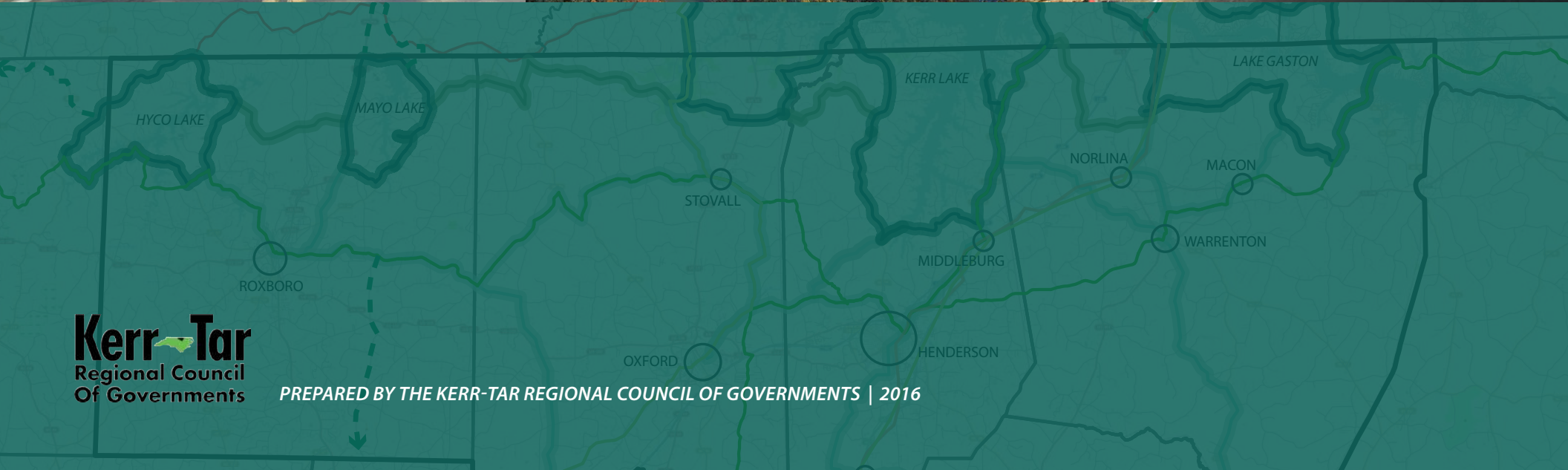


# NC LAKES DISTRICT REGIONAL BIKE PLAN



ACKNOWLEDGEMENTS

The NC Lakes District Regional Bike Plan could not have been developed without assistance from a wide range of individuals including interested citizens, municipal staff, and the NCDOT staff. In particular, the involvement and participation of members of various NCLD Core Steering Committees and other interested parties was essential to the development of this plan. A special thanks to NC-DOT Division of Bicycle & Pedestrian Transportation for funding the development of the NC Lakes District Regional Bike Plan.

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the NCLD Region:

Franklin County  
Granville County  
Person County  
Vance County  
Warren County  
Butner  
Centerville  
Henderson  
Kittrell  
Louisburg  
Macon  
Middleburg  
Norlina  
Oxford  
Roxboro  
Stem  
Stovall  
Warrenton



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## The North Carolina Lakes District (NCLD) Regional Bike Plan began with a vision to establish regional bicycling routes along and adjacent to the region's lakes.

This plan proposes bicycling connections that connect not only between the lakes, but also to regional parks and other significant features. The plan provides a strategy to implement the bike routes throughout the NCLD region, including detailed signage recommendations. The plan intends to advance and enhance the unique, natural, and historic qualities of the region, including the region's towns and cities, historic sites and landscapes, and natural and recreational areas.

## GOALS OF THE PLAN

- 1** To create links to the region's lakes Hyco, Mayo, Kerr, and Lake Gaston using a system of proposed bike routes, offering bike routes to and around the lakes as well as connections to area communities, and other significant destination points in the region.
- 2** To link and incorporate regional and locally significant features including public facilities, other greenways and trails, other transportation facilities, historic sites and landscapes, and natural and recreational areas located in adjacent towns and communities. The plan hopes to highlight these significant features that fall along the proposed bike routes and incorporate connection opportunities to them into the plan.
- 3** Increase new mobility options for people living in or visiting the area by offering bicycle routes that serve as a means for recreation as well as practical mobility purposes.
- 4** To promote recreational and economic growth in the region by attracting local users and visitors and stimulating new investments in the region.

## POLICY RECOMMENDATIONS

Zoning	Subdivision Regulations	Street Ordinance	Other Regulations	NCDOT Policies
Bicycle Parking	Site Plan Requirements	Street Design	Development Review	Complete Streets
Bicycle Lanes	Accessways	Right-of-Way	Annexations	Bridge
Mixed-Use Districts	Paths	Bicycle Network Implementation	Bicycle Parking Ordinance	Bicycle
Access Requirements	Street Design	Signage	Bike/Ped Spending Ordinance	Greenway
			Committee Ordinance	

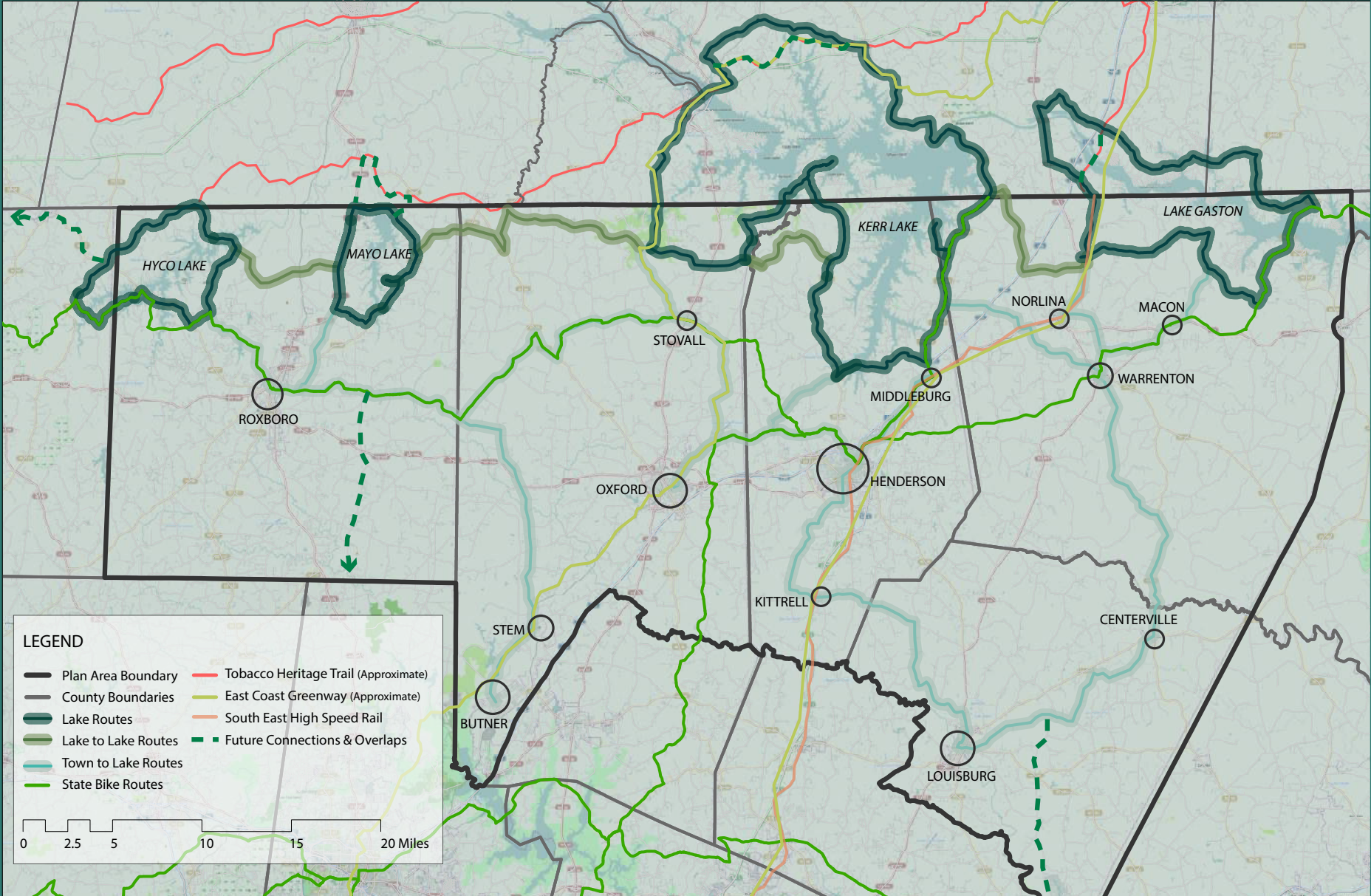
## PROGRAMMING RECOMMENDATIONS

Recommendation	Website
Complete Streets	<a href="http://completestreetsnc.org/">http://completestreetsnc.org/</a>
Watch for Me NC	<a href="http://watchformenc.org/">http://watchformenc.org/</a>
Cycle NC	<a href="http://cnc.ncsports.org/">http://cnc.ncsports.org/</a>
Bicycle Safety Rodeos	<a href="http://www.crumleyroberts.com/community/bike-safety/">http://www.crumleyroberts.com/community/bike-safety/</a>
Open Streets Events	<a href="http://openstreetsproject.org/">http://openstreetsproject.org/</a>
League of American Bicyclists Training Courses	<a href="http://bikeleague.org/content/become-instructor">http://bikeleague.org/content/become-instructor</a>
Safe Routes to School	<a href="https://connect.ncdot.gov/projects/BikePed/Documents/NCDOT_SRTS_Description.pdf">https://connect.ncdot.gov/projects/BikePed/Documents/NCDOT_SRTS_Description.pdf</a>

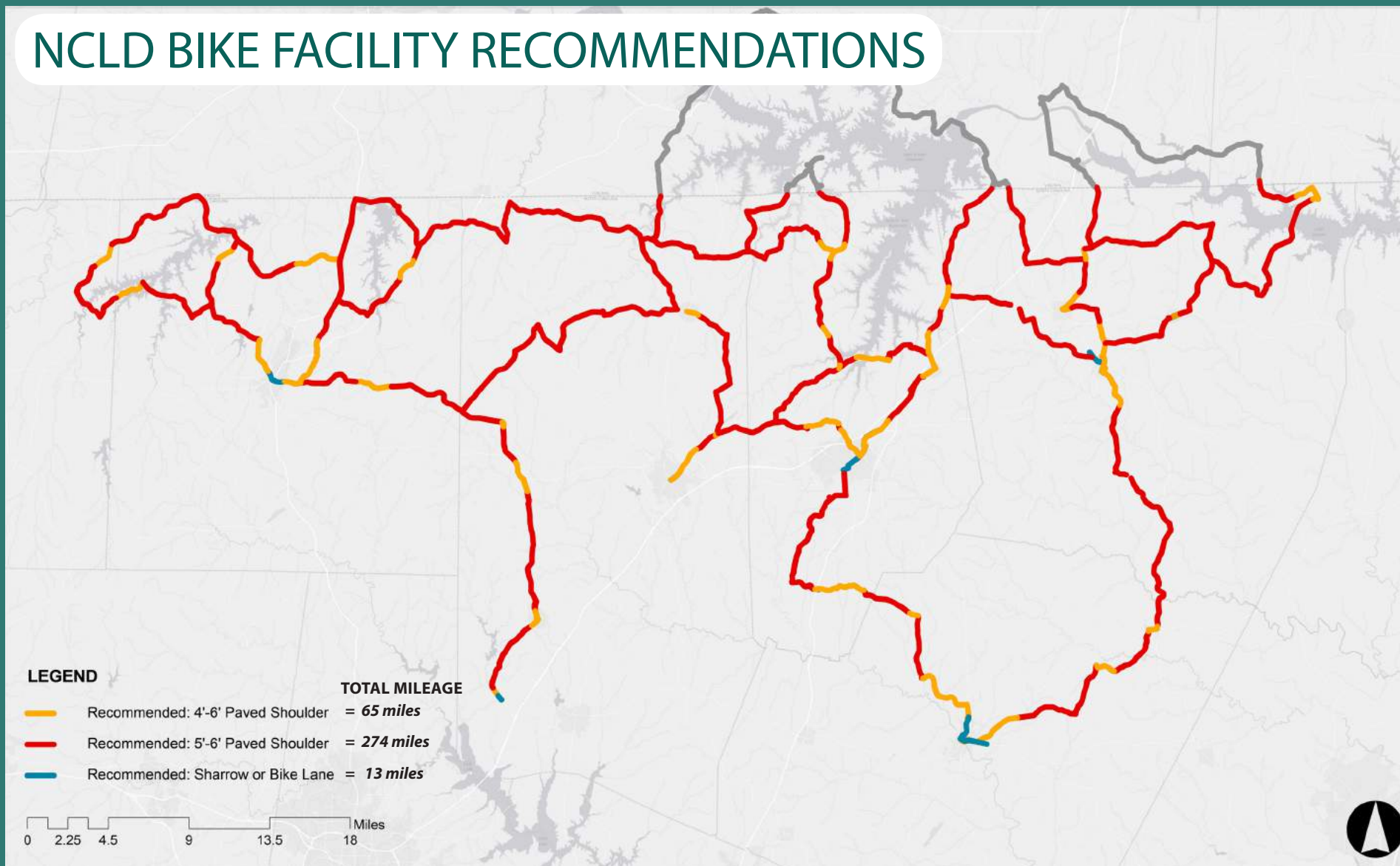
*This project was made possible by joint funding from the Kerr-Tar Council of Governments (COG) and the North Carolina Department of Transportation (NCDOT). In 2012, Kerr-Tar COG was awarded a matching grant from the NCDOT Bicycle and Pedestrian Planning Grant Initiative. Led by the Kerr-Tar COG, the planning process was guided by a steering committee composed of representatives across the NCLD region as well as public input from across the region.*



RECOMMENDED NCLD BIKE ROUTE SYSTEM



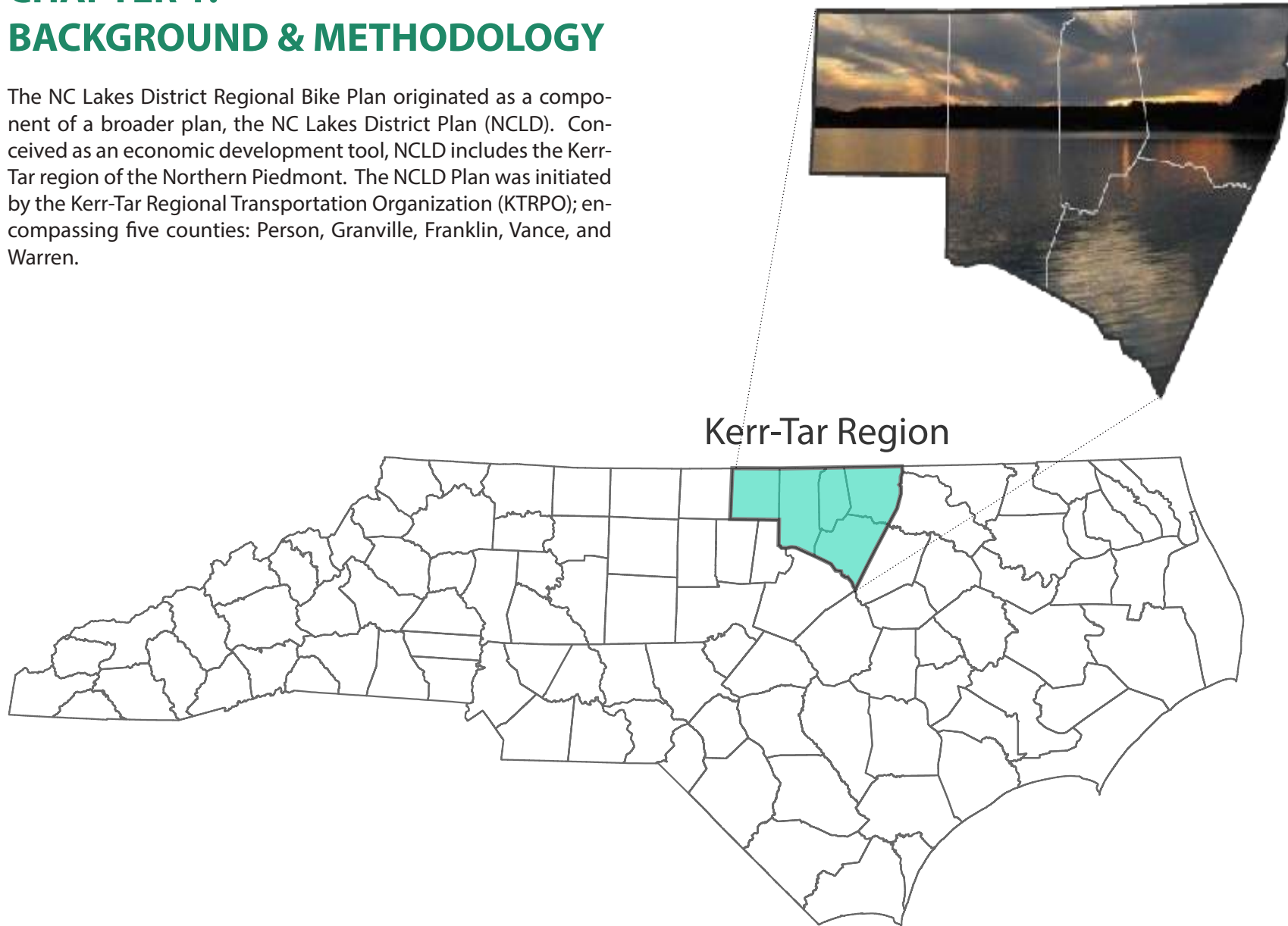
## NCLD BIKE FACILITY RECOMMENDATIONS





## CHAPTER 1: BACKGROUND & METHODOLOGY

The NC Lakes District Regional Bike Plan originated as a component of a broader plan, the NC Lakes District Plan (NCLD). Conceived as an economic development tool, NCLD includes the Kerr-Tar region of the Northern Piedmont. The NCLD Plan was initiated by the Kerr-Tar Regional Transportation Organization (KTRPO); encompassing five counties: Person, Granville, Franklin, Vance, and Warren.





## NC LAKES DISTRICT

The Lakes District Region embodies rural Piedmont North Carolina and its pastoral rolling forestland. This area is the gateway between Virginia and the Research Triangle Park Region, buffering the contrasting landscapes of urban, exurban and rural places. A bicycling culture is present in the region, although visibly light and more commonly as a leisure activity than as a method of transportation. In comparison to the rest of rural North Carolina, bicycling facilities that promote biking over driving are generally not available, or if so, are limited in connectivity outside of parks and town neighborhoods.

In sum, the region does not have a dedicated on-street bike lane. Some communities have off-road paved or grooved and maintained paths intended for bike and pedestrian use; however, this is the exception of the current environment. Moreover, collector streets and arterial roads have a predominant feature of one to two foot paved shoulders, non-conductive to practical or safe biking around towns or residents to traverse to population centers from sparsely dense areas of surrounding counties.

Another regional feature that currently precludes a bicycling culture, even for leisure riders, is the distance between the towns and residential lake development. A 10 mile or more route distance separates nearly all of the region's towns from lake access. Scattered housing sites and subdivisions, common in the region, do not promote bike usage when navigating becomes increasingly complex between lakes and town routes.

## MISSION STATEMENT

The North Carolina Lakes District Regional Bike Plan began with a mission to link the region's lakes utilizing proposed bike routes along and adjacent to the regional lakes. The plan aims to develop connections of the region's lakes, parks, and other significant features utilizing an integrated system of bike trails. The plan hopes to identify and provide a method to create bike routes within the NCLD region. The plan intends to advance and enhance the unique, natural, and historic qualities of the region including public facilities within regional towns and cities, historic sites and landscapes, and natural and recreational areas.

## VISION STATEMENT

The NCLD Regional Bike Plan envisions a viable and vibrant bicycle plan around a core of issues including mobility, economic development, and environmental and human health. The plan pursues to develop bicycle routes that circle the regional lakes and act as a connection between lakes and communities as well as other significant features in the region. The route would offer a planned course to residents, visitors, and other users providing a beneficial and appealing new means of recreation and mobility. The plan seeks to act as a catalyst for realizing solutions to some of the region's issues and to harness the opportunities inherent in the region's wealth of natural and historic features, principally, the region's lakes and riparian corridors.

## GOALS

1. To create links to the region's lakes Hyco, Mayo, Kerr, and Lake Gaston using a system of proposed bike routes, offering bike routes to and around the lakes as well as connections to area communities, and other significant destination points in the region.
2. To link and incorporate regional and locally significant features including public facilities, other greenways and trails, other transportation facilities, historic sites and landscapes, and natural and recreational areas located in adjacent towns and communities. The plan hopes to highlight these significant features that fall along the proposed bike routes and incorporate connection opportunities to them into the plan.
3. Increase new mobility options for people living in or visiting the area by offering bicycle routes that serve as a means for recreation as well as practical mobility purposes.
4. To promote recreational and economic growth in the region by attracting local users and visitors and stimulating new investments in the region.
- 5.

## KEY STRATEGIES

In preparing this plan and endeavoring to accomplish the vision, mission, and goals set forth, the following strategies were utilized to accomplish these objectives.

1. Proposed routes will be primarily on roads and improvements made for routes will try to be incorporated into existing projects already planned for roads in the region.
2. Incorporate and overlap routes with connections to existing and proposed trails such as:
  - Rails to trails plans and links
  - Tobacco Heritage Trail (VA)
  - East Coast Greenway Trail
  - Safe Routes to Schools
  - Southeast High Speed Rail corridor's proposed Bike & Pedestrian Trail
  - Area Greenways and Pedestrian plans
3. Promote bicycle education and safety to encourage knowledgeable riders and also sharing the road with cars
4. Set a soft boundary along the region to focus planning efforts, but also extend outside that boundary as needed for important connections such as links into VA.
5. Work with regional partners to gather input from a variety of viewpoints and interests in the region to ensure the plan is comprehensive and benefits a wide variety of users.
6. Receive endorsement from participating communities and agencies.

## ROUTE IDENTIFICATION PROCESS

### IDENTIFYING ROUTES

The route identification process began with the development of a steering committee made up of a wide range of members who worked with Kerr-Tar planning staff to determine the ideal location for routes. A number of resources were considered for route identification. These included but were not limited to: proximity to lakes, connections to significant features, connections to communities, connection to natural areas, lower traffic volumes, lower accident rates, regional comprehensive transportation plans, and existing and proposed greenways and trails within the region. Committee members and staff worked together to develop recommended routes within the planning area that included these different elements. Overlapping with routes such as the existing NC bike routes and the Virginia Tobacco Heritage Trail as well as proposed routes including the East Coast Greenway trail was also considered. Proximity to lakes was considered and several routes were identified running along and around the regional lakes. Other recommended routes were identified based on existing ridership and knowledge of the area by cyclists and other members of the steering committee.

### ROUTE PRIORITIZATION

Following the identification of many potential routes, a criteria was set to enable evaluating and ranking of the routes identified. The route criteria were established to help staff evaluate and rank routes for funding prioritization and for additional planning. This enabled staff to determine what routes would be considered with a higher priority. After researching similar ranking and criteria for bike plans, staff developed draft route criteria that was reviewed by the steering committee. Following their comments and feedback the criteria was revised to this final version:

To help us evaluate and rank routes for funding prioritization and for additional planning, the NCLD Steering Committee has discussed and is recommending the following route selection and scoring criteria. Minimum and maximum values will be assigned to these criteria and then applied to each proposed route within that range. *These include the following criteria:*

**Safety** focuses on factors that contribute to a safe environment for bicyclists. Such factors include, but are not limited to, low to no crime reports, lower speed limits, decent road surface conditions, and corridors with low to no bike crash reports, lower traffic volumes (lower truck traffic also), adequate space for accommodating cyclists, adequate visibility for users, minimal crossings and curb cuts. (0 – 40 points)

**Scenic Quality** is the heightened visual experience derived from the view of natural and manmade elements of the visual environment of the corridor. The characteristics of the landscape are strikingly distinct and offer a pleasing and most memorable visual experience. Scenic quality looks at how interesting the route will be to the rider. (0 – 30 points) The evaluation of these is based on the following characteristics:

- **Historic** encompasses legacies of the past that are distinctly associated with physical elements of the landscape, whether natural or manmade, that are of such historic significance that they educate the viewer and stir an appreciation for the past. The historic elements reflect the actions of people and may include buildings, open fields, forest edges, walls and fences, settlement patterns, and other examples of human activity.
- **Natural** applies to those features in the visual environment that are in a relatively undisturbed state. These features predate the arrival of human populations and may include geological formations, topography, landform,



## NCLD REGIONAL BIKE PLAN

water bodies, vegetation, and wildlife. There may be evidence of human activity, but the natural features reveal minimal disturbances.

**Amenities** include accommodations for users such as restaurants, camping, bicycle shops, convenience/grocery store, public restrooms, drinking fountains, public telephone, seating, shade, bicycle racks, waste receptacles, or access parking, campgrounds, parks, lakes, recreational areas. (0 – 15 points)

**Economic Development Potential** involves the potential to promote increased spending in the region. It encompasses the potential to boost local economies by enhancing overall tourism promotion of the area. This could include the potential to attract events such as festivals or races. (0-15 points)

*Please refer to Appendix E for a full Table of the NC Lakes District Route Categorization Evaluation and Prioritization.*

## PLANNING PROCESS

### PUBLIC INPUT

The NCLD Regional Bike Plan was developed utilizing input from a wide range of people. Public outreach was completed using surveys distributed through steering committee members and other publishings including the NCLD website and local newspapers. Kerr-Tar staff also met with Parks and Recreation directors from each of the five counties in the plan area boundary.

- Public survey distributed: 6 local newspapers, email distribution, NCLD website and steering committee members (March 2013)

- 45 initial responses reviewed and used to determine goals and objectives for NCLD plan
- Public input was solicited via a map my ride account set up to allow for public to submit route inputs. Input was recorded and routes were identified. Web map for public input was also put up on the NCLD website to allow input about areas of interest, hazards and amenities.

