other dense non-residential applications)
- When connecting to an existing street facility where curb and gutter is present, especially when adjacent to existing municipal boundaries and areas designated for future municipal annexation such as extra-territorial jurisdictions (ETJs)

Working with representatives from DWQ, the project team and technical committee developed the following recommendation regarding water quality and stream crossings:

- 1) **Curb and Gutter** — Minimize the use of curb and gutter edge treatments.
- 2) **Avoidance** — Avoid unnecessary stream and wetlands crossings; seek alternate connections that achieve similar connectivity – i.e., greenway connections.
- 3) **Subdivision Review and Zoning Procedures** — Immediately refer all development plans with property that encompasses identified stream crossings to DWQ. Consultation with

the reviewing agency will minimize conflicts regarding County approval prior to environmental permitting. Often plans are approved by local government without review and approval by DWQ and the U.S. Army Corps of Engineers. Upon their review, stream crossings may be modified or denied, requiring significant changes to the proposed plan.

- 4) **Best Management Practices** — Develop a *New Hanover County Water Quality Best Management Practices* manual. Working cooperatively with DWQ, the County's environmental services and planning departments can work to establish a series of strategies to improve water quality through environmentally sensitive development designs, preservation tools, green streets, and technology.
- 5) **Bicycle and Pedestrian Crossings** — Where stream crossing permits are denied for road, pursue less intrusive pedestrian and bicycle crossings.

### Probable Construction Costs

As part of the small area planning process, probable cost estimates were developed for each major transportation element of the recommended improvements. These cost

estimates were prepared in year 2007 dollars and do not include right-of-way (ROW) costs. The probable cost estimates are based on unit values provided by NCDOT. The total cost estimate for each element included the following categories:

- Roadway and pavement
- Landscaping
- Design services
- Contingency

Unit costs for individual streetscape and traffic calming treatments include:

- High Visibility Crosswalks: \$1,000 per location
- Raised Crosswalks: \$3,000-\$4,000 per location
- Neighborhood Traffic Circle: \$5,000-\$8,000 per location







- Center Median Island: \$8,000-\$10,000 per location
- Sidewalk: \$20 per linear foot
- Small Flowing Tree: \$200 per tree
- Large Shade Tree: \$400 per tree

A summary of construction cost by “phased” improvement is provided below.

## Phased Improvements

The timeframe needed for implementation was considered during the development of this small area plan. Many factors can affect an implementation schedule, including:

- Funding availability
- Permitting
- Right-of-way acquisition
- Public support or opposition

With this in mind, not all improvements can be made at one time. One of the guiding principles of this study is that as development occurs within the River Road planning area, incremental improvements should be made that ultimately lead to the “build out” recommendations. Interim improvements, however, should not require retrofit to accommodate the ultimate recommendation. Each development should be evaluated individually through

the review process to determine proper improvements to be included to mitigate its site traffic impacts.

The following information provides the proposed phasing of implementation. The phasing of project recommendations is addressed in two phases. Projects in Phase I are identified for short- to mid-term implementation. Phase II projects are identified for long-range implementation and require a substantial public investment.

### *Phase I — Short- and Mid- Term Improvements*

**Individual Intersection Improvements —** Construct streetscape and laneage improvements (identified on pages 32-38), including roadway, curb and gutter, landscaping, gateway, mast arm signals, and crosswalks. Probable construction costs for the following intersections include:

- River Road/Sanders Road: including new mast arm signal and realignment — \$200,000
- Silver Lake/Carolina Beach Road: including new mast arm signal and mitigate offset — \$160,000
- Silva Terra/Carolina Beach Road: including new mast arm signal — \$150,000

### **Install Traffic Calming Measures —**

Install sidewalks, highly visible crosswalks (preferably raised), median islands, street trees, and pedestrian signage and make general roadway improvements along the following residential collector streets: Silver Lake, Lorraine, Silva Terra, Yulan, and Wilderness.

**River Road Improvements —** Between Independence Boulevard and Sanders Road, construct a 2-lane divided facility with street trees, sidewalk, and multi-use path with shoulder ditch on 100’ right-of-way. This will require 8’ multi-use path (from Barnard’s Creek to Mott’s Creek) to be constructed outside of 100’ ROW. Probable construction cost is \$12-\$14.5 million.

Also, request NCDOT evaluate the posted speed limit along River Road. A proposed speed limit of 35 mph between Independence Boulevard and Sanders Road is recommended based on the expected level of pedestrian activity along the corridor.

**Connectivity Improvements —** As phased development occurs, make connections (including roadway, bicycle and pedestrian) to Wilderness Road, Lorraine Drive and Arnold Road. Additional neighborhood connections





should be considered at Lorraine Drive and Ilex Drive.

**Sanders Road Improvements** — Between Carolina Beach Road and River Road, widen roadway to 4-lane divided with plantable median, street trees, sidewalks, and wide outside lanes to accommodate bicyclists. Probable construction cost is \$4-\$4.5 million.

**Carolina Beach Road Signal Coordination and Access Management Improvements** — Upgrade signal system and install access management measures along Carolina Beach Road based on NCDOT proposed plan.

### *Phase II — Long-Term Improvements*

**Connectivity Improvements** — As development occurs, make connections using roadway, bicycle, and pedestrian facilities between Marquette Road and the Village at Mott's Landing. Enhance these connections with appropriate traffic calming elements as described above.