### PUBLIC MEETINGS

Public input meetings were held on August 11th and 13th, 2015, in the Kerr-Tar COG large conference room, and the Granville County Center conference room, respectively. Other meetings throughout the process are listed in the table below:

DATE	MEETING
3/15/12	Gina Parham-COG
8/21/12	Warren County Parks and Recreation
8/28/12	Franklin County Parks and Recreation
9/6/12	Vance County Parks and Recreation
9/12/12	Person County Parks and Recreation
9/17/12	Granville County Parks and Recreation
9/24/12	Kerr Lake State Park
12/3/13	East Coast Greenway
2/26/13	East Coast Greenway
10/4/12	1 <sup>st</sup> Kick off NCLD Steering Committee
12/12/12	2 <sup>nd</sup> NCLD Steering Committee
3/26/13	3 <sup>rd</sup> NCLD Steering Committee
8/22/13	4 <sup>th</sup> NCLD Steering Committee
1/23/14	5 <sup>th</sup> NCLD Core Steering Committee

## STEERING COMMITTEE

A master steering committee of around 34-40 individuals was created to represent a broad range of organizations and interests to best represent the region in this plan. Representatives included: local government planning, parks and recreation, administrative, economic development, NC DOT, tourism, cyclists, and other interested parties from the region. A smaller core committee was created from the larger master committee to meet more frequently. Over the course of the project, the large committee and a smaller core committee met several times to facilitate an opportunity for input, suggestions, and ideas for the plan.

## ECONOMIC IMPACTS

Economic impacts and other benefits, such as promoting a healthy active lifestyle, are key factors to plan for bicycle transportation infrastructure. Similar to repurposing a building for mixed use or adapting an existing transportation facility, such as rail corridors to trail greenway routes, roadways create a market for both commercial opportunity and leisure seekers.

Historically, rural roads served as recreational scenic routes for travelers. In modern history, exponential growth of highways and high speed interstates have made it convenient to forget the use of rural road driving benefits, escalating the importance of level of service capacity and time savings over driver experience. However, the costs of highway benefits are creating a fiscal burden for state and federal transportation agencies to keep up with exorbitant maintenance costs, negating many of the benefits of auto-centric development and redevelopment.

The Lakes District Routes are intended to adaptively use the existing two lane road infrastructure that connects communities throughout the region and encourages interaction between riders, local businesses, and destination sites. Lake businesses and attractions will benefit from an increase in seasonal traffic, whereas surrounding towns in proximity to a given route will have a chance to promote locations and meet convenience needs for cyclists to gather at the beginning or end of a ride.



*Example of a rural bike route in NC.*

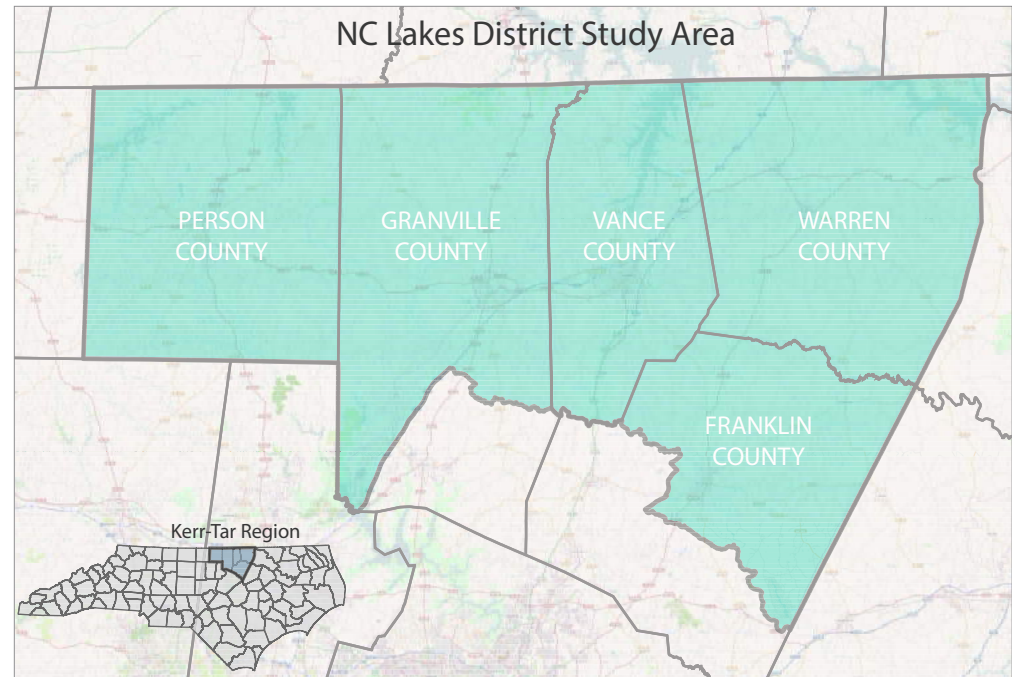
## CHAPTER 2: EXISTING CONDITIONS

### OVERVIEW

In the creation of this plan the Kerr-Tar planning staff looked at different factors including land use, support, related plans in the region, recreational opportunities, as well safety issues including crash data. Included in this section are maps that take a look at these factors for the Kerr-Tar region. The NC Lakes District study area includes the five Kerr-Tar counties, Person, Granville, Vance, Warren, and Franklin. In order to establish a study area boundary, the Rural Planning Organization boundary was used to define the main focus of the study area. However, staff also considered adjacent areas as well.

### PROGRAMS / GRANTS

The environment for bicycling in the Kerr-Tar region is improving across the region but still has room for advancement. There are efforts to support bicycling and pedestrian safety by developing new bike and pedestrian facilities in towns across the region. Through the Congestion Mitigation Air Quality Grant, several towns have built new greenways and sidewalks improving air quality as well as opportunities for cycling or walking. Other efforts include Bicycle and Pedestrian Safety Campaigns by Butner, Creedmoor, Oxford, and Granville County-area law enforcement to begin major enforcement of pedestrian laws a part of the Watch for Me NC program.



### PLANS

There are several local plans that promote bike and pedestrian facilities in the region including: Town of Stovall Pedestrian Plan, Stem Pedestrian Plan, Town of Macon Pedestrian Plan, the Imagine Bickett Boulevard Plan, the City of Oxford Comprehensive Pedestrian Plan, City of Oxford Bicycle Plan, City of Creedmoor Bicycle and Pedestrian Transportation Plan, Town of Butner Pedestrian Plan, and the Granville County Greenway Master Plan. The Person County Parks and Recreation Department is working on developing a local bike and pedestrian plan expected to be completed in 2016. The Warren County, Franklin County, Person County, and Vance County Comprehensive Transportation Plans include recommendations for on road and off road bicycle facilities. Two NC Bike routes also run through the plan area including the North Trace/NC Bike Route 4 and the Carolina Connection/US Bike Route 1.



## INFRASTRUCTURE

Cycling infrastructure is incrementally growing in the region. There are currently off road facilities for cycling at the JC Cooper Camp Area located within the Kerr Lake State Recreation area. The Granville County Greenway Master Plan includes 22 proposed trails throughout Granville County with 1.05 miles of trail currently built and 0.7 miles under construction and another 4.1 miles in planning and design as of September 2015. The East Coast Greenway includes a 39 mile signed on road route that travels through Granville County from the Virginia line to the Durham County Line. The East Coast Greenway Alliance is also working to establish potential shared use trail to be developed along the inactive rail line from Oxford, NC to Clarksville, VA. The use of the rail corridor for a multi-use path is included in the Granville County Greenway Master Plan as well as Pedestrian and Bicycle Plans for Butner, Stem, Oxford, and Stovall. The Louisburg Bike Trail includes 2.2 miles of paved bicycle trails linking Vance Granville Community College to S. Main Street. Directly adjacent to the Lakes District region and just over the state line in Virginia is the Tobacco Heritage Trail that offers off road and on road sections of trail that is open to cycling.

## EVENTS

There are also several cycling events that take place throughout the region. The Tour de Vance takes place each April in Vance County, offering a 60 mile ride with a visit to Kerr Lake, a 30 mile ride, and a 10 mile Family Fun Ride for beginners. In 2014, Oxford hosted visitors downtown as one of the overnight stops of the annual Cycle North Carolina Mountains to Coast Tour, a cross state ride. The Cycle NC Mountains to Coast Ride also had stops in Warrenton and Littleton in 2014. The Mayo Lake Cyclysm event was held in October 2015 at the Mayo Park Amphitheatre, taking cyclists on a scenic journey through rural Person, Granville, and Vance counties and surrounding areas including southern Virginia. This event has been going on annually for at least 15 years as of 2015 and now covers around 5 different counties between NC

and VA. The Mayo Lake Sprint Triathlon is held annually in August, with the bike course following a scenic ride through the rolling hills in Person County. The Tour de Granville 4th Annual Sheriff's Ride was held in October 2014 at the Granville Park in Oxford.

## EXISTING AND PROPOSED ROUTES AND TRAIL FACILITIES

Within the five counties of the Kerr-Tar Region, there are current and proposed bicycle routes and trail facilities at the local and regional level. Some trail facilities that accommodate bicycles are found in the region but there are no existing bike lanes and existing paved shoulder data is not available for this plan.

Also found within the Kerr-Tar region are state and local parks with trail facilities that can be used for cycling. State parks with hiking trails that are bike friendly include: J.C. Cooper campground and Hibernia Park. Other parks in the region that have trail facilities include Mayo Park, Diamonds at Oxford Park, Granville Street Park, Lake Delvin Park, Granville County Environmental Park, Stovall Park, and Fox Pond Park. Regional routes include the North Carolina State Bike Routes, the proposed East Coast Greenway Trail, the future Southeast High Speed Rail Corridor, and bordering the region is the Tobacco Heritage Trail in Virginia.

### NC BIKE ROUTES

The NC bike route system was planned in the early 1970's and signed during the subsequent decades. The NC bike routes that run through the Kerr-Tar region include: the North Line Trace/ NC Bike Route 4 and the Carolina Connection/ US Bike Route 1. More information about NC bike routes can be found on NCDOT's website here: <http://www.ncdot.gov/travel/mappubs/bikemaps/default.html>. Recommendations for updating the NC bike system were included as part of WalkBike NC (2013) and can be found on the WalkBike NC website here: <http://www.walkbikenc.com/wp-content/uploads/2014/12/bikeroutes.pdf>.

### EAST COAST GREENWAY

The East Coast Greenway (ECG) currently has a temporary on road route that will serve as the part of the main route through NC until alternative off road trails are developed. The ECG spine route runs through the Kerr-Tar region passing through Granville County and then connecting to Durham. There is also another route identified that would pass through Warren and Vance counties and then connecting to Raleigh. The ECG route has been identified in the Kerr-Tar region, but is not yet complete. More information about the NC ECG route can be found on their website here: <http://www.greenway.org/explore-by-state/nc>

### SOUTHEAST HIGH SPEED RAIL CORRIDOR

There is a proposed Southeast High Speed Rail Corridor (SEHSR) that will pass through the Kerr-Tar region, running through Warren and Vance counties. The SEHSR project includes the evaluation of a parallel multipurpose trail concept that would run along the SEHSR corridor. More information about the SEHSR corridor greenway trail can be found on their website here: <http://www.sehsr.org/faq.html>

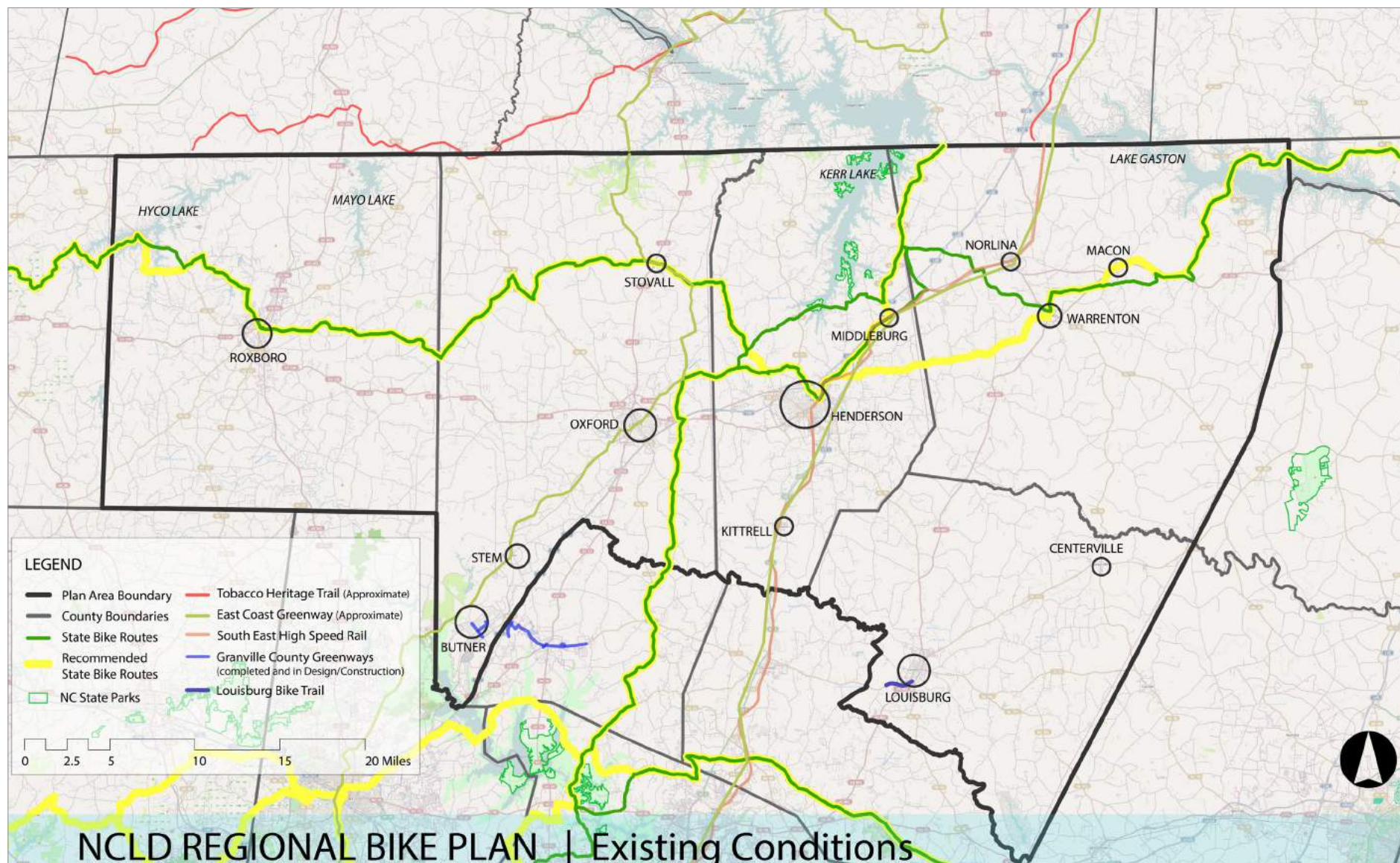
### TOBACCO HERITAGE TRAIL

The Tobacco Heritage Trail is a regional network of off road trails in the Virginia counties of Halifax, Mecklenburg, Lunenburg, and Brunswick County. While not in North Carolina, this trail was included in the existing conditions because of its direct adjacency to the Kerr-Tar region. A brief section of the trail dips into the northern portion of Granville County. More information about the Tobacco Heritage Trail can be found here: <http://tobaccoheritagetrail.org/>

### LOCAL TRAILS

Existing local trails include the Butner and Creedmoor greenways and the Louisburg Bike Trail. Some of the Butner and Creedmoor Greenways have been built as well as other portions that are in design or construction. Proposed trails are found in Granville County's 2006 Greenway Master Plan and these were designed to connect Granville County's natural, historic, and scenic landscapes as well cultural and recreational sites. More information about Granville County Greenways can be found on their website here: <http://granvillegreenways.org/>. The Louisburg Bike Trail is an existing 2.2 mile paved bicycle trail connecting destinations through Louisburg. More information can be found here: [http://www.townoflouisburg.com/city-services/parks-and-recreation\\_facilities\\_louisburg-bike-trail.aspx](http://www.townoflouisburg.com/city-services/parks-and-recreation_facilities_louisburg-bike-trail.aspx).

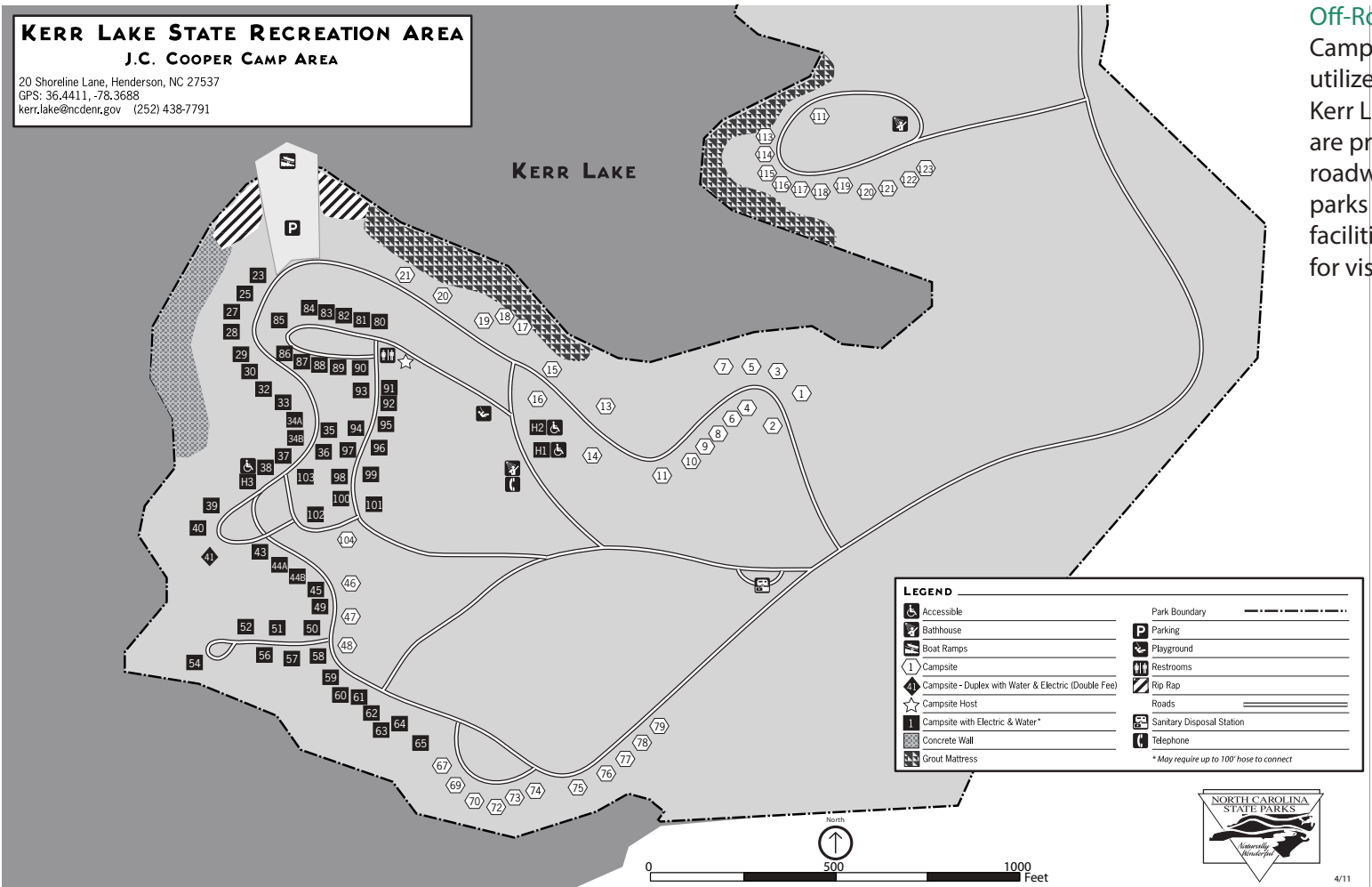
## EXISTING & PROPOSED BICYCLE ROUTES AND TRAILS | KERR-TAR REGION





RELEVANT LOCAL, REGIONAL AND STATEWIDE PLANS

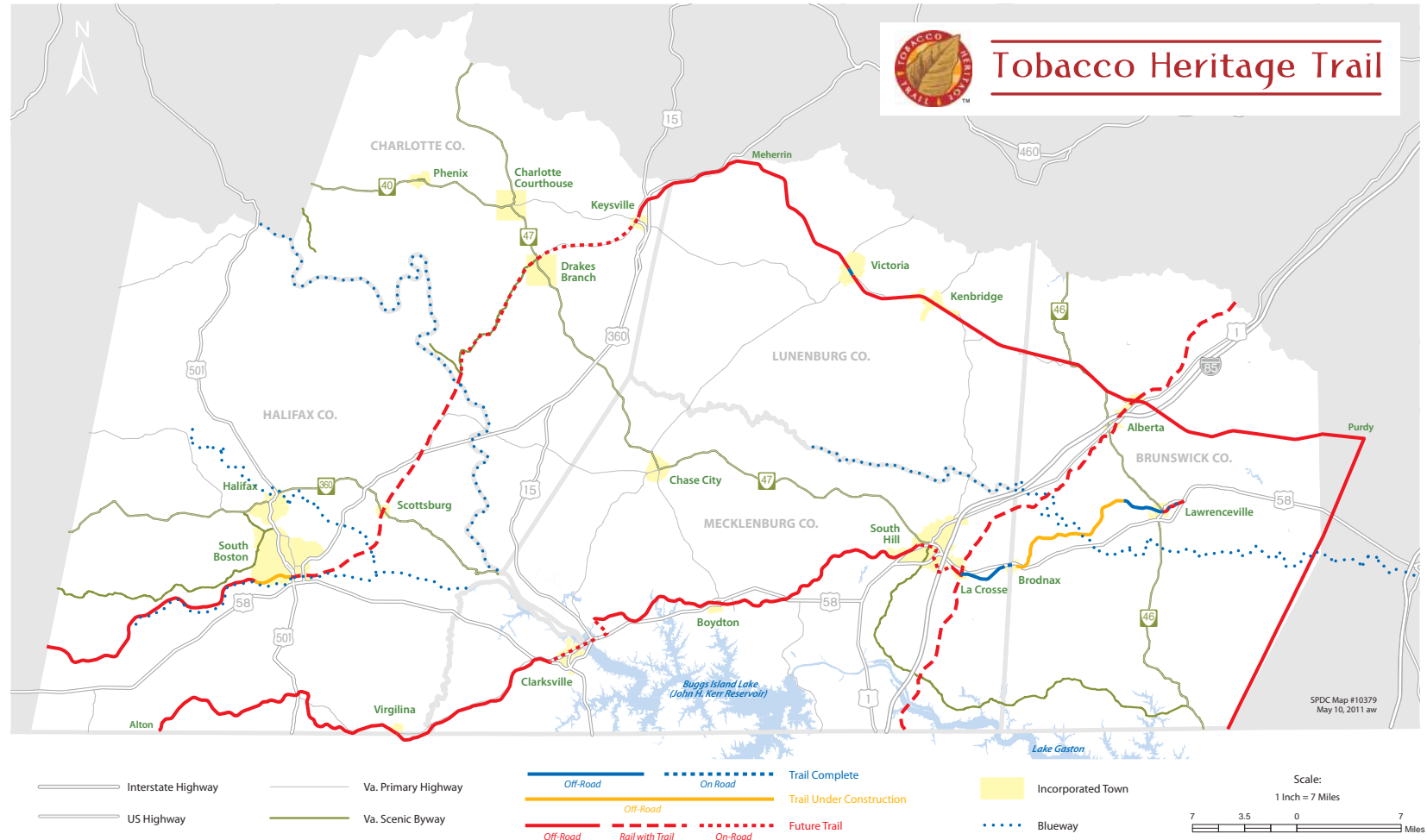
KERR LAKE STATE RECREATION AREA | J. C. COOPER CAMP AREA



**Off-Road Facilities:** The J.C. Cooper Camp Area has trail that can be utilized by cyclists. While the other Kerr Lake state park area trails are primarily for hiking, the park roadways are open to bicycling. The parks also offer parking and restroom facilities as well as other amenities for visitors.



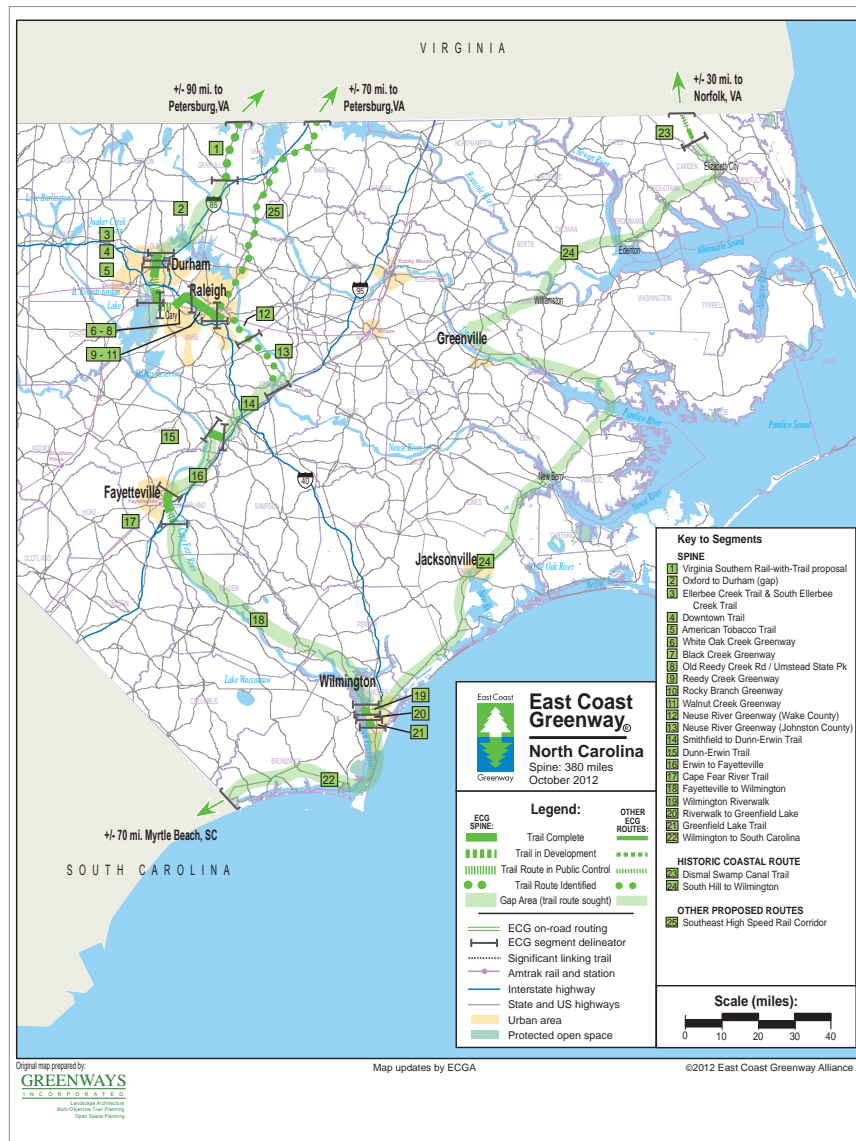
## TOBACCO HERITAGE TRAIL



**Off-Road Facilities:** The Tobacco Heritage Trail is a regional network of off road trails in the Virginia counties of Halifax, Mecklenburg, Lunenburg, and Brunswick County. While not in North Carolina, this trail is directly adjacency to the Kerr-Tar region. A short section of the trail dips into the northern portion of Granville County. Eventually, the trail (a mixture of off-road and on-road sections) will total 150 miles and connect the counties of Brunswick, Charlotte, Halifax, Lunenburg and Mecklenburg. The network will incorporate historical sites and local points of interest, including natural and recreational areas. More information about the Tobacco Heritage Trail can be found here: <http://tobaccoheritagetrail.org/>



# EAST COAST GREENWAY

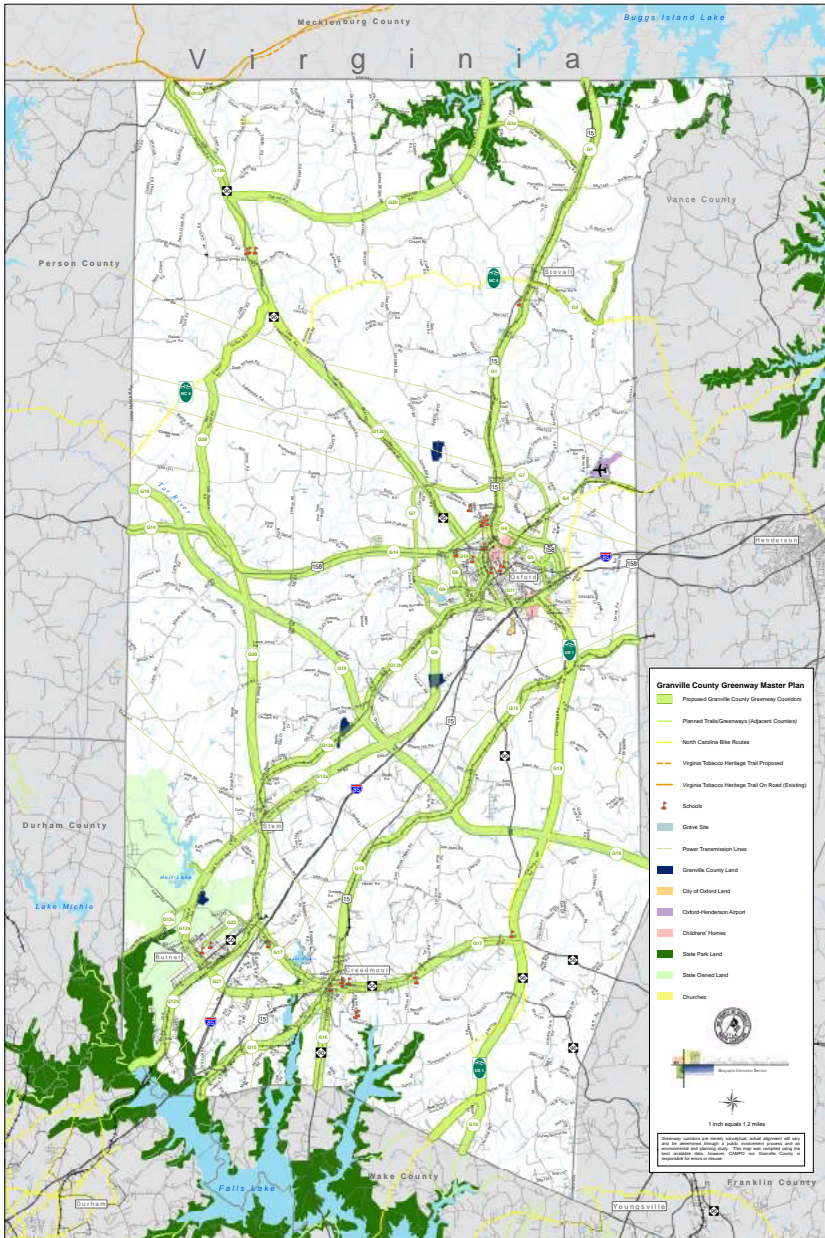


**On-Road Facilities:** The East Coast Greenway is a developing trail system traveling from Maine to Florida. The the proposed trail spine route within the North Carolina portion of the trail travels through Granville County and is currently an on road facility. The trails passing through the Kerr-Tar region are currently on-road, but the on-road portion of the ECG is converted to trail as new segments are constructed. For more information visit the ECG website here:

<http://www.greenway.org/explore-by-state/nc>



## GRANVILLE COUNTY GREENWAY PLAN



**Off-Road Facilities:** There is an existing adopted Granville County Greenway Master Plan that includes 22 proposed trails throughout Granville County in addition to recommendations for funding, land development, easement acquisition, and connectivity. A new section of the greenway was recently completed and opened in Butner on April 22, 2015. There are also other completed and under construction greenway projects underway in Creedmoor. For more information visit the Granville County Greenways website here:

<http://granvillegreenways.org/>

## REGIONAL SUPPORT & FUTURE LAND USE

### EDUCATION AWARENESS

**Regional Roadway Designs (in general):** Currently, roadway layouts for this region can vary. This could be primarily depending on location. The existing attraction of outside visitors to the lakes of this region is on demand. The road designs near these lake areas are up-to-date with material and signage that is only appropriate for auto vehicle usage. Existing conditions for these road designs could create a unsafe environment for bicyclists. Speed limits for these auto vehicles could vary, within these existing road layouts and this could be the leading characteristic to fatal cyclist crashes with auto vehicles. Its important that plan is intended to make a safe environment for bicyclist of this region of North Carolina.

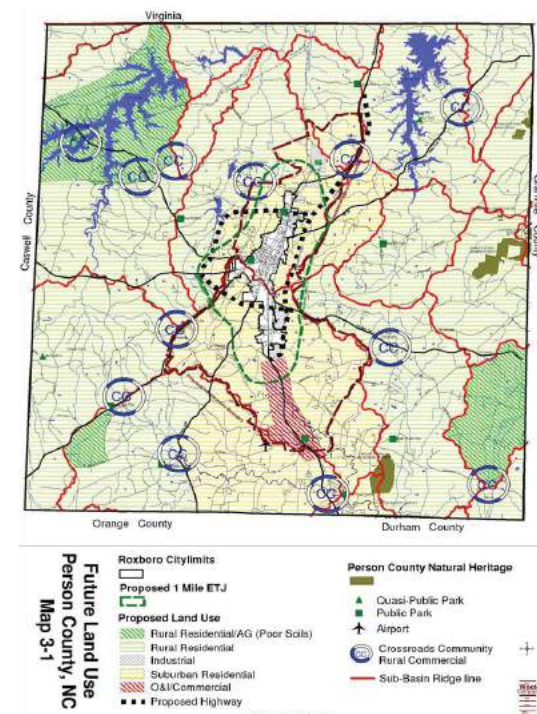
**Education Awareness:** In order for this project to achieve the objective of making a safe environment for bicyclists of this region, educating individuals about biking safety is important, particularly, individuals who prefer to use auto vehicles near the proposed NCLD bike routes. Pushing the need of cautious speed limits, signage and other related safety prevention options will help create more of a safe environment for bicyclist of this region.

### PERSON COUNTY REGIONAL SUPPORT

Currently in Person County, there are annual bike races including the Mayo Lake Sprint Triathlon and the Rural Heritage Tour, a BikeFest put on by the Carolina Tarwheels in August. Person County parks and recreation also hosts other bike rides throughout the year. There is currently one facility that is part of the State

designated bicycle routes in Person County, the North Line Trace (NC Bike Route 4). Also, a small portion of the adopted Tobacco Heritage Trail dips into northern Person County.

**Person County Future Land Use:** To the right is a map detailing Person County's future land use plan. Land use categories include: Rural Residential/Agricultural, Suburban Residential, Crossroad Community/Rural Commercial, Office and Institutional/Commercial, and Industrial. A goal included in the Person County Future Land Use Plan includes: *"Protect public investment in community infrastructure—transportation facilities, water and sewer systems, school system and parks and recreational sites."*

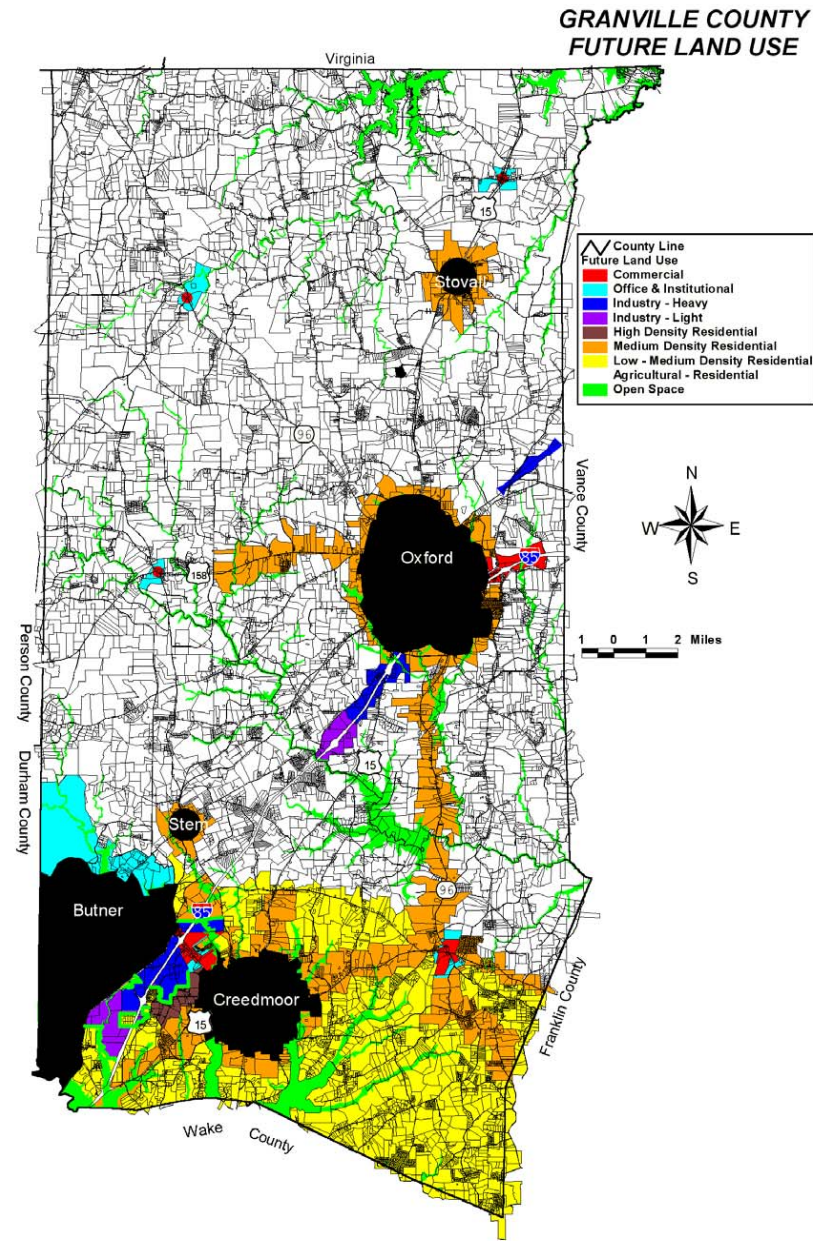




## GRANVILLE COUNTY REGIONAL SUPPORT

There are currently two facilities that are part of the State designated bicycle routes in Granville County and have sub-standard widths. Those include Carolina Connection (US Bike Route 1) and North Line Trace (NC Bike Route 4). Granville County also has a Greenway Master Plan that was adopted in 2006. The plan includes 22 proposed trails throughout Granville County as well as provides recommendations of funding, land development, easement acquisition, and connectivity.

**Granville County Future Land Use:** The current land use for Granville County is a mix of residential, agricultural and commercial with most of the development in the central and southern portion of the county. Major routes include I-85, US 15, US 158, NC 96, and NC 50. Within the Granville County Comprehensive Transportation Plan (CTP), one of the three main goals is to provide a comprehensive multi-modal transportation network that provides transit, bicycle, and pedestrian options for transportation within the county. Another objective of that goal includes educating the public about transportation options including the benefits of choosing alternative modes of transportation. All of the on-road bicycle routes are identified in the CTP Bicycle map legend and are shown as "Needs Improvement". Due to this shared, or multi-modal, use of these facilities, it is recommended that sub-standard roadway sections be widened to a standard 24-foot cross section with 4-foot paved shoulders. These improvements should enhance safety and the functional design of the facility. Granville County's code of ordinances includes a land development code that determines that an interconnected street system is necessary in order to protect the public health, safety, and welfare in order to ensure that streets will function in an interdependent manner, to provide adequate access for emergency and service vehicles, to enhance non-vehicular travel such as pedestrians and bicycles, and to provide continuous and comprehensible traffic routes.

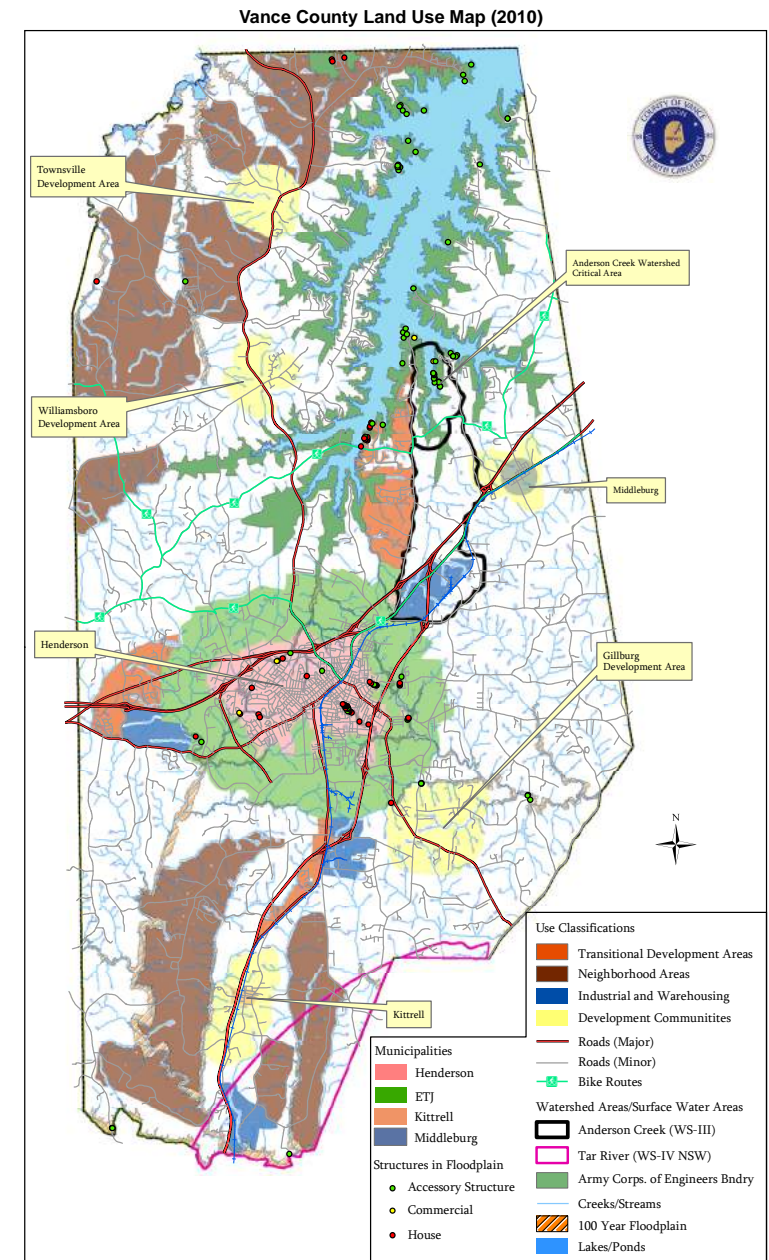




## VANCE COUNTY REGIONAL SUPPORT

There are currently two facilities that are part of the State designated bicycle routes in Granville County and have sub-standard widths. Those include the Carolina Connection (US Bike Route 1) which runs from Maine to Florida covers 200 miles in North Carolina and traverses Vance County. The North Line Trace (NC Bike Route 4) is a 400 mile bike route that runs through Vance County and is just south of the Virginia border from the mountains to the coast of North Carolina.

**Vance County Future Land Use:** Vance County 2010 Land Use plan: "The development of multi-use trails should be encouraged and the use of abandoned rail corridors explored. Additionally, the county should participate and fully cooperate with the plan for a multi-purpose greenway paralleling the proposed high speed rail corridor."



## WARREN COUNTY REGIONAL SUPPORT

Warren County has one existing trail; the Sabina Gould Walkway is a short rail-trail that runs through Littleton, NC, on the Roanoke Valley Trail corridor. It has a length of 1.2 Miles and has asphalt and crushed stone trail surface. Activities include biking, walking, and others. Until recently, Warren County, and the Town of Warrenton in particular, were active participants in the annual “AIDS Ride” – opening their hearts and homes to hosting and providing assistance to bicycle riders who travelled the county when event was operated between Raleigh and Washington. Warren and Vance counties’ tourism and economic development offices, in conjunction with local bicycle enthusiasts, have also hosted a “Ride between the Lakes” bicycle race.

**Warren County Future Land Use:** The Warren County Future Land Use Plan includes a recommendation of a Natural Resources Protection Ordinance. To protect the natural resources of Warren County and incorporate practices that will allow managed development. Sections included would be best management practices (control storm water runoff), erosion and sediment controls ordinance, floodplain regulations (NFIP Program), and creation/incorporation of a countywide greenway (hiker/biker trails) system.

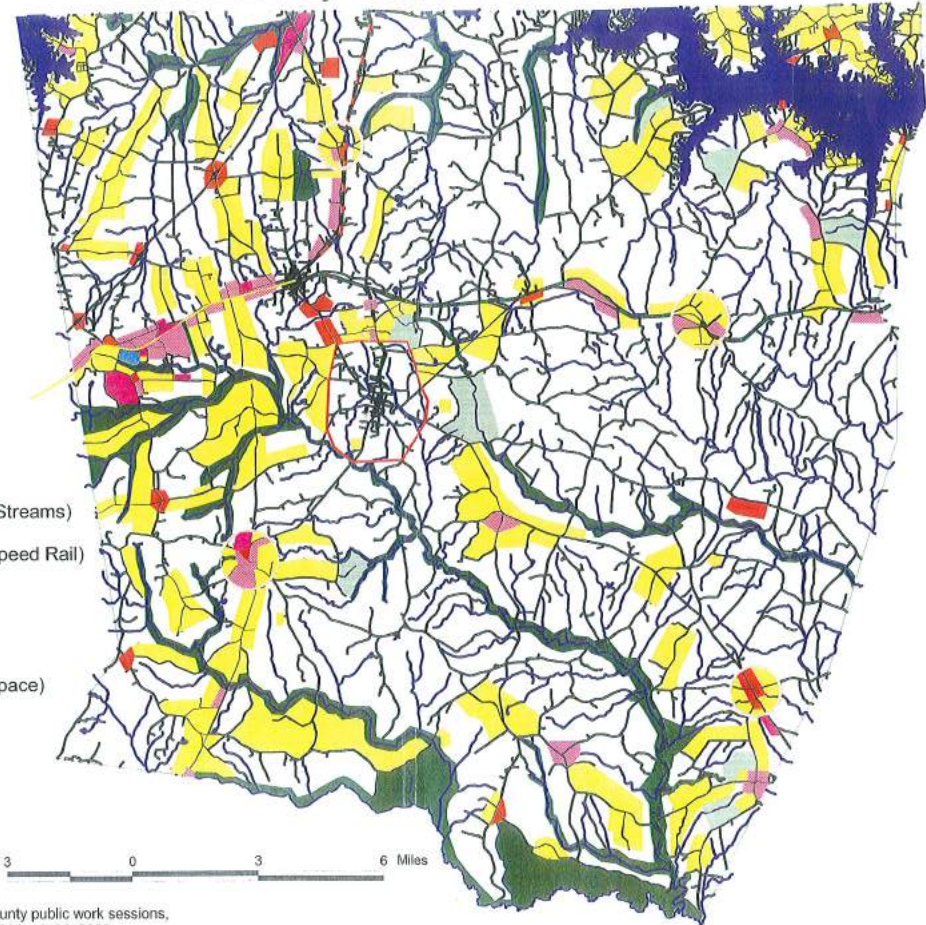
### Legend

- Surface Waters (Lakes-Creeks-Streams)
- Active Rail Line
- Rail Easement (Potential High Speed Rail)
- Greenway (Walking-Biking Trail)
- Roads
- Warrenton ETJ Limits
- Residential
- Incorporated Municipalities
- Agricultural Residential (Open Space)
- Industrial
- Recreation
- Office/Institutional
- Public/Quasi-Public
- Commercial
- Greenspace-Preservation Area
- Mixed-Use
- Crossroads Community

3 0 3 6 Miles

Map represents combined source data from the Warren County Land Use Committee, Warren County public work sessions, and C.O.G. Planning Staff 1/01 to 10/01. Adopted March 11, 2002.

Warren County-Future Land Use Patterns

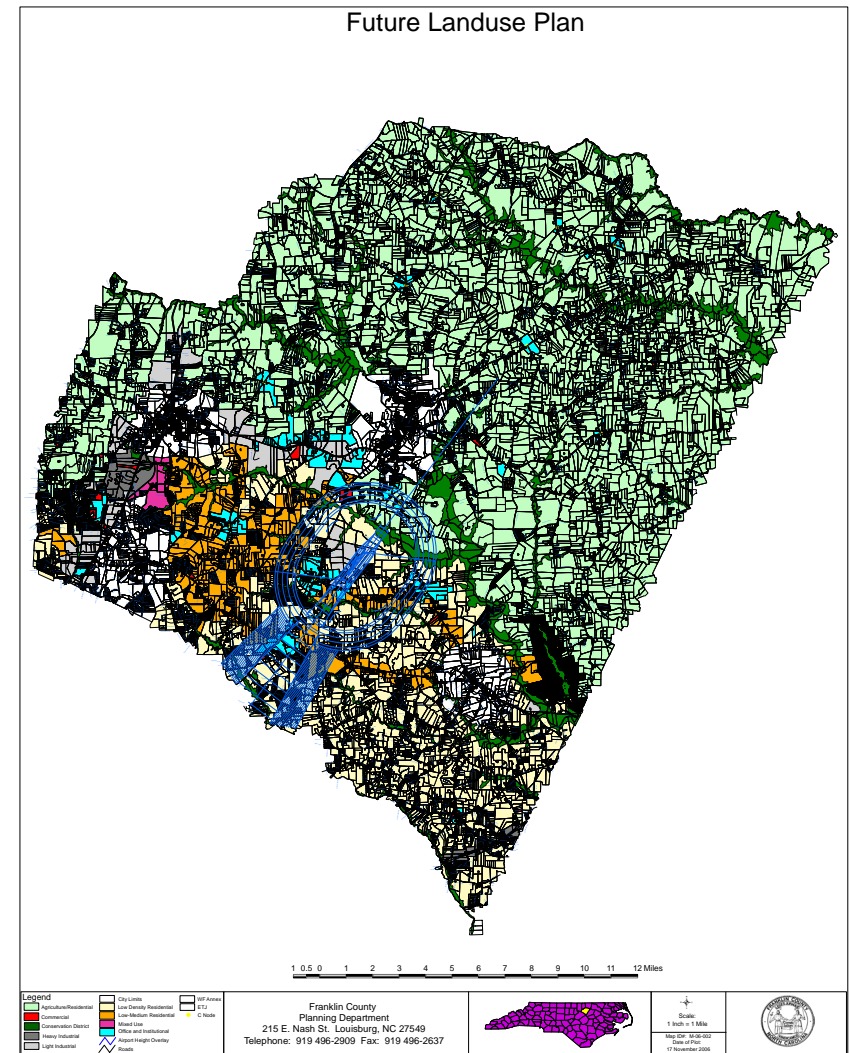




## FRANKLIN COUNTY REGIONAL SUPPORT

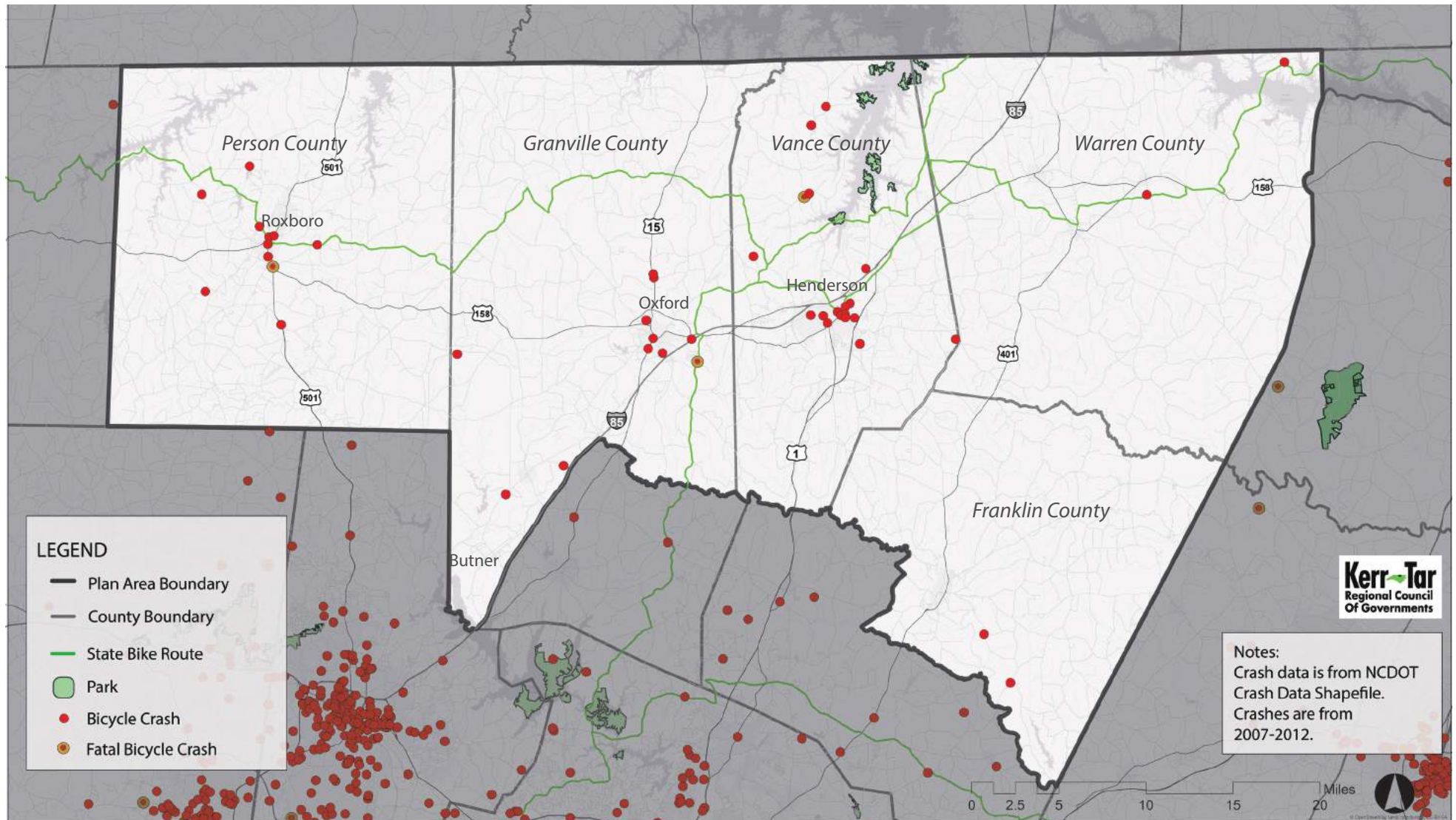
Franklin County currently contains the Louisburg Bike Trail, a 2.2 mile paved bicycle trail that was created through the Rails-to-Trails program and other grants. Additionally, Franklin County's Code of Ordinances includes an article addressing minimum standards of design for streets and this includes: *"to enhance non-vehicular travel such as pedestrians and bicycles."*

**Franklin County Future Land Use:** The Franklin County Comprehensive Parks and Recreation Master Plan includes a recommendation for trails and greenways: Identify and plan for greenways and open space: Implement planning strategies to identify trail corridors and greenway links throughout Franklin County that gives particular attention to abandoned rail corridors, utility easements, and the State Bike Trail; Develop bikeways and walking trails along the old CSX rail corridor from Louisburg to Franklinton that would run from the site of the Old Louisburg Depot to Vance-Granville Community College to the newly proposed park in Franklinton and on to the Old Depot in Franklinton; Provide enhancements to the State Bike Trail that runs from Nash County across southern Franklin County, through Youngsville to Wake County.