**Individual Intersection Improvements** — Construct streetscape and laneage improvements (identified on pages 34-38) including roadway, curb and gutter, landscaping, gateway, mast arm signals, and crosswalks. Probable construction costs include:



- River Road/Independence Boulevard, including new mast arm signal and gateway treatments — \$175,000
- Carolina Beach Road/Independence Boulevard, including laneage improvements — \$50,000

**River Road Improvements** — Between Independence Boulevard and Sanders Road, widen River Road from 2 lanes to 4-lane divided. This will require two new bridges (one each over Mott's Creek and Barnard's Creek) and one additional lane in each direction. NCDOT should determine whether curb and gutter is feasible in this section of roadway. Probable construction cost is \$19-\$21 million.

**Independence Boulevard Improvements** — Between Carolina Beach Road and River Road, widen Independence Boulevard to 4-lane divided with plantable median, street trees, sidewalks, and wide outside lanes to accommodate bicyclists. Probable construction cost is estimated to be \$7 million.

**Carolina Beach Road Improvements** — Between Independence Boulevard and South College Road, consider widening Carolina Beach Road to 6-lane divided with plantable median, street trees, and sidewalks. Probable construction cost is estimated at \$16-\$18 million.





## Funding Strategies

One of the primary purposes of the *River Road Small Area Plan* is to communicate the framework for the future roadway, pedestrian, and bicycle network. Through the adoption of local policies and procedures, the incremental construction of the proposed improvements can effectively occur.

With the planned development in the area, it is expected that the City, County, and NCDOT will expect a fair share of the improvements to be funded by the development community. The level to which developers will be required to aid in the construction of facilities affected by residential and commercial growth will be determined in the application and development review process. Public-private venture agreements also can be leveraged to implement a specific improvement, especially if there are identified benefits or incentives for both parties.

Inevitably, some improvements will not be funded by the development community and fall upon the responsibility of the County and NCDOT. Although funds are limited and generally programmed well in advance, a few funding categories are potential sources for financing these

improvements. Some funding options require local matching funds.

Because the list of recommended improvements contains a variety of projects, it is recommended that the “typical” funding types be explored and exhausted for each individual improvement. For example, all sidewalk and gateway improvements should seek “enhancement” funds and all roadway improvements should seek State funds, at a minimum.

The following list identifies “action items” that should be initiated by the County and MPO to begin the process of improving the River Road area.

### ***Priority “Action Items”***

- Lobby NCDOT and members of the State Board of Transportation (BOT) to include partial funding of major roadway improvements (e.g., Independence Boulevard, Carolina Beach Road, and Sanders Road) in the next Transportation Improvement Program (TIP) to design and implement.
- Pursue NCDOT STP-Enhancement grant funding to install multi-use paths (along Mott’s and Barnard’s Creeks) and intersection gateway features.

These funds are administered through a grant program with a 20% local match requirement. More information is available on the NCDOT website ([www.ncdot.org/financial/fiscal/Enhancement/](http://www.ncdot.org/financial/fiscal/Enhancement/)).

- Pursue NCDOT/NCMA (“Moving Ahead”) Spot Safety and Hazard Elimination funding to implement connectivity and intersection treatments.
- Pursue NCDOT Division 3-Small Construction Funds and Contingency Funds. These funding programs are typically requested by NC House or Senate representatives for their local districts.
- Consider a transportation bond referendum to complete “gaps” along the corridor.

While they may have limited opportunities for application, other innovative financing alternatives considered for the *River Road Small Area Plan* recommendations include:

- Impact fees
- Vehicle license fees
- Local option sales tax
- Hotel occupancy tax
- Rental car receipts





Special legislation and voter approval may be required for some or all of these strategies to be implemented.

A variety of funding strategies can be used to implement the recommended improvements for the *River Road Small Area Plan*. These funding strategies include state and local monies, which are often limited or committed well into the future. Grant funding from the state typically requires a local match, but these monies may be used to cover many of the capital and operating expenses identified in the plan's recommendations. Some of the improvements will be made in partnership with the private sector. An incremental funding approach would be possible, but is not as attractive because the full benefit of the collective improvements would not be realized for quite some time. Alternative funding sources for expediting construction include special assessments and/or a locally-adopted transportation bond.

With the current transportation funding shortfall, the most critical steps for implementation will be carried by "champions for change" identified within the community. In collaboration with state and local officials, their collective efforts will lead to a safe, aesthetically-pleasing community connected through the heart of the River Road small area.








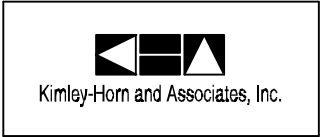
## APPENDIX A: INTERSECTION IMPROVEMENT DIAGRAMS





PLAN PREPARED  
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GRAPHIC SCALE  
( 1 IN = 50 FEET )  
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RIVER ROAD SMALL AREA PLAN  
2025 RECOMMENDED IMPROVEMENTS

SANDERS ROAD AND  
CAROLINA BEACH ROAD

FIGURE  
A.1



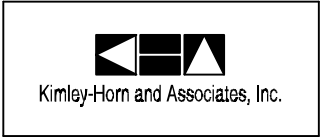


RIVER ROAD SMALL AREA PLAN  
2025 RECOMMENDED IMPROVEMENTS

SANDERS ROAD AND  
RIVER ROAD

FIGURE  
A.2






RIVER ROAD SMALL AREA PLAN  
2025 RECOMMENDED IMPROVEMENTS

RIVER ROAD AND  
INDEPENDENCE BOULEVARD

FIGURE  
A.3





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