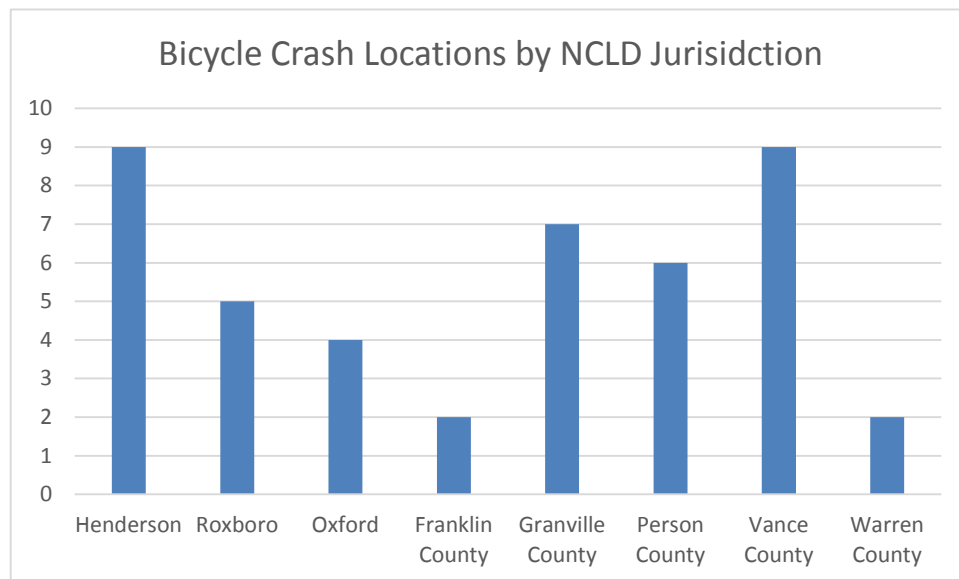


## BICYCLE CRASH MAP (NCLD STUDY AREA - CRASH DATA 2007-2012)

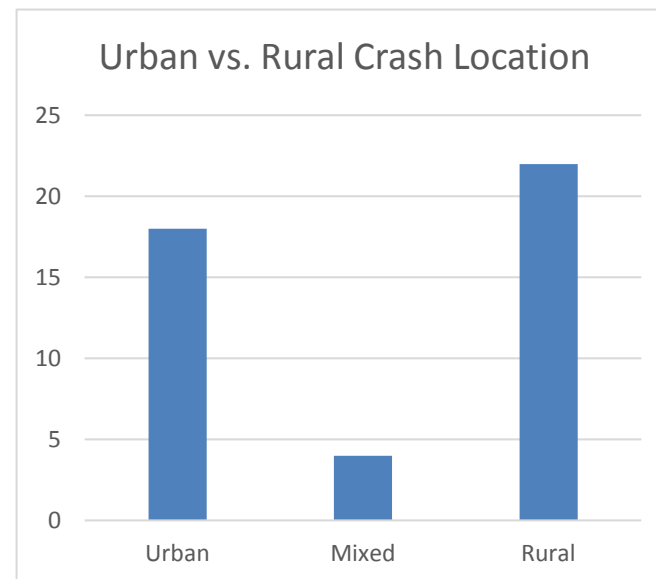


## BICYCLE CRASHES

The most recent crash data available (2007-2012) at the time of this writing shows that 44 bicycle crashes (including three fatalities) occurred in the NCLD study area.

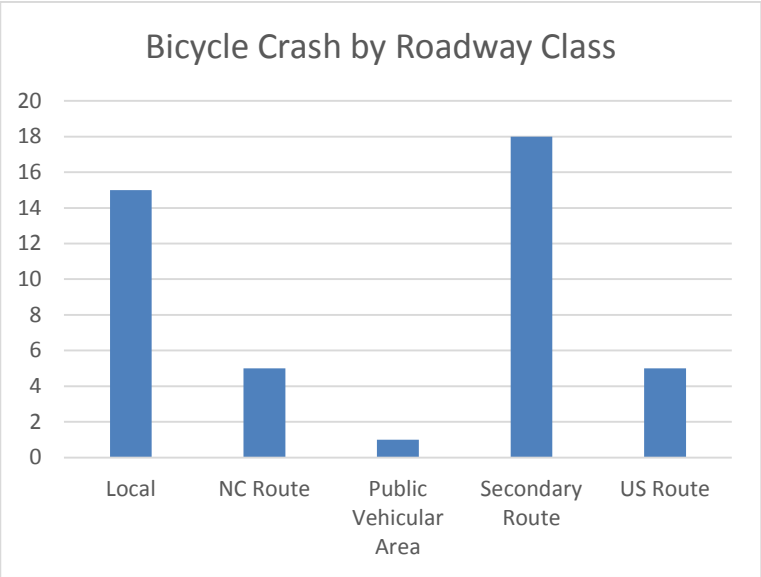


*By county, the highest frequency of crashes are found in Vance County. Clusters of crashes are found in the urban areas of Henderson, Oxford, and Roxboro.*

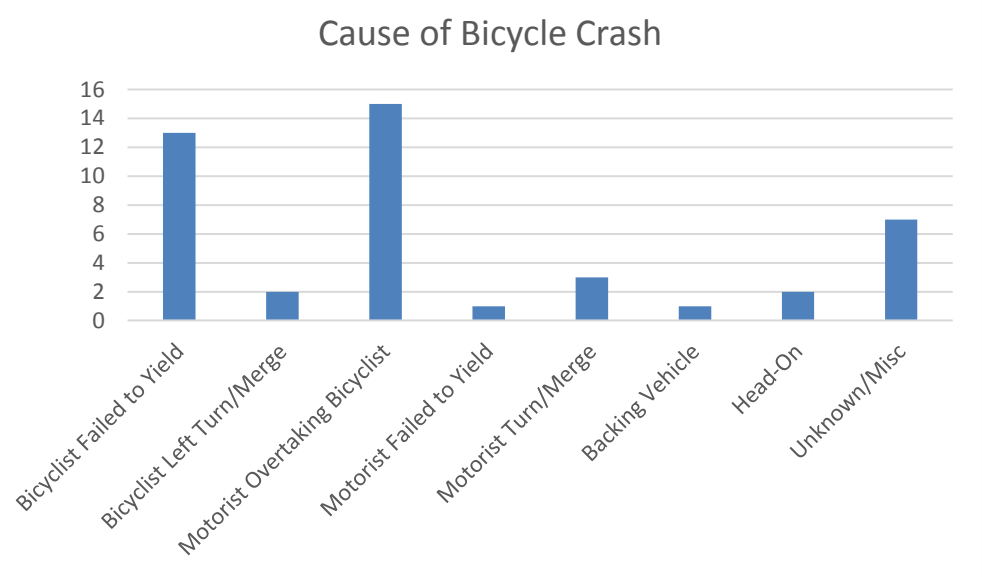


*Crash numbers were slightly higher in rural areas than urban areas.*

BICYCLE CRASHES (CONTINUED)



Secondary routes and local roads were the roadway classes with the highest frequency of bicycle crashes. This highlights that bicyclists choose to ride on these roads as opposed to busier US & NC Routes.



'Bicyclists failing to yield' and 'motorists overtaking a bicyclist' were the two most often cited reason for a bicycle crash. This highlights the need for caution among both bicyclists and motorists.



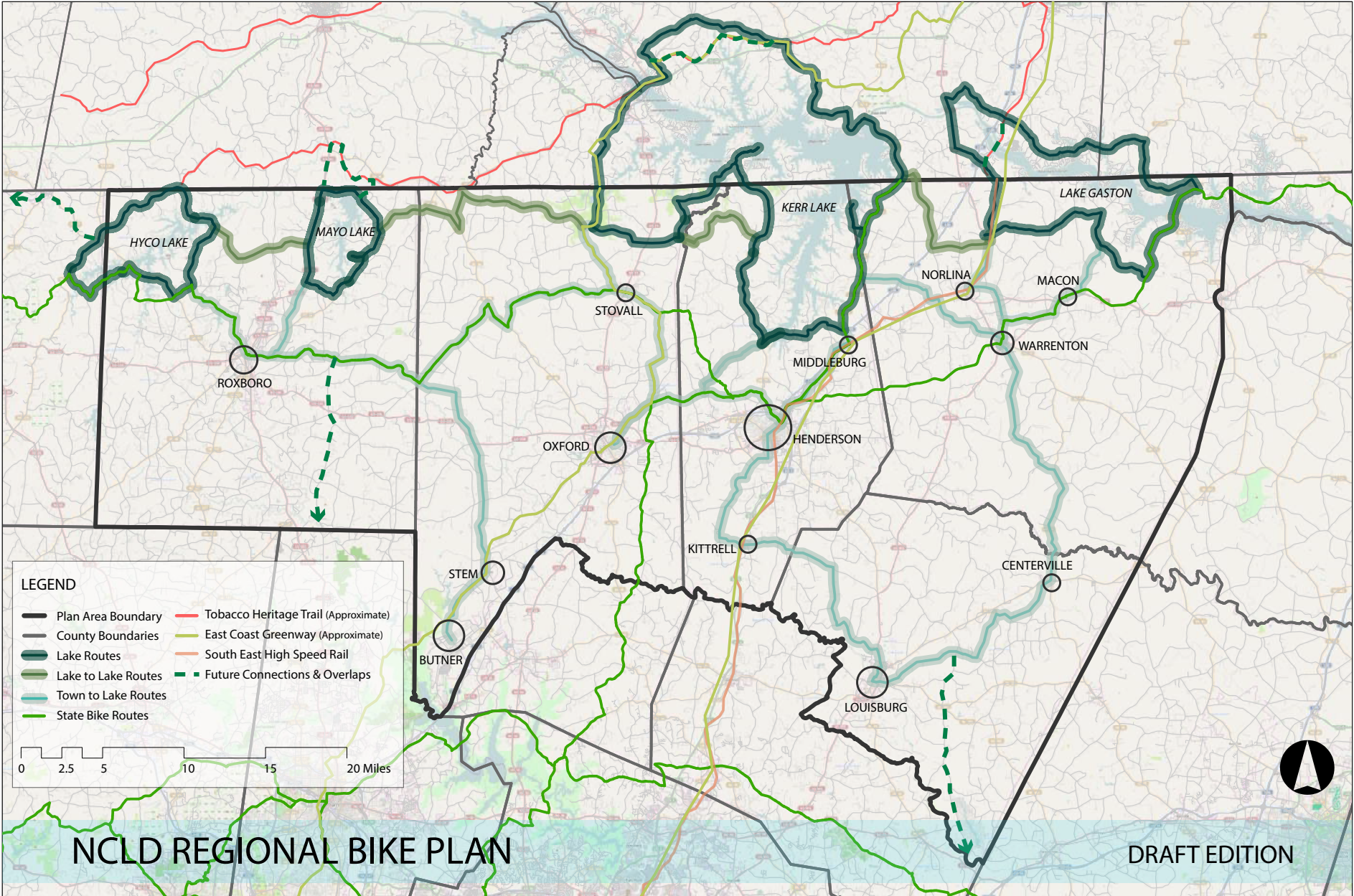
## CHAPTER 3: ROUTES

### OVERVIEW

The proposed North Carolina Lakes District (NCLD) routes were developed through extensive staff research and collaboration with the NCLD Steering committee. Staff examined the existing conditions in the Kerr-Tar region looking at a range of data including road conditions, potential greenway corridors, existing bicycle and greenway plans, bicycle accident data, significant parks and recreation facilities, and other data. Initial routes were developed through the input of the NCLD Steering committee. Routes identified by steering committee members and other interested parties were reconnoitered and recorded for final route determination.

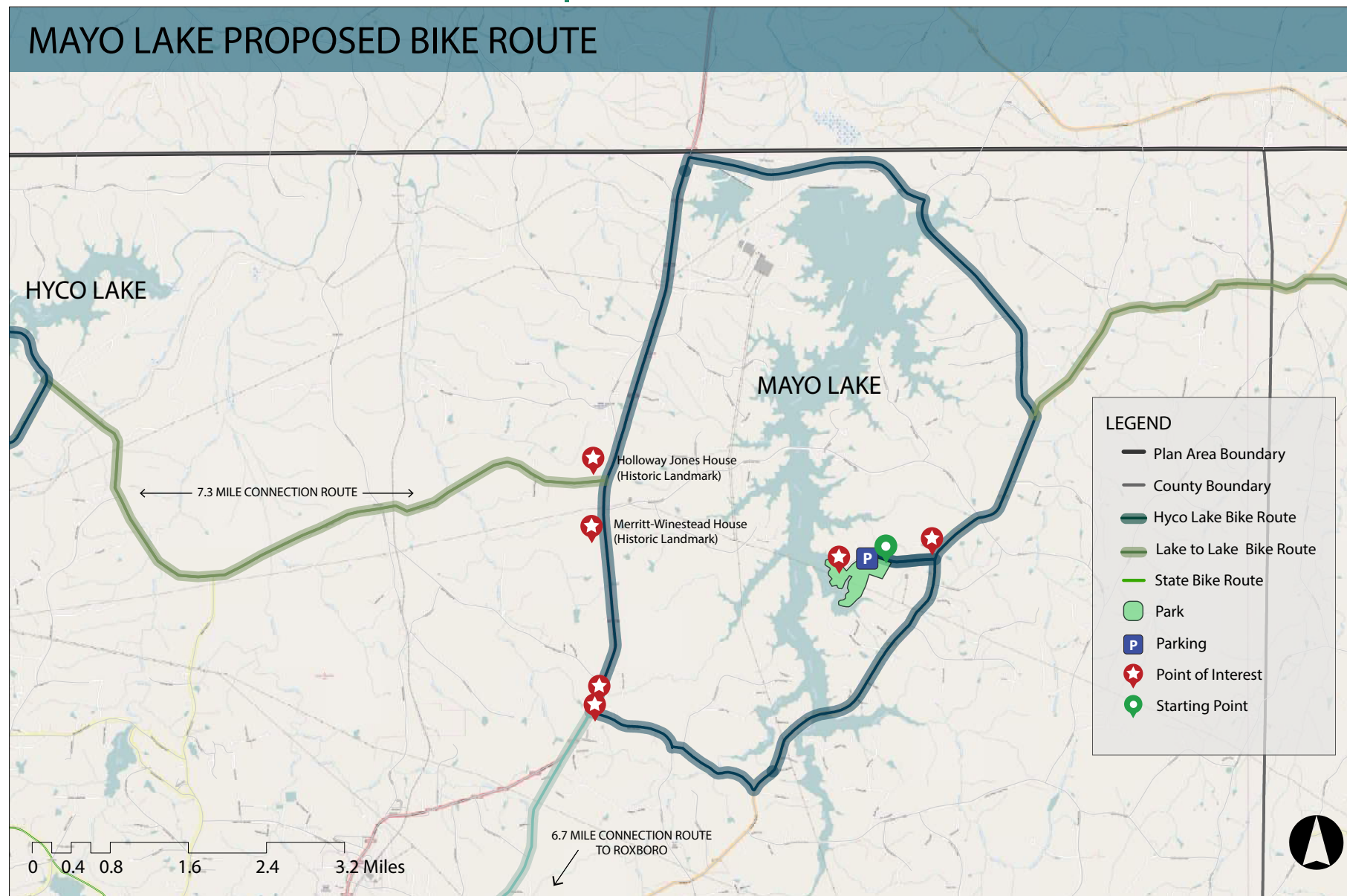
The proposed NCLD routes were selected with a goal to develop bicycle routes that circle the regional lakes and act as a connection between lakes and communities as well as other significant features in the region. The routes would offer a planned course to residents, visitors, and other users providing a beneficial and appealing new means of recreation and mobility. The proposed NCLD regional bike plan includes Lake Routes, Lake to Lake Routes, and Town to Lake Routes.

# OVERALL BICYCLE ROUTES MAP



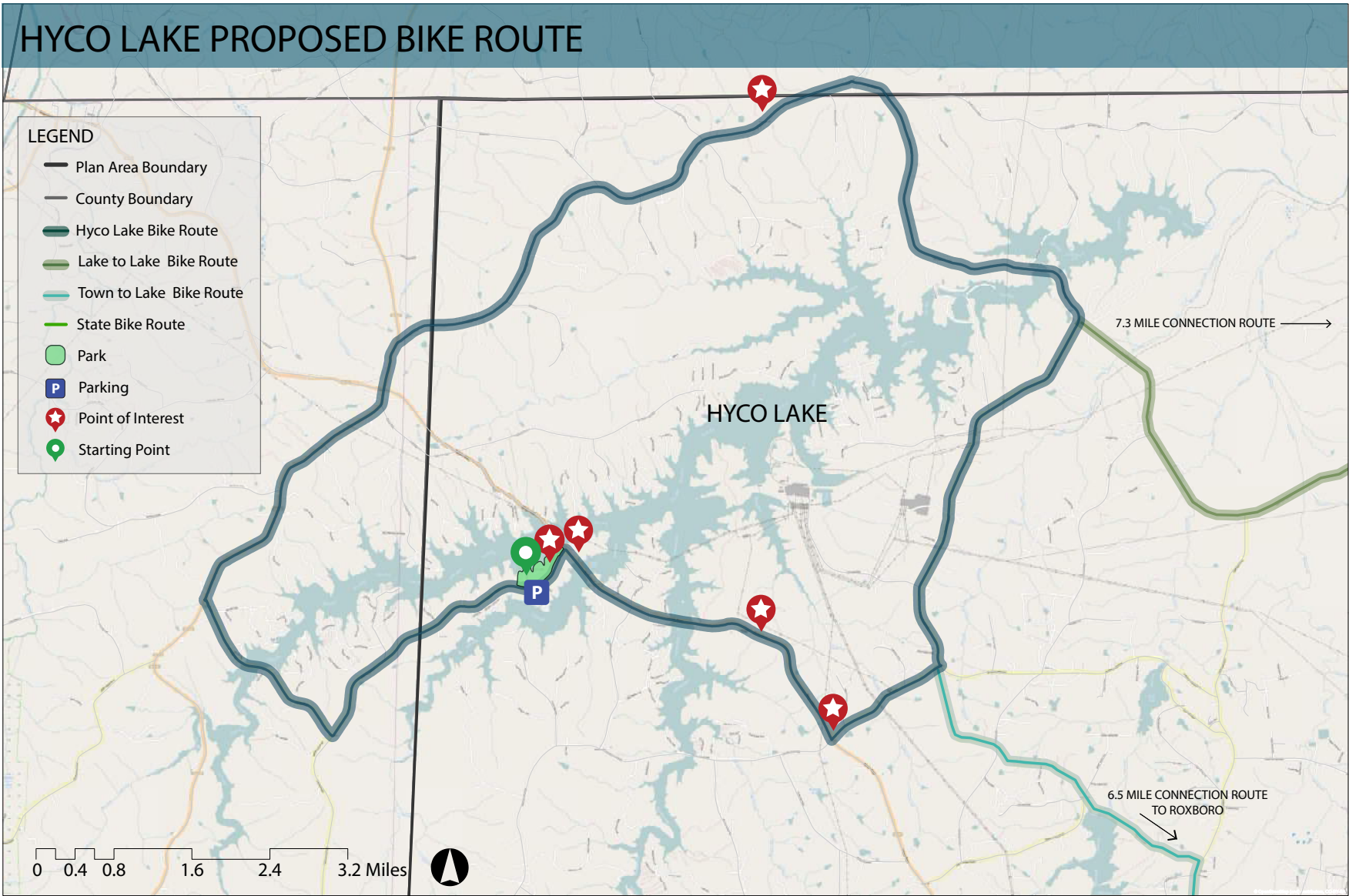


## INDIVIDUAL ROUTE SEGMENTS | LAKE ROUTES

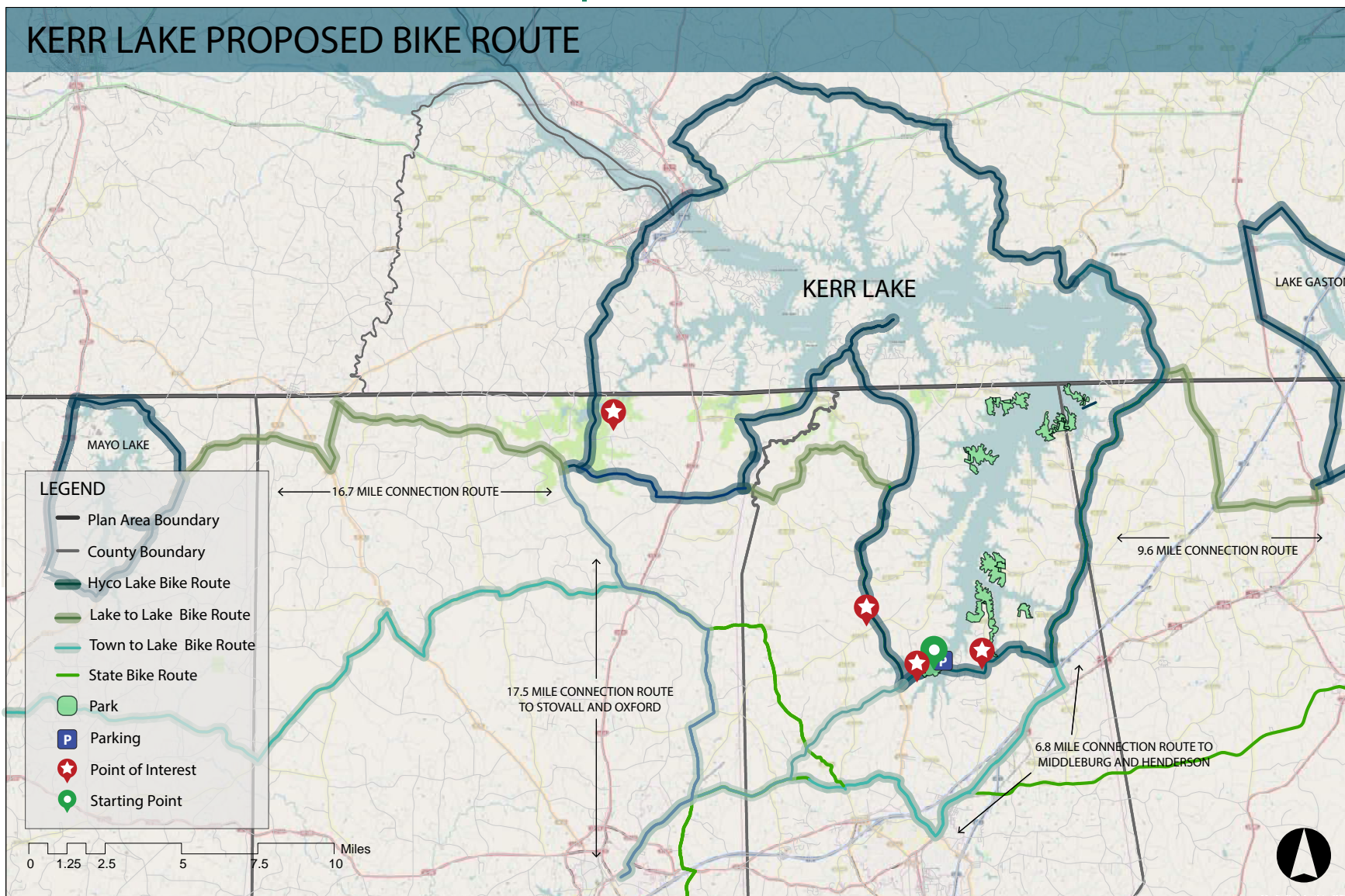




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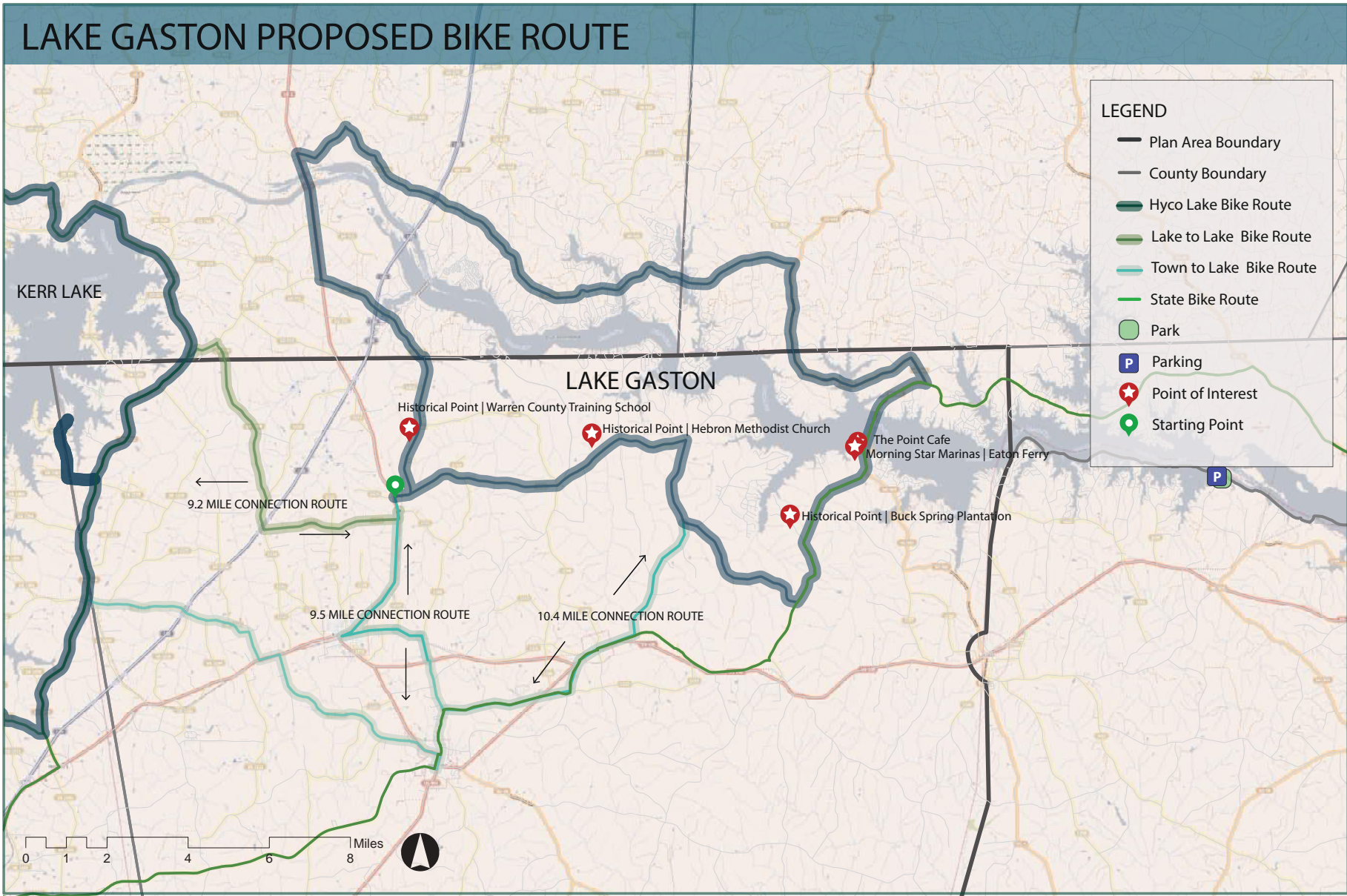


## INDIVIDUAL ROUTE SEGMENTS | LAKE ROUTES





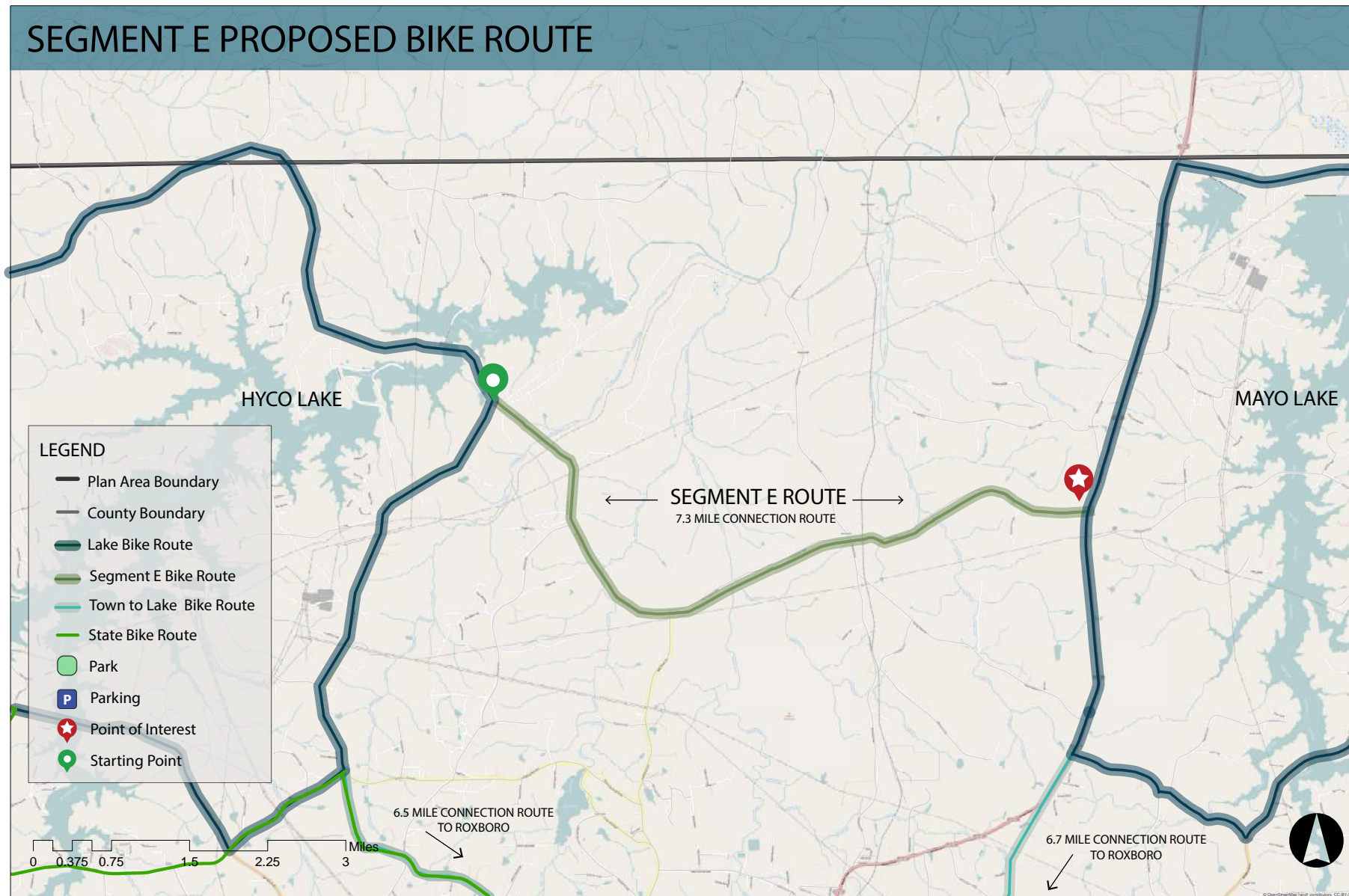
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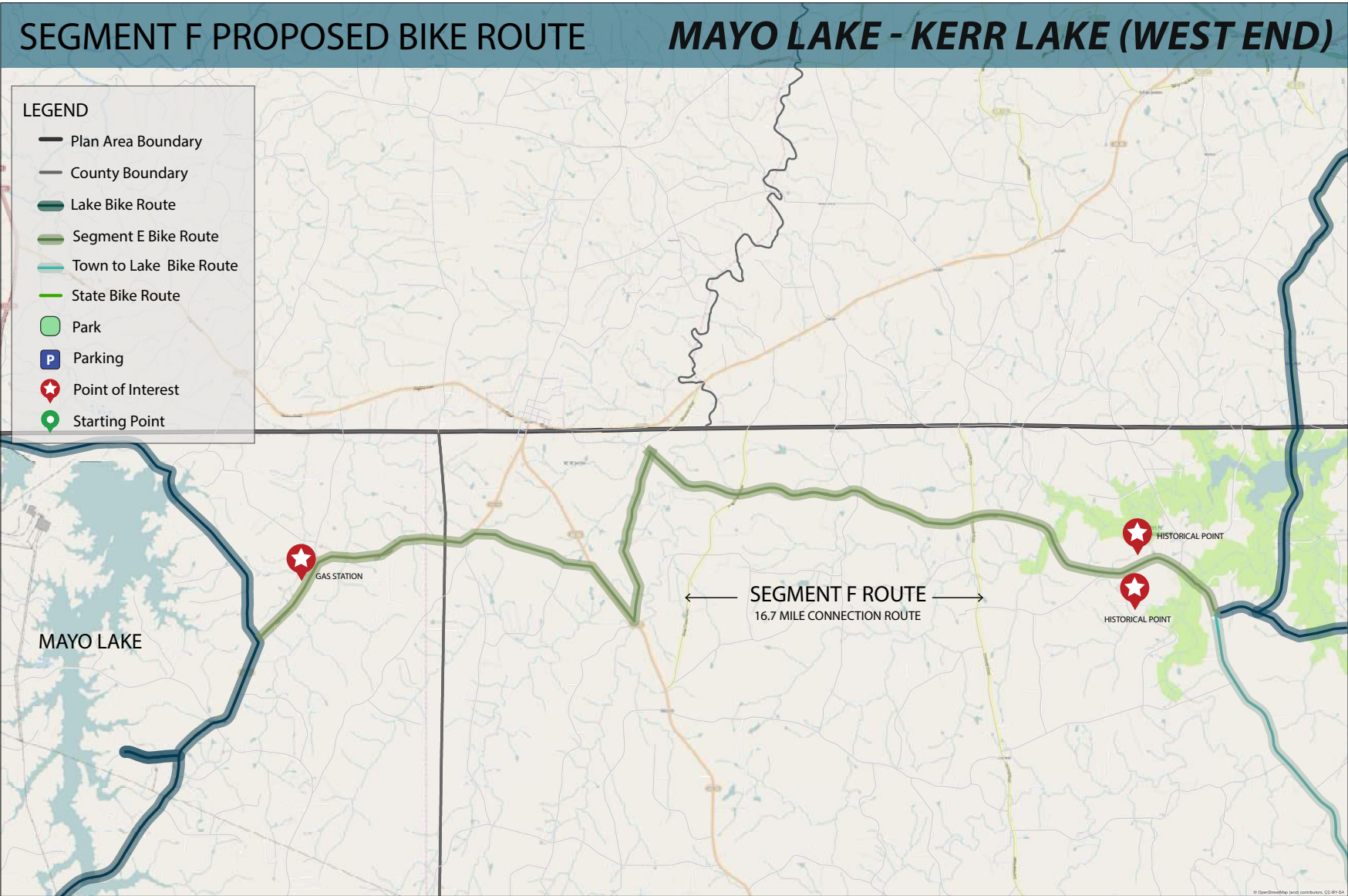


## INDIVIDUAL ROUTE SEGMENTS | LAKE TO LAKE ROUTES

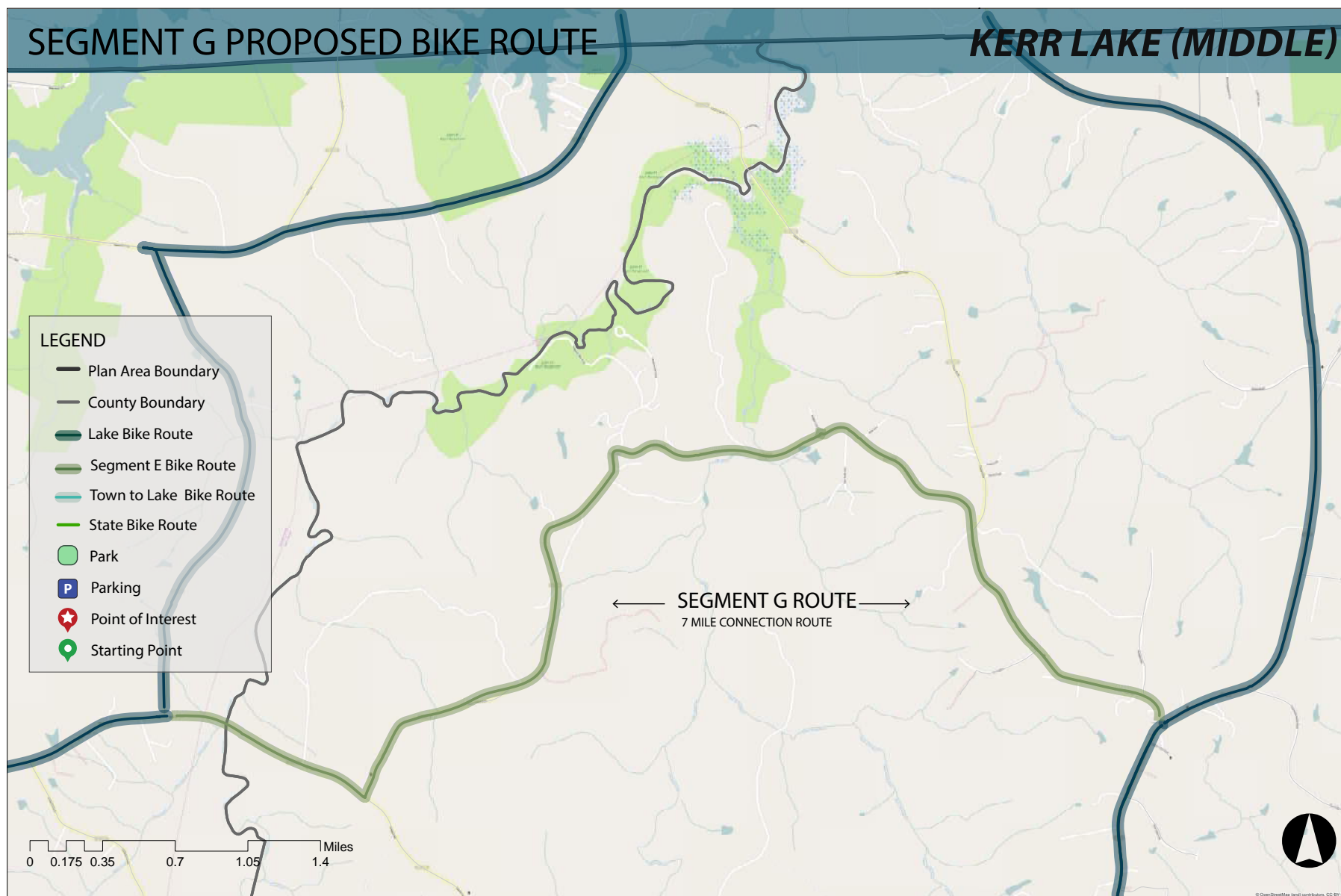
### SEGMENT E PROPOSED BIKE ROUTE



INDIVIDUAL ROUTE SEGMENTS | LAKE TO LAKE ROUTES

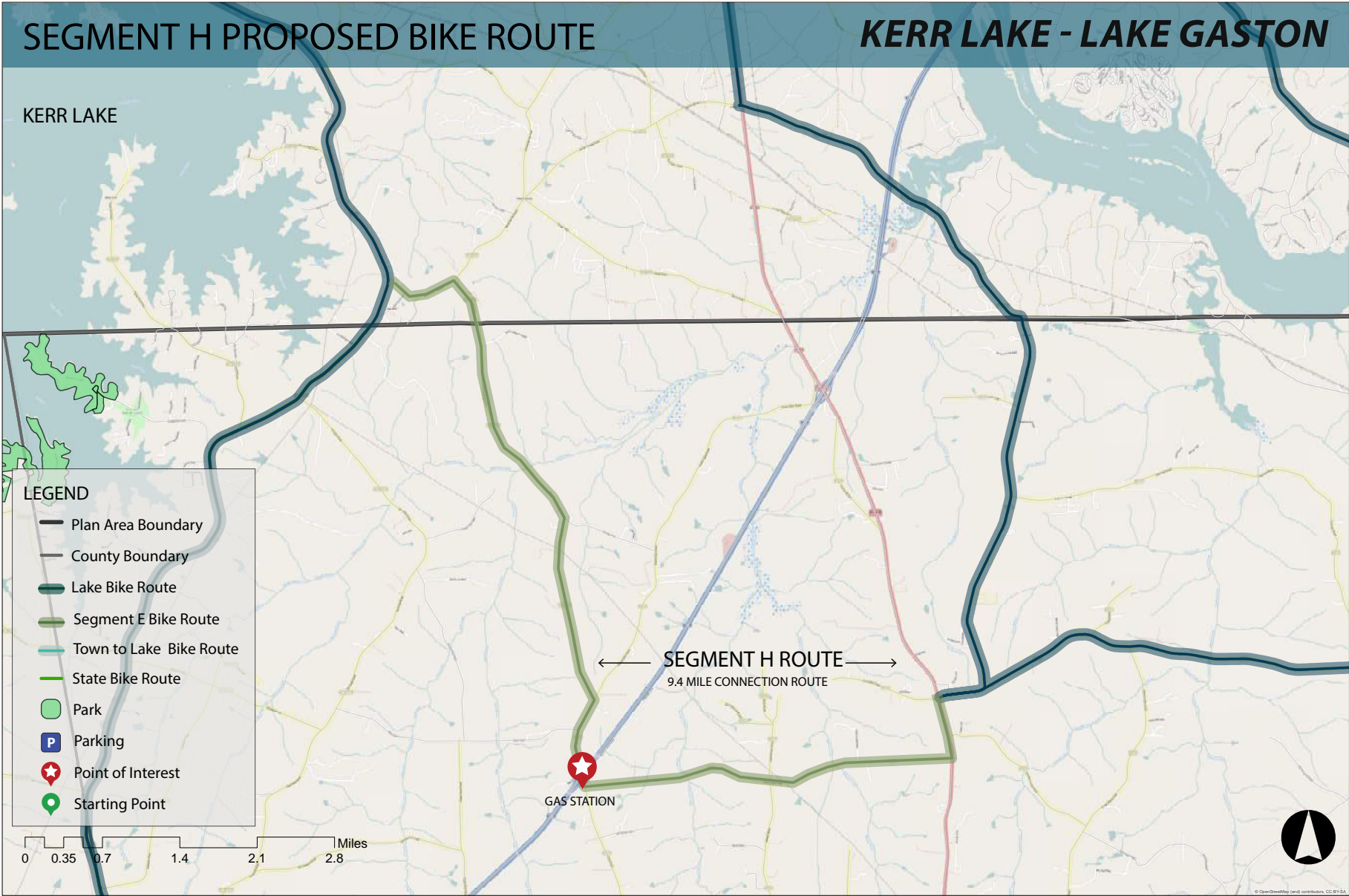


## INDIVIDUAL ROUTE SEGMENTS | LAKE TO LAKE ROUTES

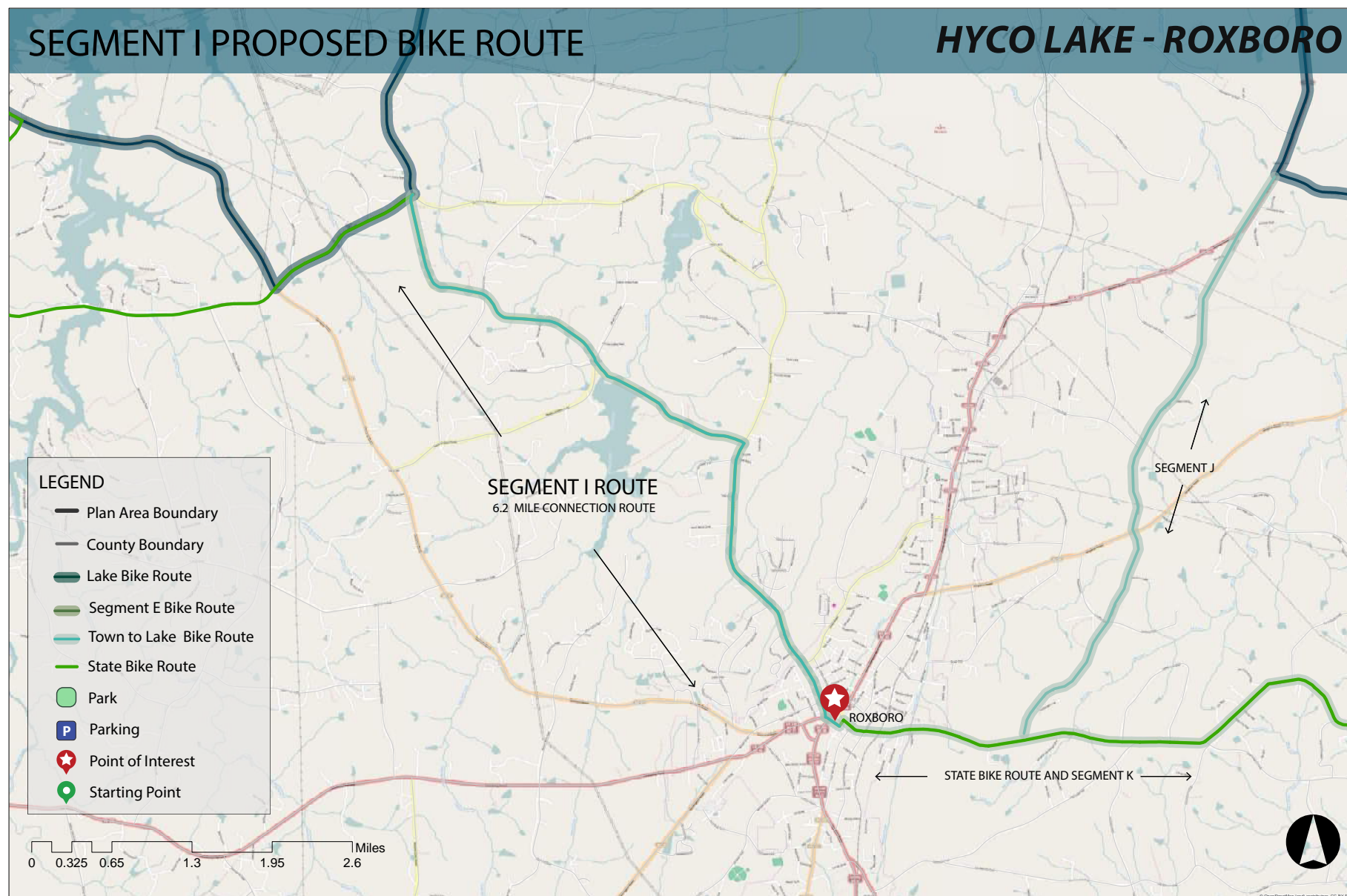




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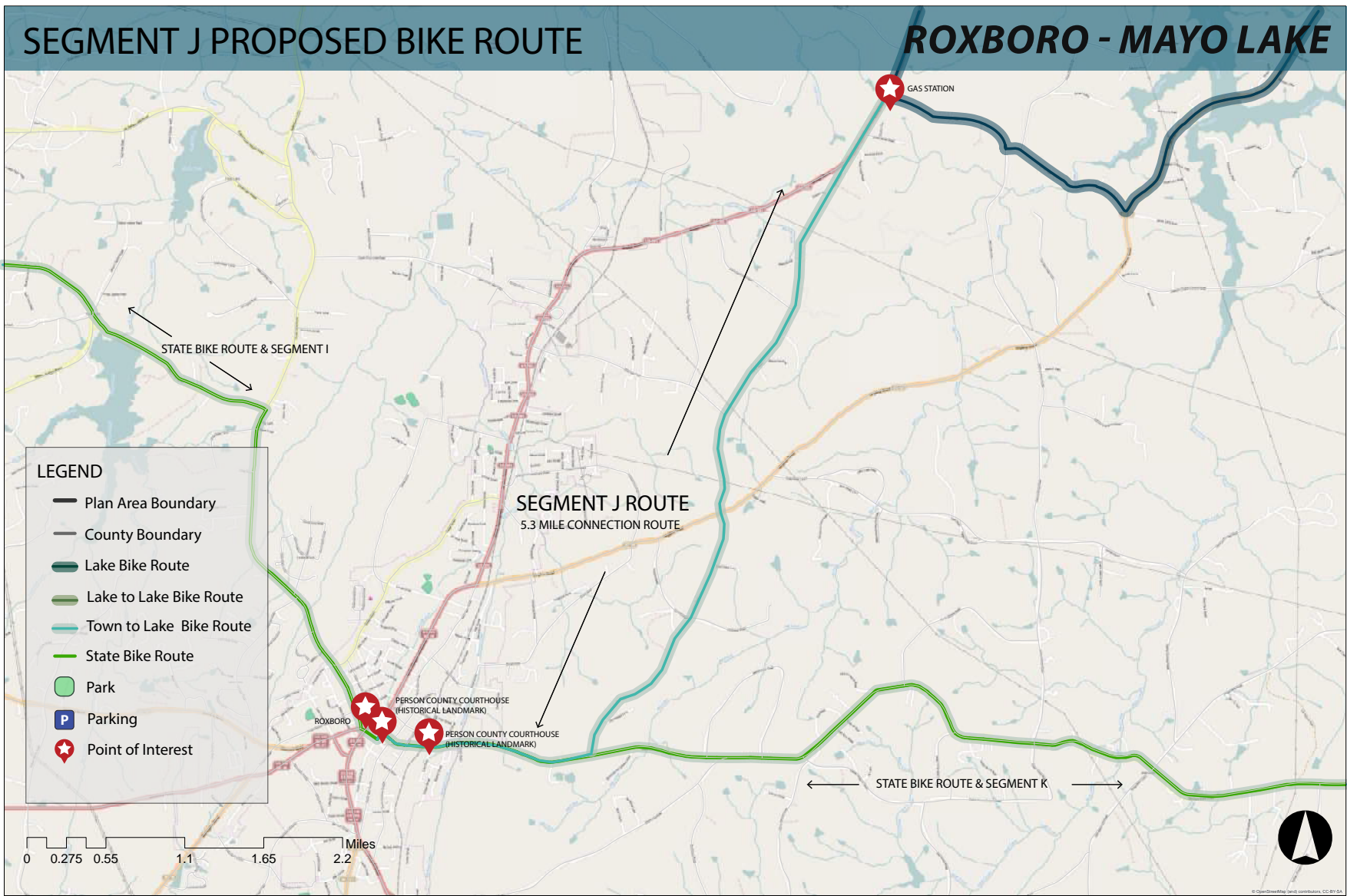


## INDIVIDUAL ROUTE SEGMENTS | TOWN TO LAKE ROUTES



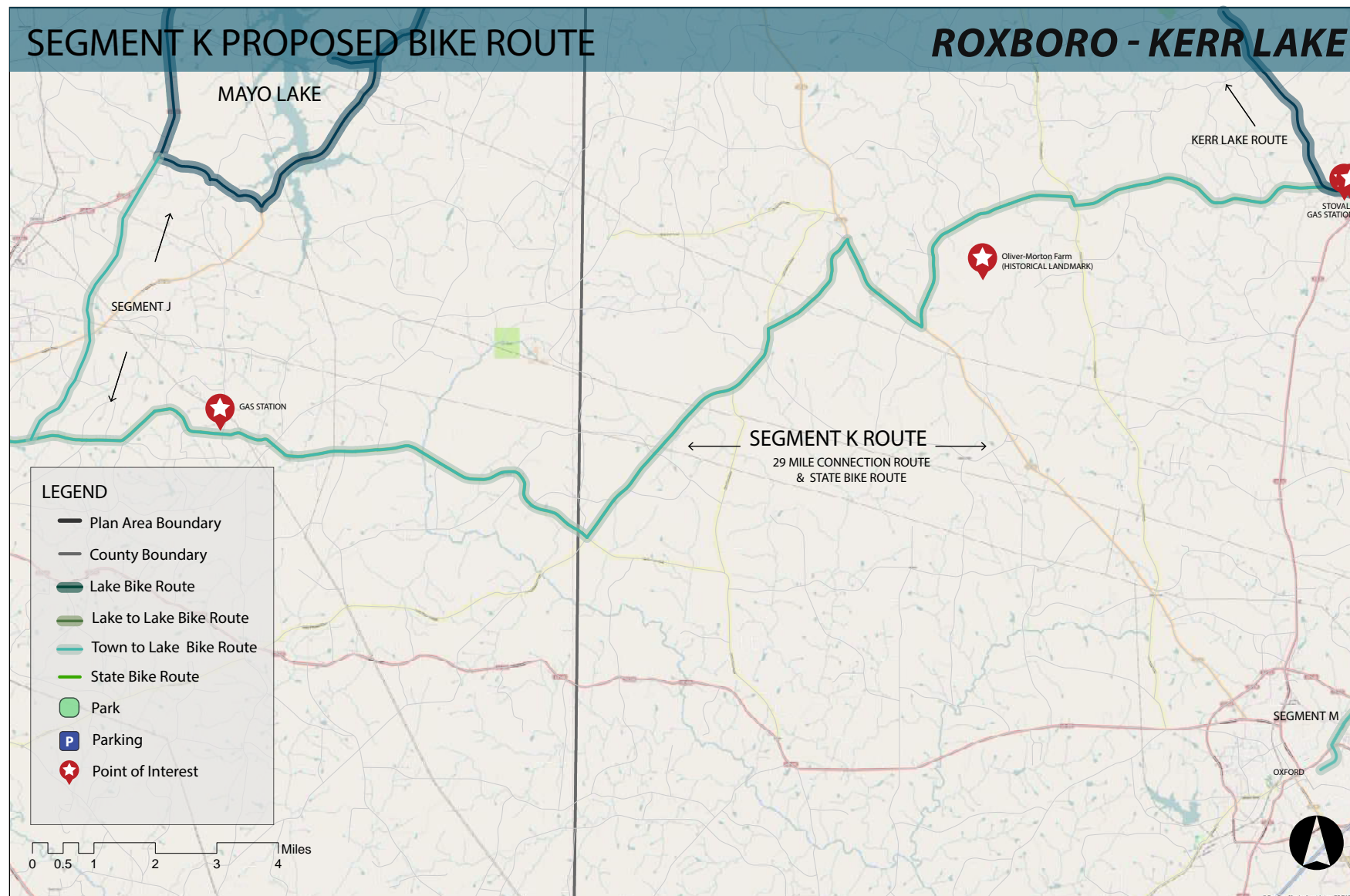


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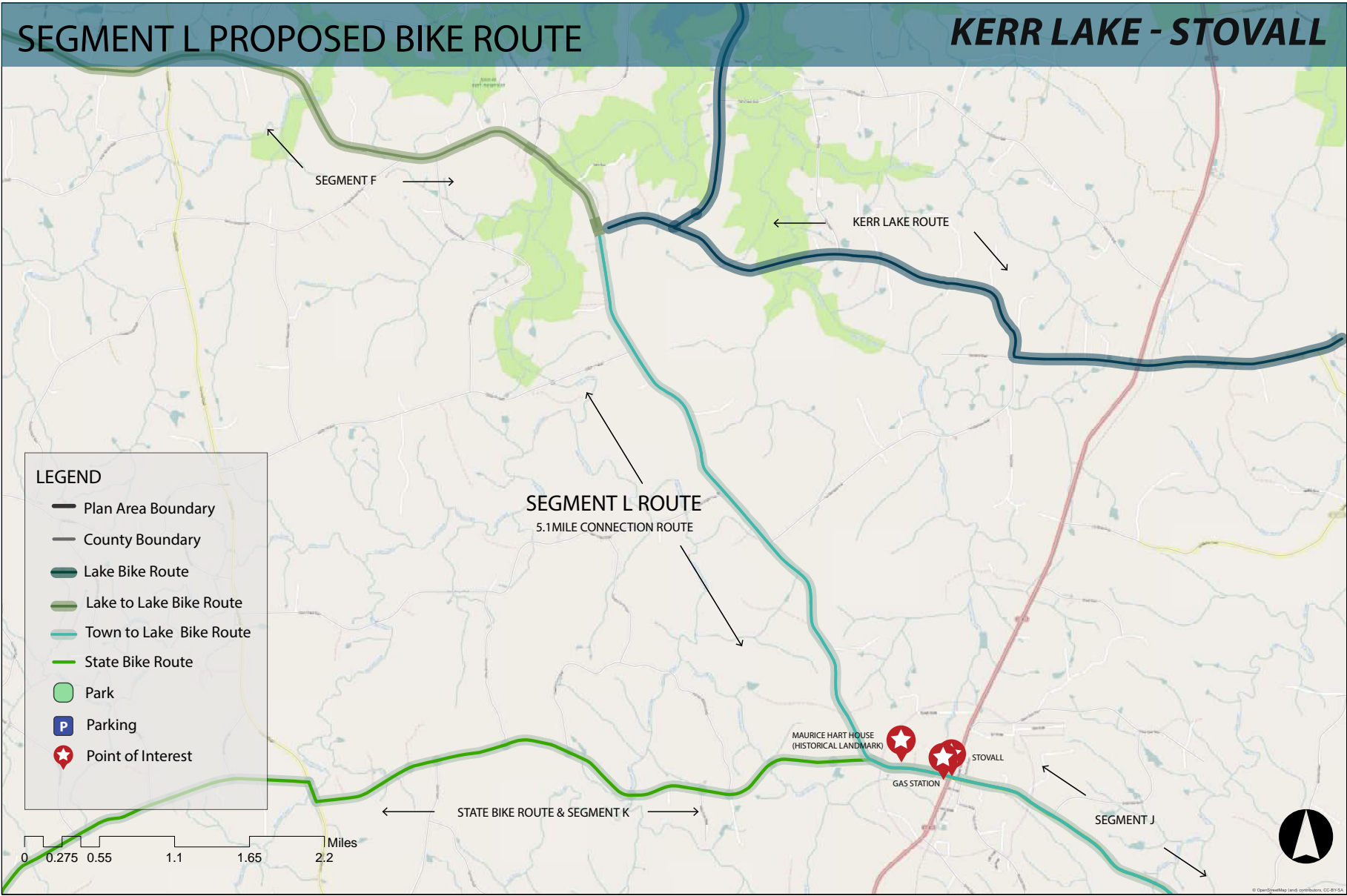




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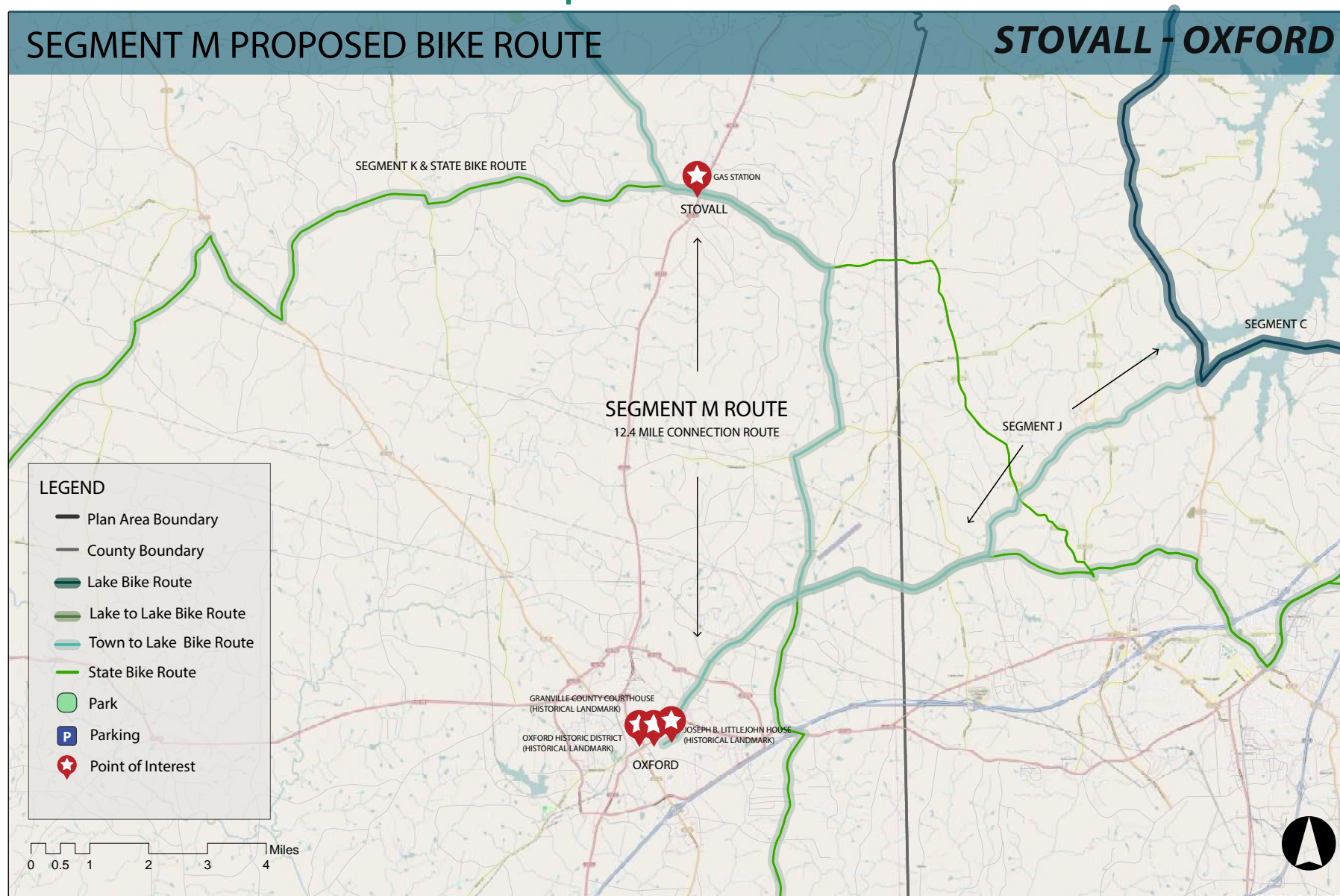


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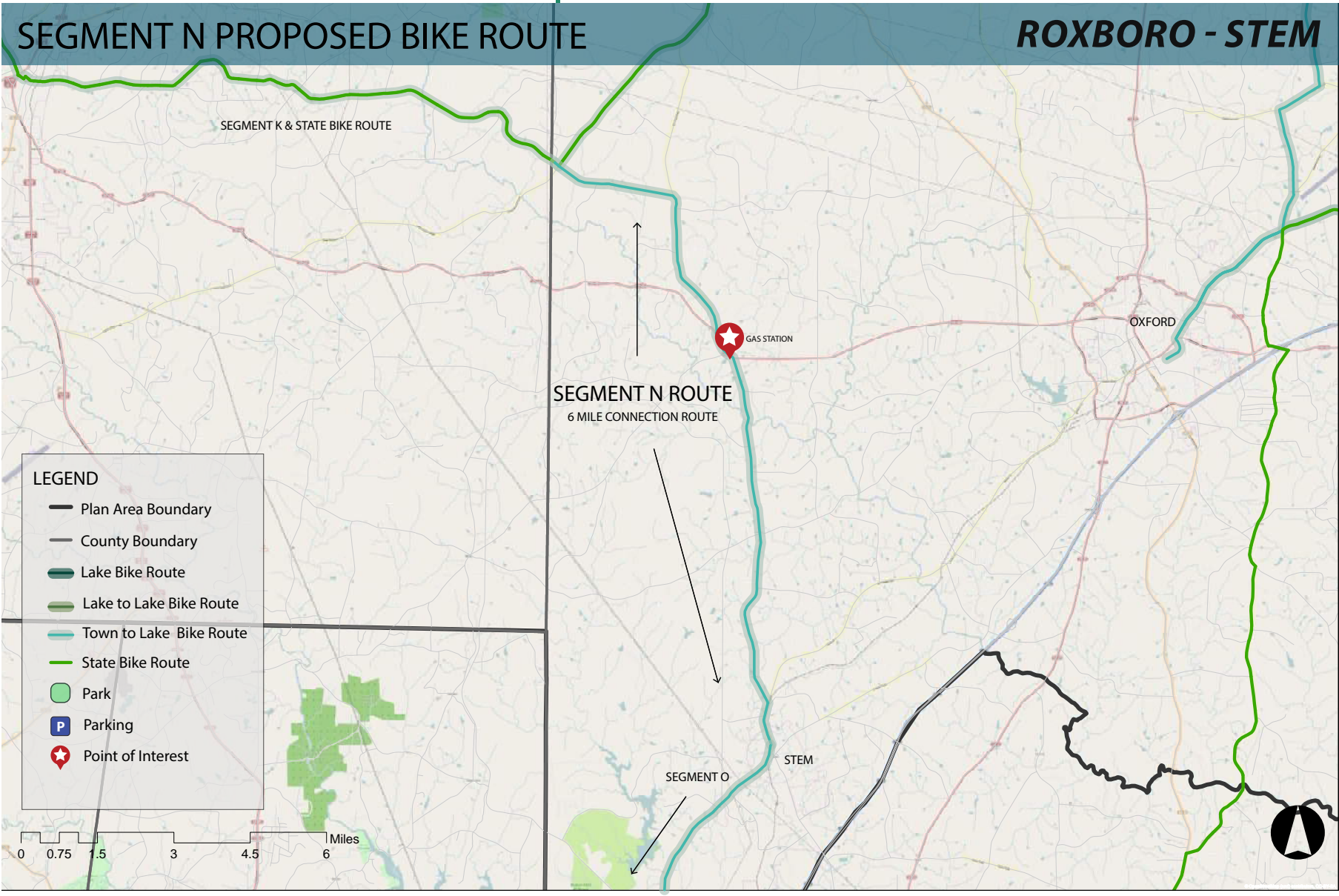


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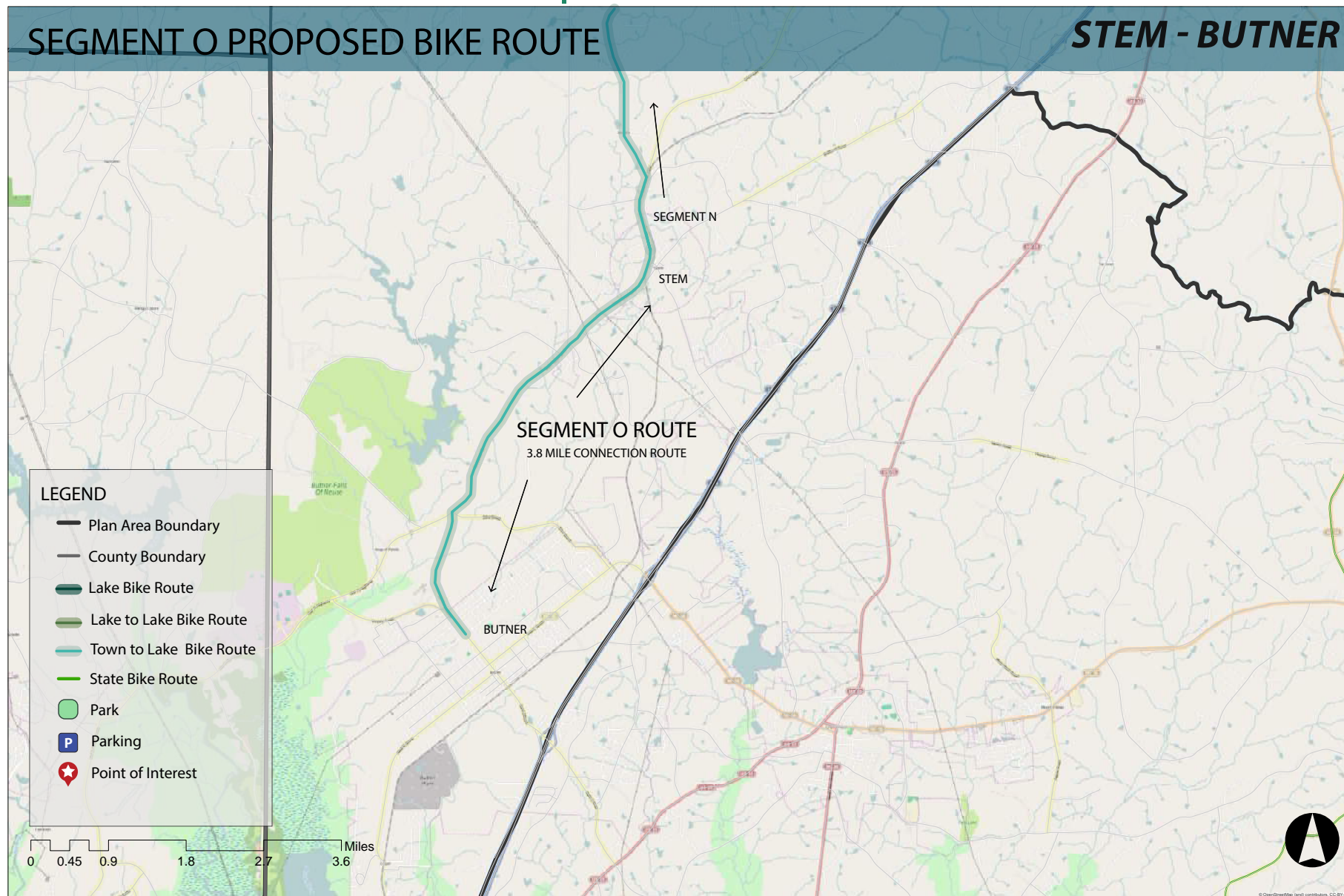




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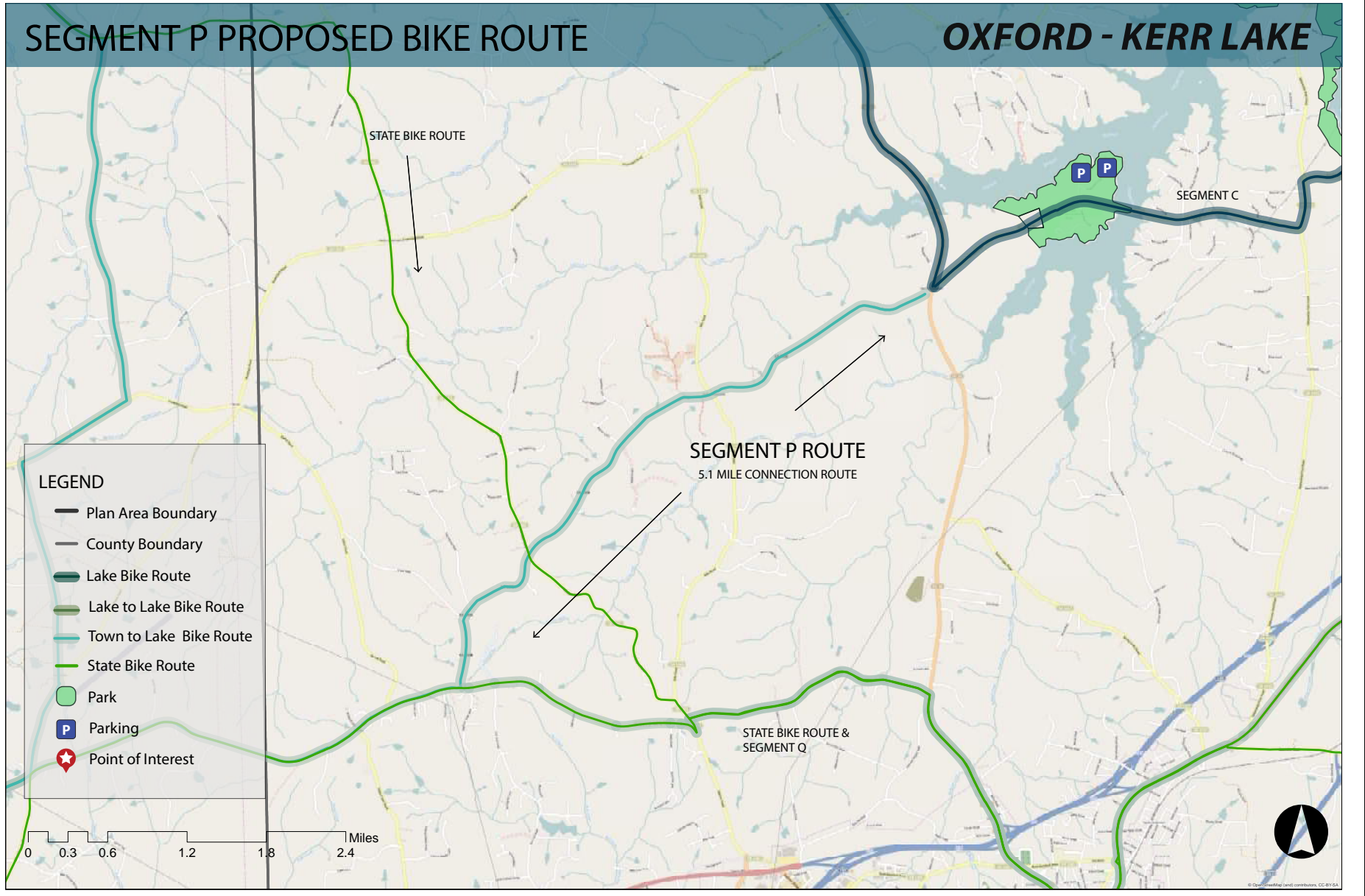


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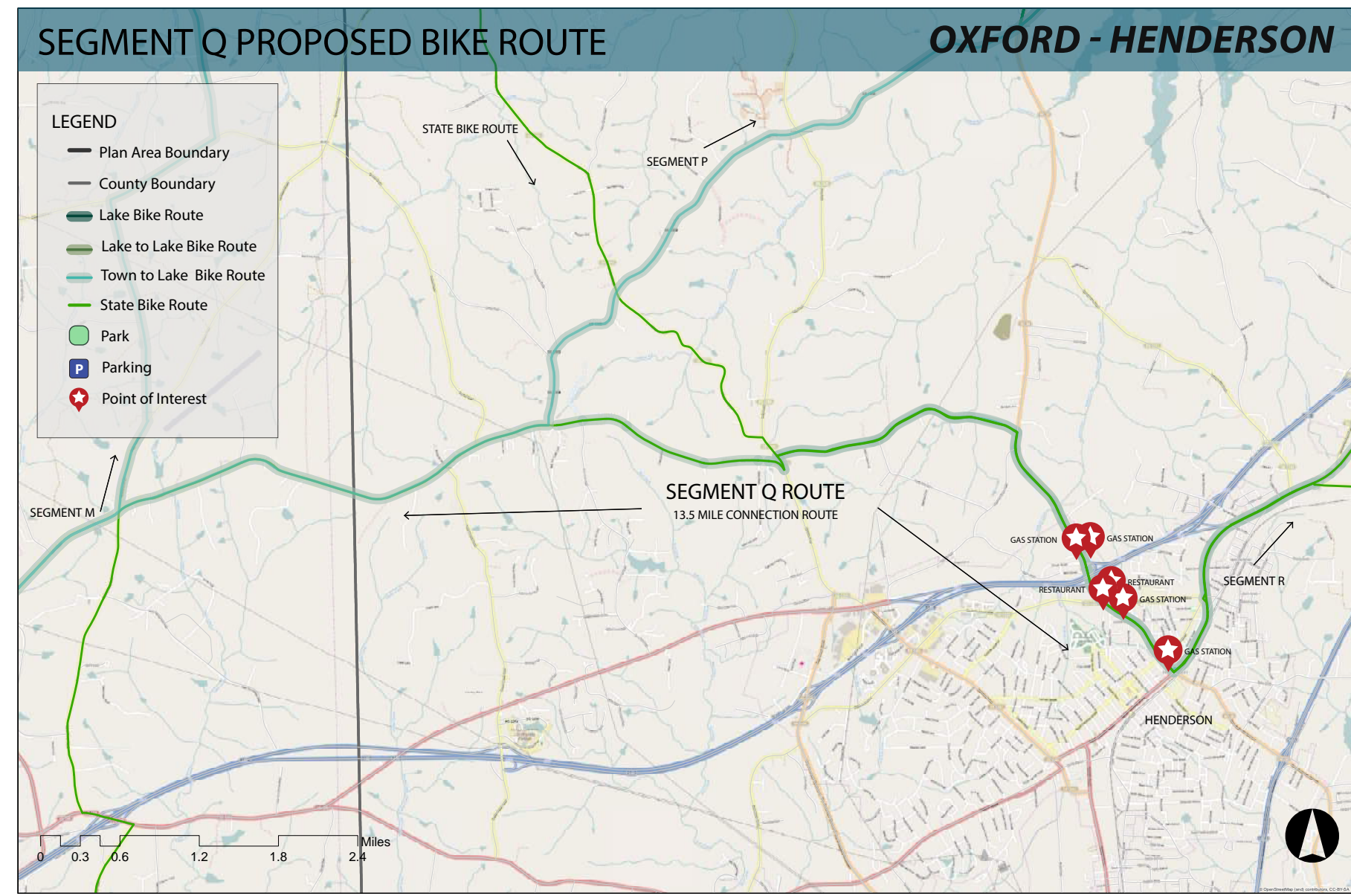


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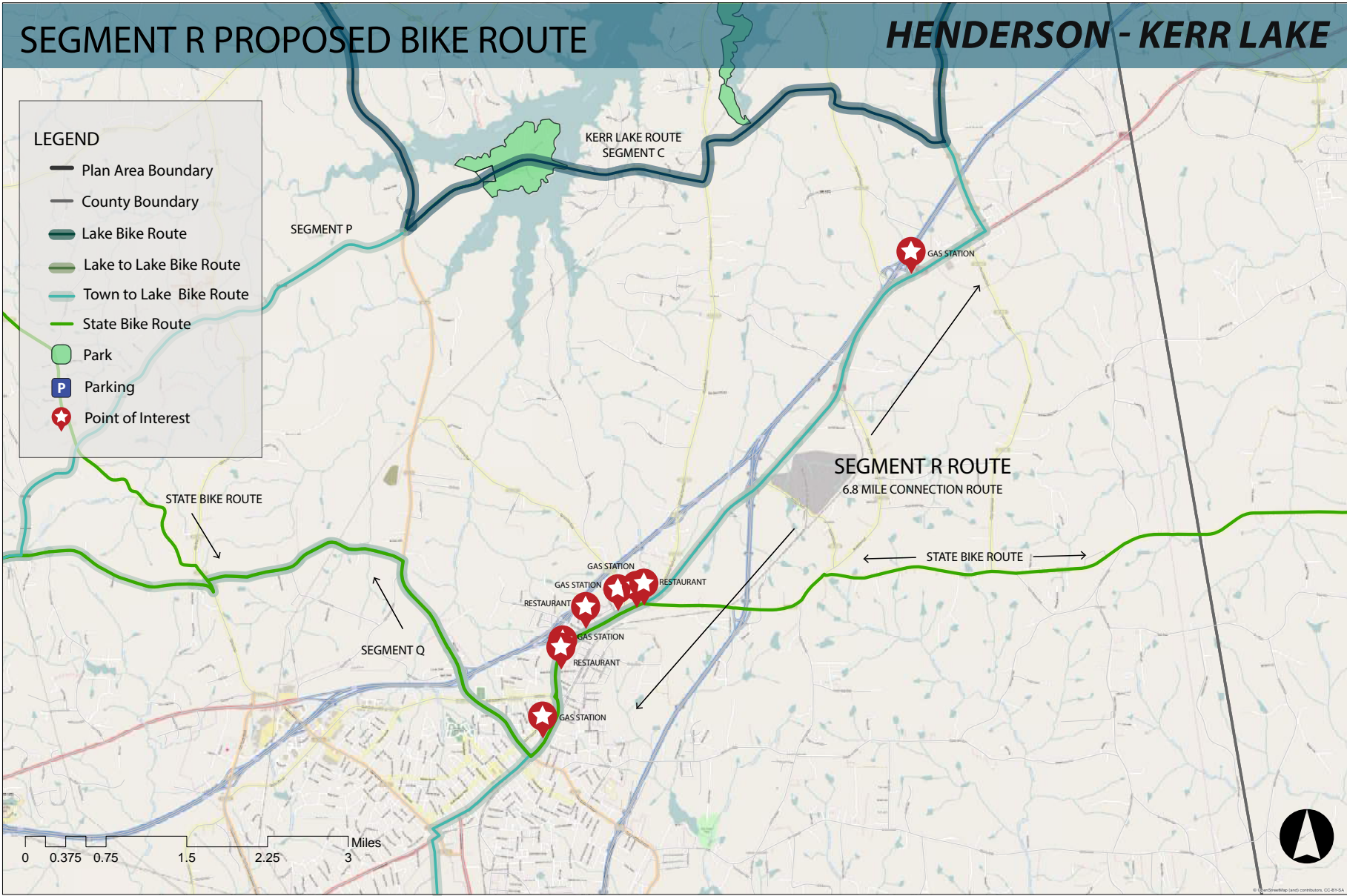




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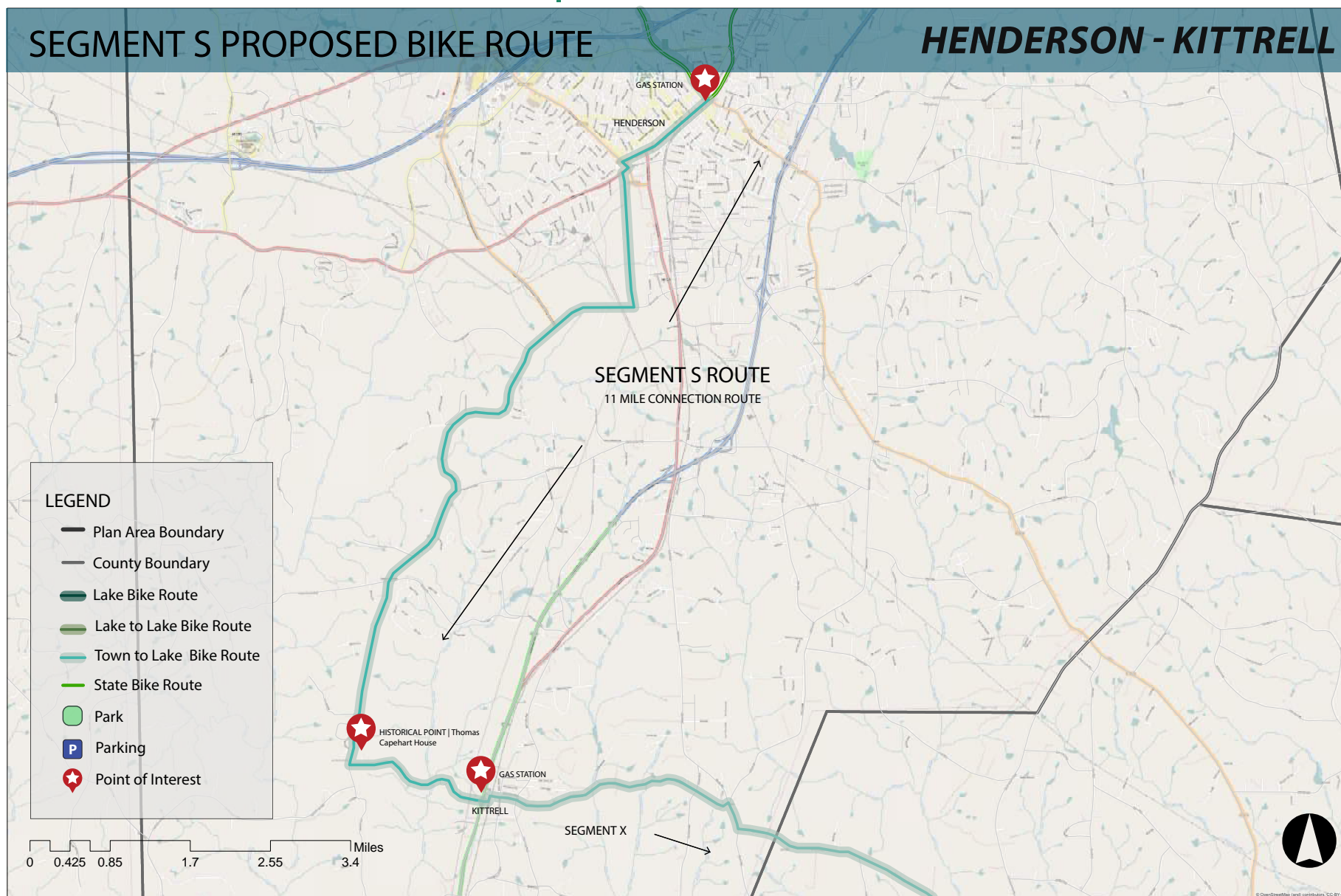


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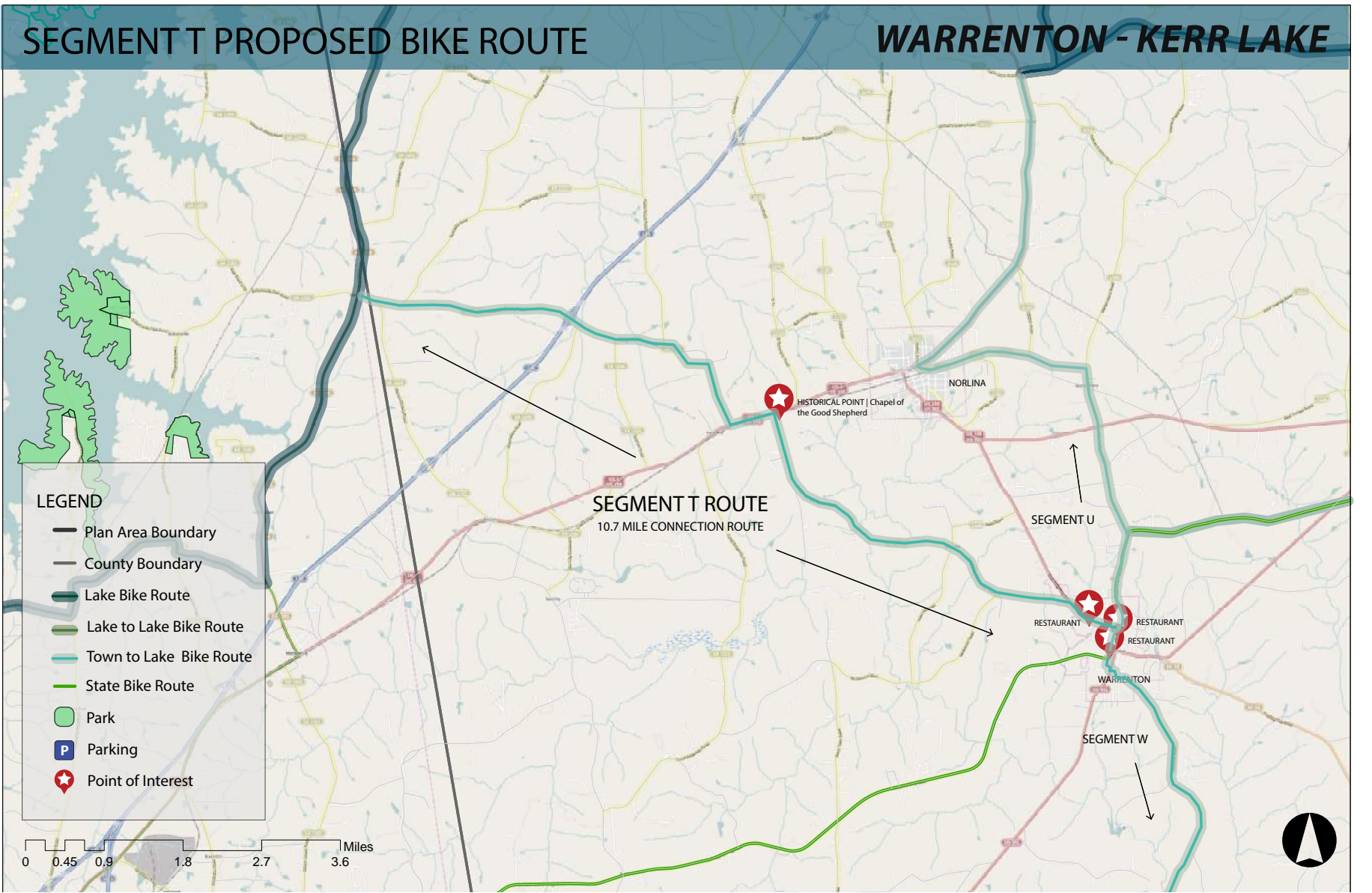


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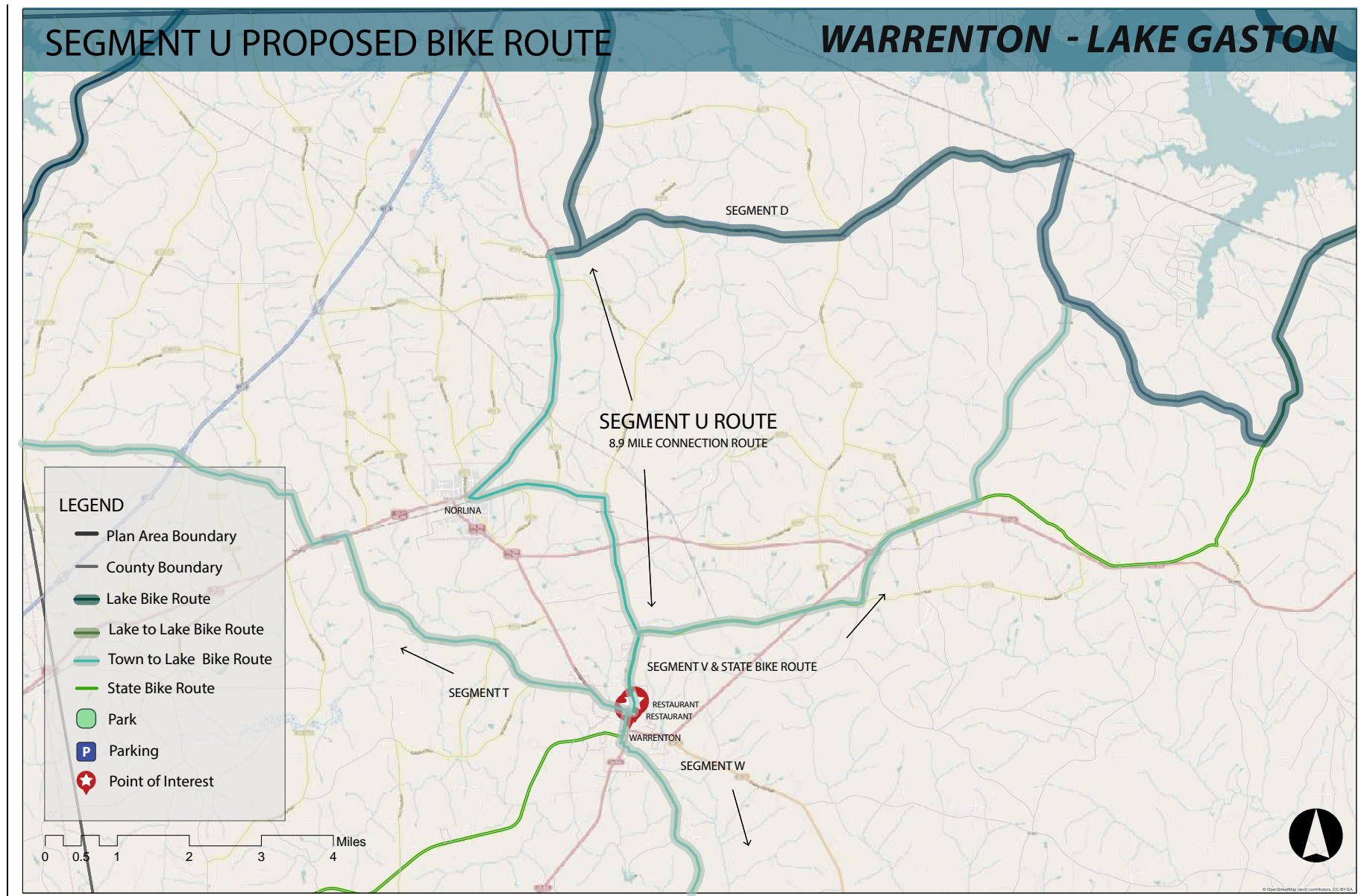




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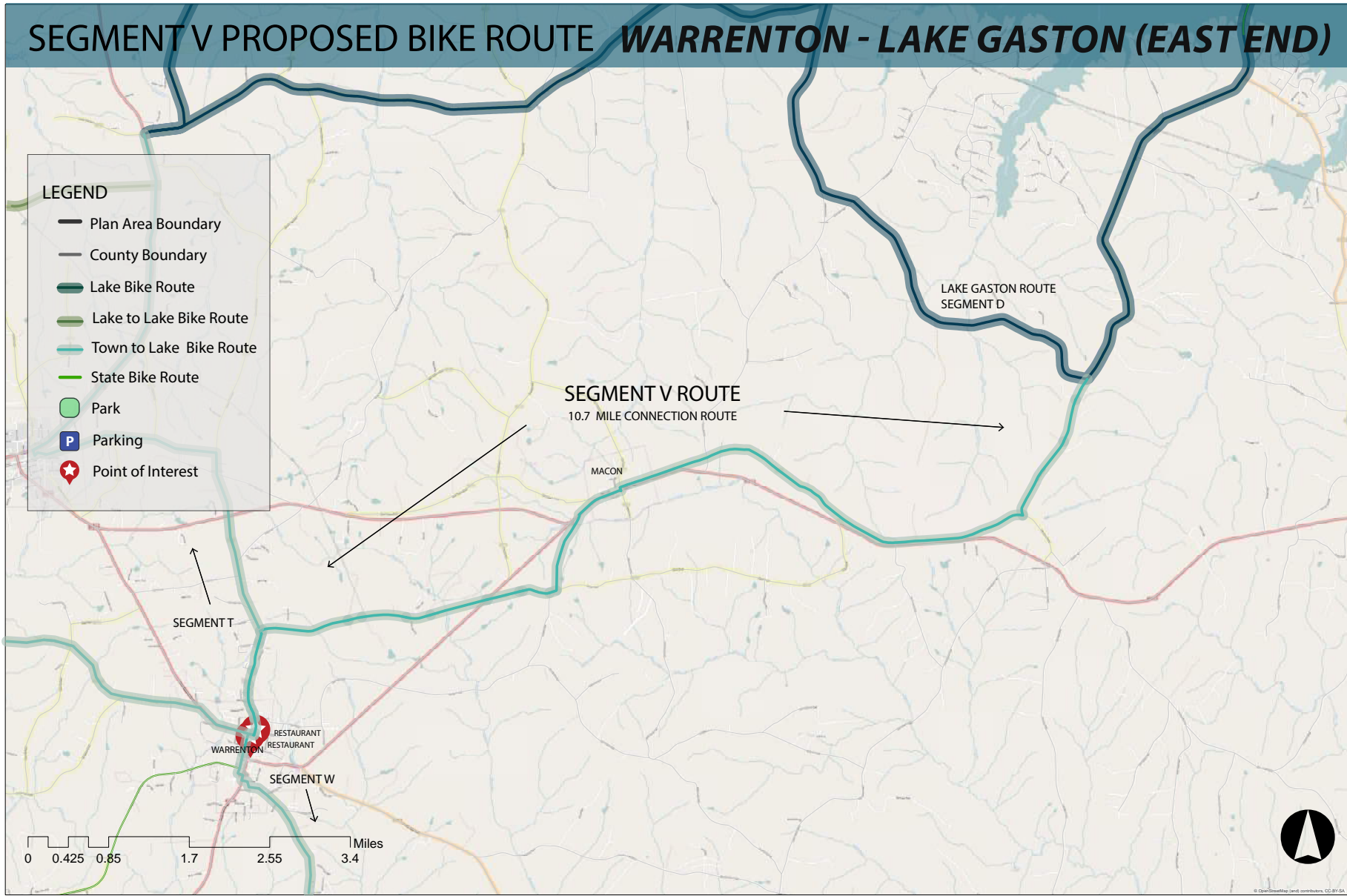


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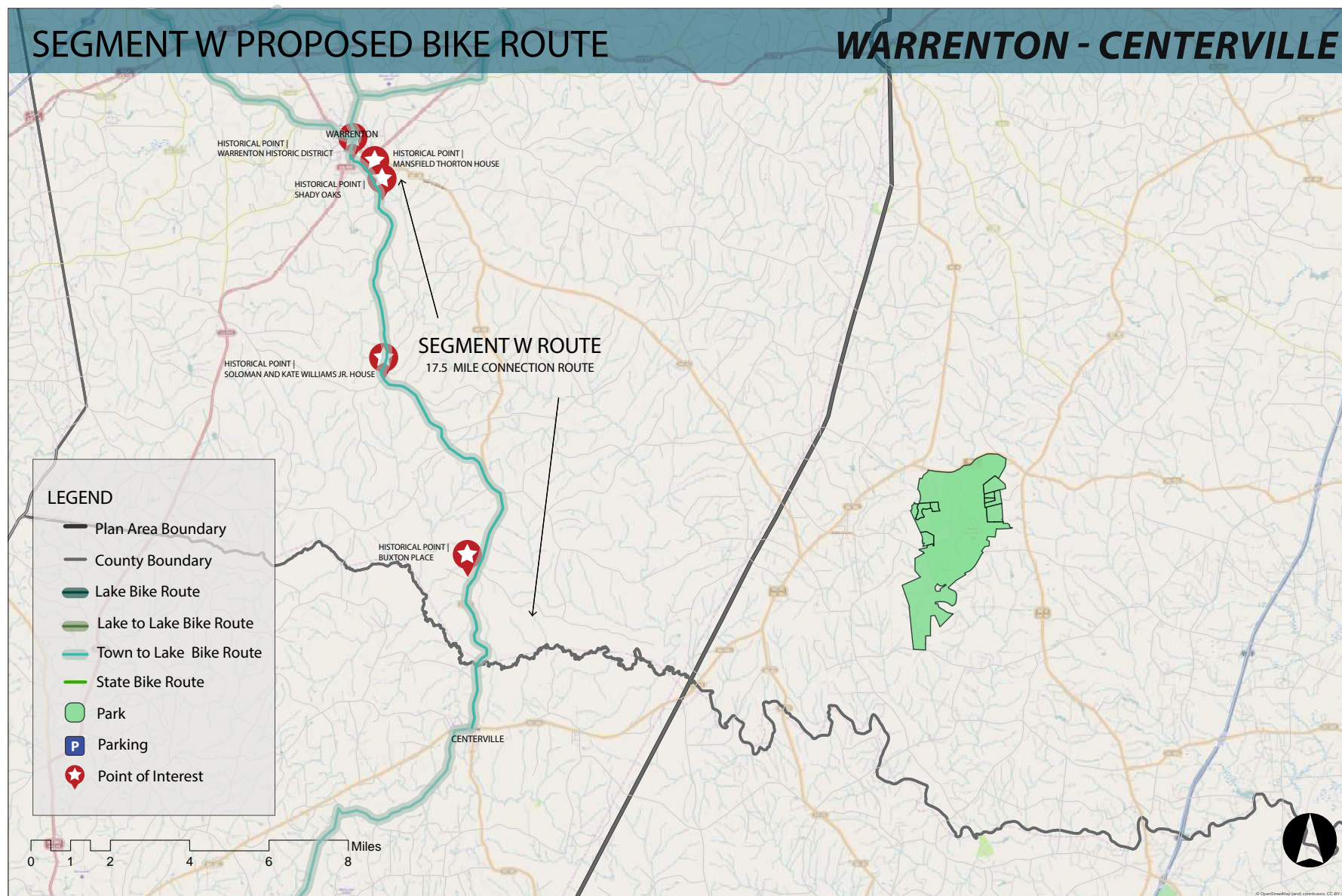


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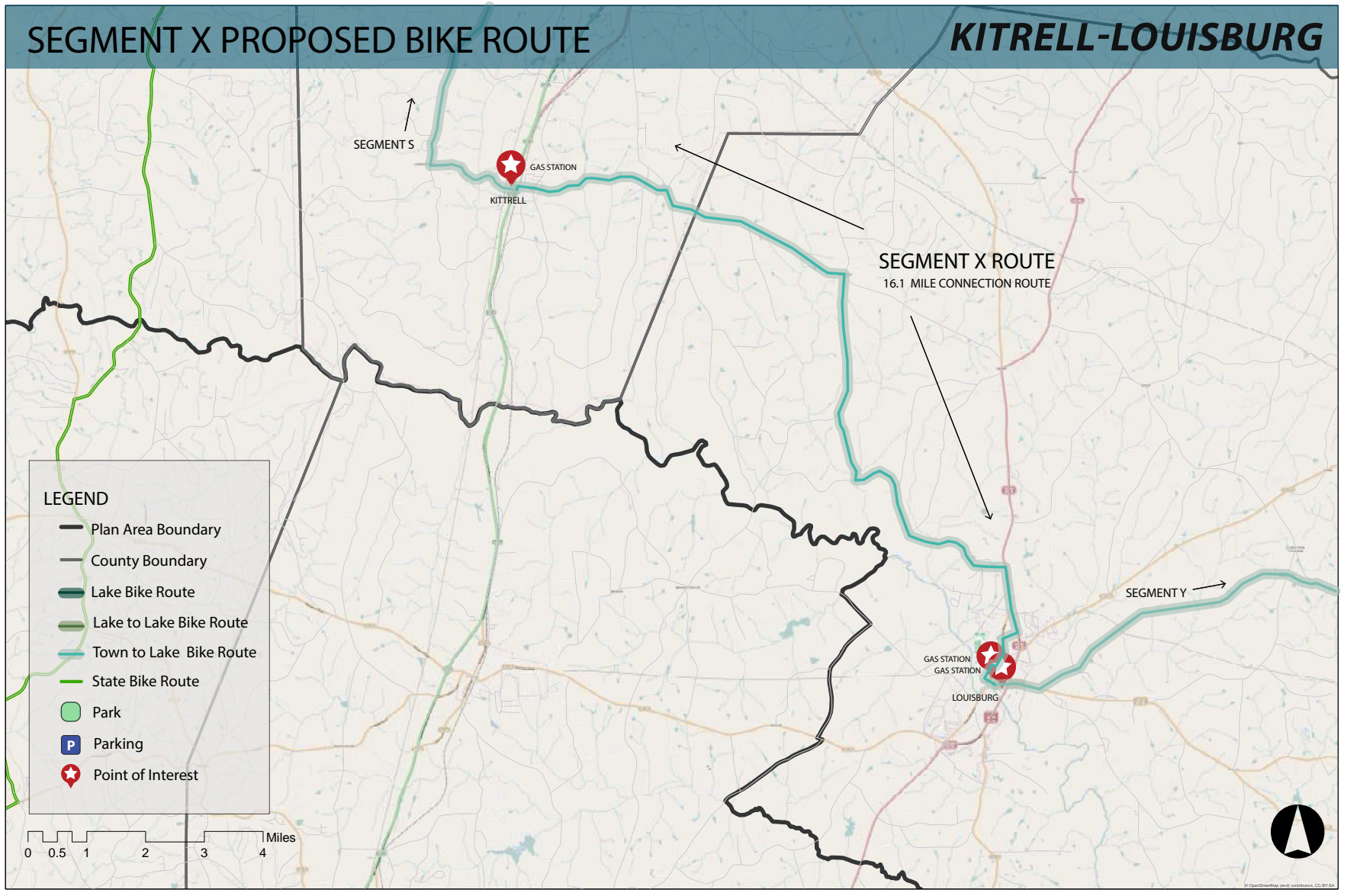




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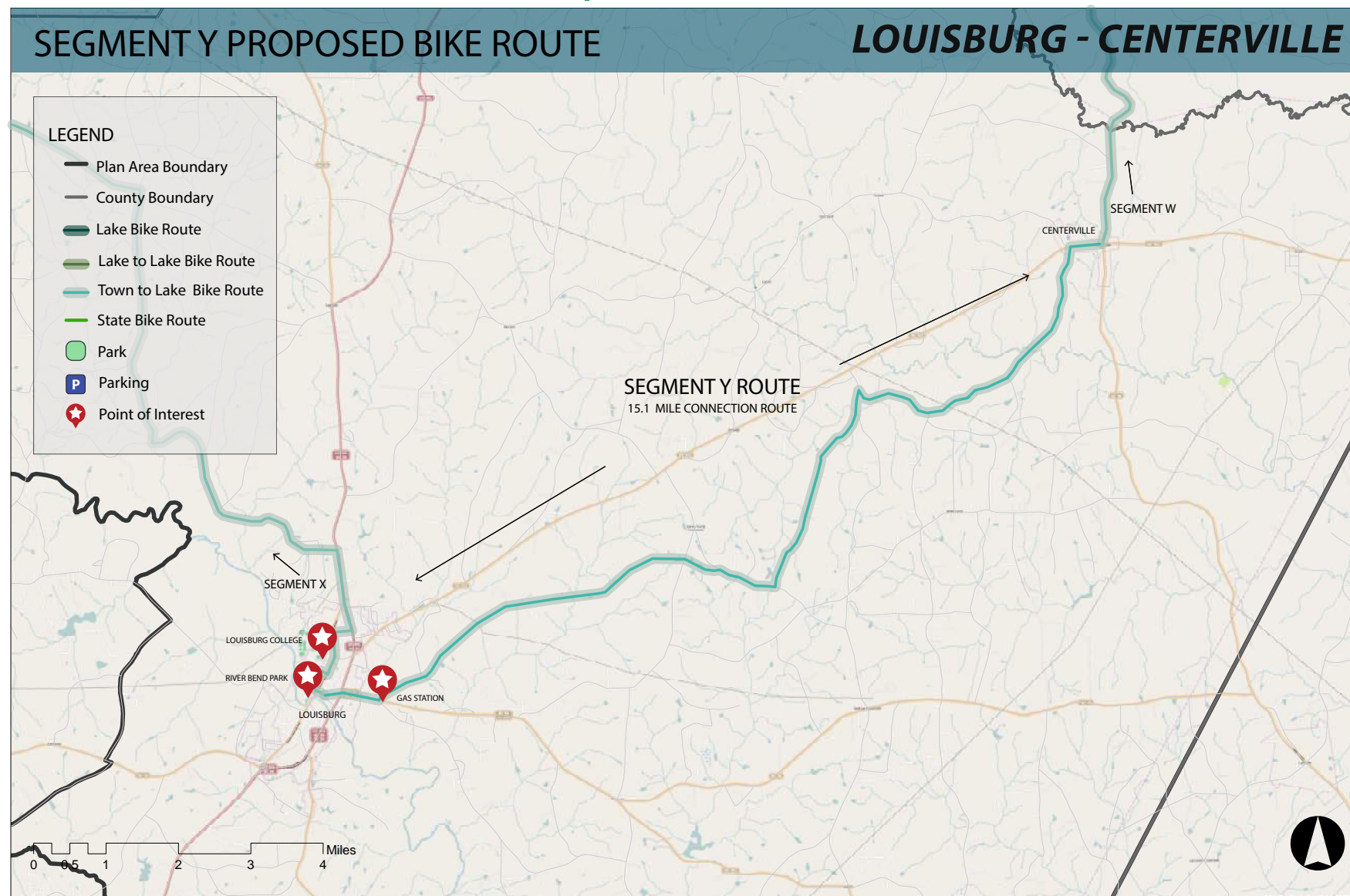


INDIVIDUAL ROUTE SEGMENTS | TOWN TO LAKE ROUTES





# INDIVIDUAL ROUTE SEGMENTS | TOWN TO LAKE ROUTES





## MUNICIPAL BICYCLE PLANNING

The proposed NCLD routes connect the region's municipalities to the region's lakes and other destinations. While these routes can serve as key components of local bicycle networks in communities across the region, further planning will be needed at the local level to provide comprehensive bicycle connectivity. Each community should develop a comprehensive bicycle plan that incorporates and builds upon any routes proposed as part of the regional network in this plan. Local planning combined with the regional efforts found in this document will strengthen opportunities for efficient implementation locally, regionally, and multi-jurisdictionally.

Key items to consider when developing a comprehensive municipal bicycle network include:

- Goal setting/Visioning
- Existing conditions analysis
  - ◇ Data collection and analysis
  - ◇ Related plans and initiatives
- Public input (throughout process)
- Infrastructure and programmatic recommendations
  - ◇ Community-wide network
  - ◇ Project development and prioritization
- Implementation structure
- Design and funding guides



Example municipal bicycle plan map

## CHAPTER 4: IMPLEMENTATION PLAN

### *PROJECT PRIORITIES & RECOMMENDATIONS*

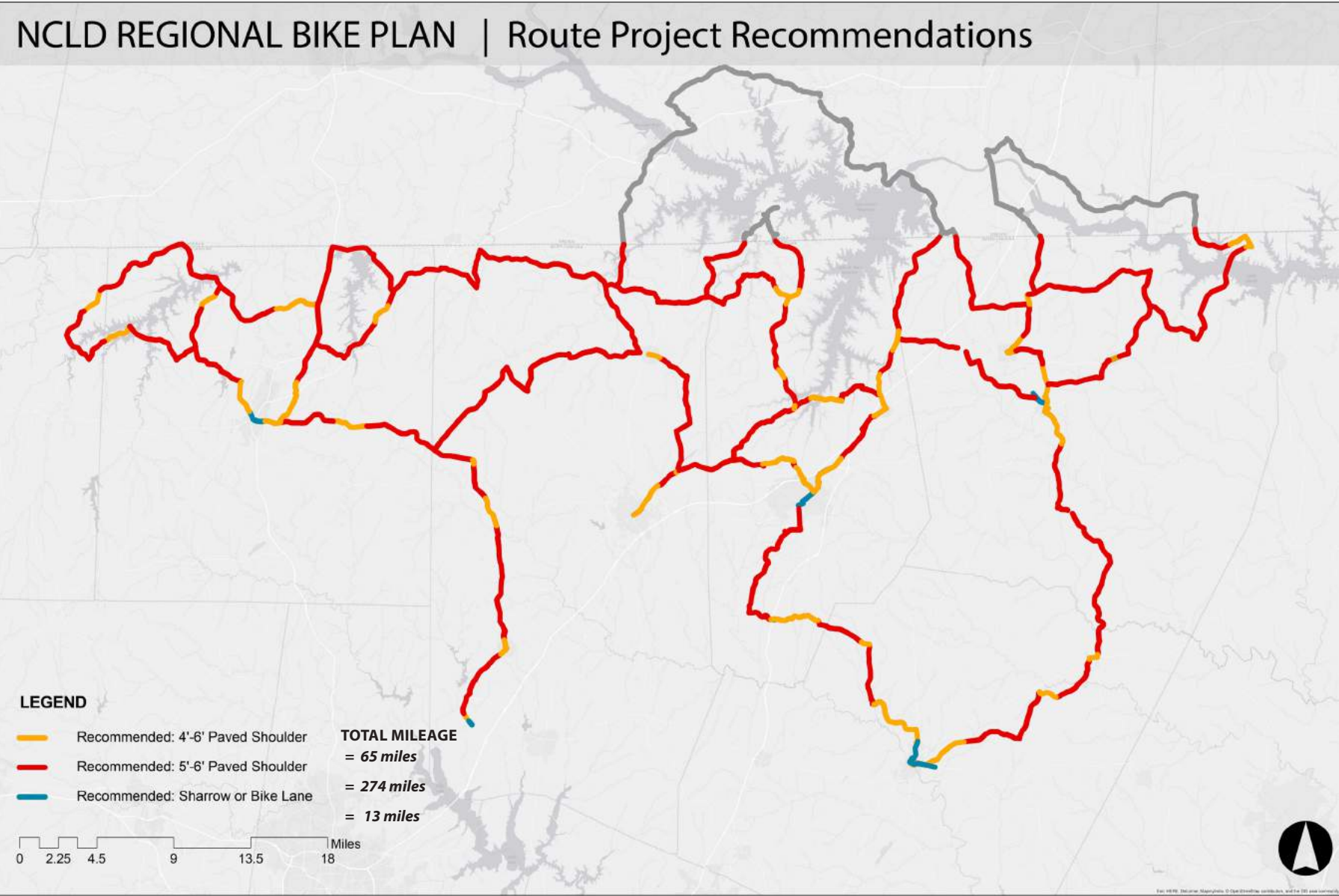
#### NCLD PROJECT RECOMMENDATIONS OVERVIEW

These project recommendations were developed to be used as a guide for future improvements to routes as roads are repaved or other opportunities arise. As situations and conditions of proposed routes change over time, the most suitable project recommendation may become different than what is suggested in this plan. The communities and planning agencies implementing and impacted by these routes should use their best judgment to determine the ultimate road improvements that work for them and the users of the routes. The on-road improvement recommendations generally consist of paved shoulders of varying width, bike lanes, or sharrows. Staff looked at roadway characteristics including roadway speed and existing curb and gutter to calculate project recommendations. Roadway speed was calculated by field work data and NCDOT Roadway Characteristic Shapefile as well as the Virginia Base Mapping Program Road Centerline Program Shapefile. Curb and gutter was determined by field work data and Google Street View. Initial project recommendations were made based on guidance from 2012 Guide for the Development

of Bicycle Facilities by the American Association of State Highway and Transportation Officials (AASHTO). For road segments with a speed limit of 50 mph and higher a recommendation of a paved shoulder of 5-6 feet range is preferred. For road segments with a speed limit of 45 mph or lower a recommendation of a paved shoulder of 4-6 feet range is preferred. For areas with curb and gutter a Shared-Lane Marking or Bike lane is recommended. A map of these facility recommendations across the NCLD region is found on the following page. Further detail on design guidance for bicycle facility types can be found in Appendix A.

This chapter also details priority action steps for the region. The actions steps presented do not cover every individual infrastructure, policy, and program recommendation of this plan. Rather, they call out priority items within each of these categories in order to provide guidance for moving forward on the most important items. For each action step, a lead agency, potential support agencies, and time frame for completion are suggested.

PROJECT PRIORITIES & RECOMMENDATIONS





## ACTION STEPS

Short-term = 1-2 years

Mid-term = 3-5 years

Long-term = 5+ years

Task	Lead Agency	Support	Details	Phase
<b>PRESENTATIONS AND ADOPTIONS</b>				
Present plan to Kerr-Tar COG Board	Kerr-Tar COG	Steering Committee	Present the plan to the Kerr-Tar COG Board for approval and adoption.	Short Term
Approve and/or adopt this plan - Municipalities	Municipal Planners	Kerr-Tar COG	Through adoption, the plan becomes a legitimate planning document of each municipality. Adoption shows that the city or town has been part of a successful, supported planning process and is a partner in implementation. It is key to securing funding from NCDOT and other state and federal agencies.	Short Term
Approve and/or adopt this plan - Counties	County Planners	Kerr-Tar COG	Through adoption, the plan becomes a legitimate planning document of each County. Adoption shows that the County has been part of a successful, supported planning process and are partners in implementation. It is key to securing funding from NCDOT and other state and federal agencies.	Short Term
Involve media to spread word to public and elected officials.	Kerr-Tar COG	Municipal and County Planners; Advocates	Kerr-Tar COG should utilize the media to announce the adoption of the bicycle plan. Media includes local newspapers, websites, and local television. When significant trails and facilities are constructed, the media should be notified in order to spread the word to the public. This will help build upon successes.	Short Term
<b>LOCAL AND REGIONAL COORDINATION</b>				
Establish an NCLD Bicycle and Pedestrian Advisory Committee (BPAC)	NCLD Bike Plan Committee	Kerr-Tar COG	An ongoing regional entity focused on bicycle issues will be instrumental to the implementation of this plan and promotion of biking in the NCLD region. This group should initially be formed of interested members of this plan's committee, and meet at least semi-annually to share implementation successes and challenges and track progress. The group can be divided into meaningful subcommittees such as policy, program, infrastructure, and evaluation groups.	Short Term
Make updates and expand upon the project web page	BPAC	Kerr-Tar COG	The site, "www.nclakesdistrict.com/bikeways" provides information to residents and tourists on the bicycle plan. More information about bicycling in the region should be added, including links to the destinations that can be reached for each route.	Mid-Term
Add information on the location of amenities to the project website	BPAC	Kerr-Tar COG, Municipal and County Planners	Gather the locations of bike parking, restrooms, and water fountains along bike routes and communicate it on the regional website. A public input form could help to crowd-source this data.	Continuous/Ongoing

**ACTION STEPS (CONTINUED)**

Short-term = 1-2 years

Mid-term = 3-5 years

Long-term = 5+ years

Task	Lead Agency	Support	Details	Phase
Schedule semi-annual project development meetings with NCDOT	Kerr-Tar COG	NCDOT Division 5; Municipal and County Planners	Many projects recommended in this plan could be developed as part of a roadway reconstruction, widening, or resurfacing project. Kerr-Tar COG should work with NCDOT to ensure that upcoming roadway reconstruction projects, including TIP projects, incorporate the bicycle improvements recommended in this plan. Further, this plan's recommendations should become an input into the development of the resurfacing schedule - roadways with bicycle recommendations should become higher relative priorities for resurfacing or widening than other roadways.	Short Term
Discuss bridge policy application with NCDOT	Kerr-Tar COG	NCDOT Division 5, Municipal and County Planners	During one of the project meetings above, confirm that all bridges along roadways that permit bicycles will be accommodated with bike facilities in any bridge replacement or repair project (where feasible during repair projects). Identify bridges along the proposed network with insufficient handrails and work to install bicycle-safe handrails on those bridges in accordance with NCDOT's bridge policy.	Short Term
<b>EVALUATION AND DATABASES</b>				
Share GIS data with the PBIN as updates are made to both existing and planned bicycle facilities	Kerr-Tar COG	Municipal and County Planners	The Pedestrian and Bicycle Infrastructure Network (PBIN) is a statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking facilities in North Carolina. The PBIN is maintained by the North Carolina Department of Transportation Division of Bicycle and Pedestrian Transportation and Institute for Transportation Research and Education (ITRE). More information can be found here: <a href="http://www.itre.ncsu.edu">www.itre.ncsu.edu</a>	Continuous/ Ongoing
Publish Annual Performance Report	BPAC	Kerr-Tar COG, Municipal and County Planners	Publish an annual report to provide an update on progress made during that year to advance bicycle transportation in the NCLD region. Kerr-Tar COG should lead this effort, with support and content development provided by local staff. This report will provide an objective measurement of progress.	Annually
Develop bicycle count program	Kerr-Tar COG	Municipal and County Planners	A key method to evaluate bicycle activity and needs is to conduct professional counts. Counts should be recorded in the annual performance report and coordinated with NCDOT's Division of Bicycle & Pedestrian Transportation.	Annually
Online form for bicycle facility request	Kerr-Tar COG	Municipal and County Planners	Provide a web-based service that allows residents to report hazards, such as debris in a shoulder or trail, and request new bicycle facilities and connections. Requests should be collected and communicated to planners within the relevant jurisdiction, and used to update this plan in the future. The website should be linked to municipal and county websites.	Short Term
Update this plan	Kerr-Tar COG	BPAC	Update this plan after five years to reflect implementation progress, unexpected challenges, and changes to the regional landscape.	Mid-Term

## ACTION STEPS (CONTINUED)

Short-term = 1-2 years

Mid-term = 3-5 years

Long-term = 5+ years

Task	Lead Agency	Support	Details	Phase
INFRASTRUCTURE IMPROVEMENTS				
Identify and secure funding sources for priority project implementation	Municipal and County Planners	Kerr-Tar COG, BPAC	Multiple funding sources should be sought. A variety of funding opportunities are listed toward the end of this section.	Short Term
Complete priority projects	Municipal and County Planners, Kerr-Tar COG	NCDOT, NCDENR, NCDPR	Build priority projects identified in this plan (submit bicycle projects to State TIP, add bicycle projects to local CIP lists)	Mid-Term
Develop a long term funding strategy	Municipal and County Planners	Kerr-Tar COG, NCDOT, BPAC	To allow continued development of the overall system, capital funds for bicycle and pedestrian facility construction should be set aside every year, even if only for a small amount (small amounts of local funding can be matched to outside funding sources). Funding for an ongoing maintenance program should also be included in the county and town operating budgets. Multiple funding sources should be sought from federal, state, and health sources.	Short Term
PROGRAMS				
Establish Safe Routes to School Program in Towns and Cities	School Districts	Kerr-Tar COG, BPAC, SRTS Program	Apply for Safe Routes to School funding for planning and implementation.	Short Term
Apply for "Bicycle Friendly Community" designation by League of American Bicyclists	Municipalities	BPAC	Complete an application for the Bicycle Friendly Community designation.	Short Term
Hold first Police Officer Bicycle Training	Municipal and County Planners, Kerr-Tar COG	BPAC	Arrange initial training and invite police departments from around the region.	Short Term
Educate internal staff on bicycle and pedestrian-related issues.	Municipal and County Planners	Kerr-Tar COG, BPAC	Train relevant local government staff who play roles in implementation, design, construction, enforcement, and maintenance of roadways and bike facilities. Local staff should be familiar with the Regional Bicycle Plan.	Short Term
Develop local hard copy and online bicycle maps and brochures	Municipal and County Planners	BPAC, Health staff and advocates	A hardcopy and online map displaying bicycle facilities, suggested bike routes, destinations, and educational materials will be useful for tourists and residents. Maps for individual communities can provide the level of detail needed for navigation and supplement the regional brochure that was developed along with this plan. These maps should be updated every 3-5 years.	Mid-Term



## ACTION STEPS (CONTINUED)

Short-term = 1-2 years

Mid-term = 3-5 years

Long-term = 5+ years

Task	Lead Agency	Support	Details	Phase
Establish maintenance standards	BPAC	Municipal and County Staff	Establish minimum standards for maintenance of bikeways (replacement of pavement markings, sweeping of debris, etc) and encourage local staff to follow these standards and set up hotlines for reporting of issues.	Mid-Term
Hold a "WatchForMe NC" workshop in the region	NCDOT	Kerr-Tar COG, Municipal and County Staff	Present the campaign to interested municipalities and counties with information on how to implement it locally.	Short Term
Celebrate and promote Bike Month	BPAC	Municipal and County Planners, Health staff and advocates	Bike Month provides an opportunity to encourage new bicyclists in a group setting with entertainment, prizes, and media attention. Promote and expand Bike Month annually. Consider programs such as Ciclovias to generate interest.	Short Term

### POLICIES

Incorporate this Regional Bicycle Plan's recommendations into long-range transportation and land use planning documents and local comprehensive plans.	Kerr-Tar COG	NCDOT, City and County Planners	Recommendations from this plan should become the starting point for the accommodation of bicycle facilities in future transportation and land use planning documents around the region	Ongoing
Revise Municipal and County Codes of Ordinances.	Municipal and County Planners	Kerr-Tar COG	Revise ordinances to better accommodate bicycle infrastructure and considerations.	Short Term
Initiate regional Transfer of Development Rights program	Kerr-Tar COG	Municipal and County Planners	Establish a regional program to protect natural and working landscapes while encouraging appropriate development in population centers that supports bicycle transportation.	Long-Term
Adopt form-based codes	Municipal Planners		Replace use-based zoning codes with form-based zoning in growing municipalities to support growth that will encourage and enable bicycle transportation.	Mid-Term
Consider Complete Streets Policy	Municipal Planners	Kerr-Tar COG	The municipalities of the Kerr-Tar COG should consider Complete Streets policy guidance language to ensure commitment to developing roadways that accommodate all users.	Mid-Term

### BICYCLE TOURISM ECONOMY

Create a bicycle tourism committee (or subcommittee of BPAC)	Kerr-Tar COG, BPAC, Chambers of Commerce	Municipalities, Businesses, etc.	The cultivation of relationships among businesses, cycling groups, government agencies, NCDOT, local chambers of commerce, etc. is essential for creating and marketing a bicycle-friendly region. This group should prioritize steps to grow the bicycle tourism economy.	Short Term
Track return-on-investment measures	Department of Commerce, Chambers of Commerce	Municipalities, Kerr-Tar COG	Further measurement is needed to quantify the many economic benefits of bicycling and evaluate its success in the region.	Mid-Term

## FUNDING SOURCES

Several potential funding sources of **Safe Routes to School** exist:

- Mini-grants from the National Center (when available)
- Local government capital improvement plans (CIPs)
- Private foundation funding (non-governmental sources)
- Federal funding under MAP 21 Transportation Alternatives Program

<http://saferoutespartnership.org/state/srts-in-your-state/northcarolina>

**Rails to Trails** may be funded from a number of existing programs:

- Federal Transportation Enhancement (TE) funding administered by NCDOT
- Recreational Trails Program (RTP) grant administered by NCD-EQ (when available)
- Adopt-A-Trail (AAT) grant administered by NCDEQ
- REI Gives Program (rei.com/aboutrei/gives)

[http://trade.railstotrails.org//page.php?identifier=10\\_definitions](http://trade.railstotrails.org//page.php?identifier=10_definitions)

**Recreational Trails Program** is a federal trails grant program that assists communities to fund trails and recreation related needs. Funds may be used to develop and maintain trail facilities for both motorized and non-motorized uses.

[http://www.ncparks.gov/About/trails\\_RTP.php](http://www.ncparks.gov/About/trails_RTP.php)

**Community Development Block Grant Program (CDBG)** allows for certain use of funds relevant to bike path development. Department of Housing and Urban Development or HUD guidance is referred in a CDBG memorandum at the above webpage address.

<http://www.hudexchange.info/resource/3469/cdbg-memorandum-using-cdbg-funds-to-creat-a-bike-path/>

**People for Bikes Community Grant Program** provides funding for important and influential projects that leverage federal funding and build momentum for bicycling in communities. These projects include bike paths and rail trails, as well as mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

<http://www.peopleforbikes.org/pages/community-grants>

**NCDOT** funding for bicycling and pedestrian projects can come from several federal programs, those prioritized by the strategic mobility formula are bolded: **Safe Routes to School (SRTS)**, **Transportation Alternatives Program (TAP)**, **Surface Transportation Program (STP)**, Congestion Mitigation and Air Quality Improvement (CMAQ), Highway Safety Improvement Program (HSIP)

<http://www.ncdot.gov/bikeped/funding/projects/>

**Highway Safety Improvement Program (HSIP)**: continued by MAP-21 as a federal-aid program aiming to significantly reduce traffic fatalities and serious injuries on all public roads. The Local and Rural Road Safety Program is mandated to deliver safety programs and products to agencies and stakeholders to improve safety on local and rural roads.

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

**The Parks and Recreation Trust Fund (PARTF)** provides dollar-for-dollar matching grants to local governments for parks and recreational projects that serve the public.

[http://www.ncparks.gov/About/grants/partf\\_main.php](http://www.ncparks.gov/About/grants/partf_main.php)

## CONCLUSION

The recommendations included in this plan form the basis for the development of a vibrant and viable bicycle plan that acts as a connection between the lakes and communities as well as other significant features in the region. The network will provide the option of bicycling as a practical mode of transportation. This plan is meant to serve as a working document to guide transportation planning decisions made over time in the region.

In order to continue the plan's development and sustainment, a group of interested NCLD Bike committee members will contribute to this plan's progression. This group will handle future efforts to continue implementing the bike plan and adjusting proposed and existing routes as well as recommending new ones as they are suggested. The group will include representatives of organizations affected by the bike plan such as local governments and other interested organizations. For more information and updates on the NC Lakes District Regional Bike Plan, please visit the website: <http://www.nclakesdistrict.com/bikeways.html>



*Existing US Bike Route 1  
Proposed Kerr-Lake Segment C Route*



## APPENDIX A: DESIGN GUIDELINES

### APPENDIX A FEATURES

On-Road Facilities	Off-Road Facilities	Retrofitting Road to Add Bikeways	Additional Features
Sidepath	Crushed Stone Trail	Roadway Widening	Bicycle Route Maintenance, Support, Safety
Paved Shoulder	Natural Surface Trail	Lane Reconfiguration	Signage
Bicycle Lane	Boardwalk	Lane Narrowing	Resources
Sharrows	Bridge		
Buffered Bike Lane			

## ON-ROAD FACILITIES

As the project is implemented, bike path designs, paving type and/or width could change because of alterations in traffic patterns, changes in land use or local interest. Below are some primary on-road facilities recommended for this plan. Please refer to the *NCDOT Complete Streets Planning and Design Guidelines*, 2012 for more information, and see the following link for typical NCDOT cross-sections:

<https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/highwaycrosssections.pdf>

### SIDEPATH (MULTI-USE PATHS ALONG ROADWAYS)

Sidepaths are multi-use paths that are exclusively located adjacent to a roadway, typically within the road right of way. This type of path may be utilized by pedestrians, joggers, wheelchair users, and other non-motorized users as well as allowing for two-way, off-street bicycle use. Commercial residential driveways should be limited. Sidepaths provide available space for bicycle and pedestrian travel where on-road bicycle facilities are not feasible due to traffic volumes, speeds, and/or roadway configuration.

Below is a description of the surface, width, and available uses for a sidepath. Multi-use path, in this case, is a path that is used in different forms of mobility.

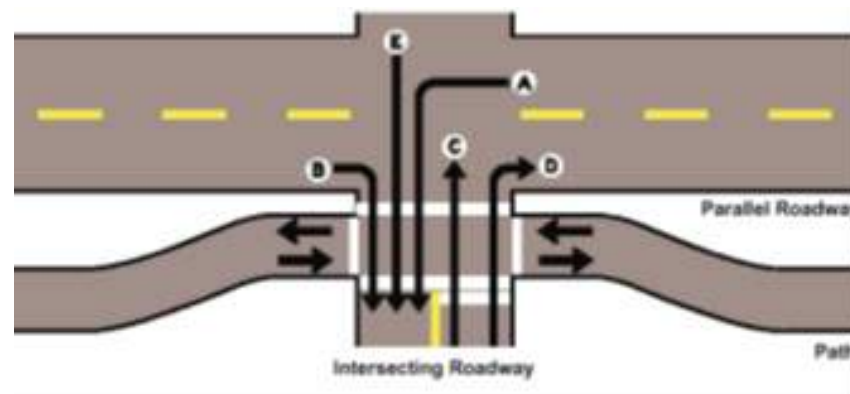
- Surface: Asphalt or Concrete
- Width: 8-10 Feet
- Uses: Bicycling or Walking

Design Considerations for Sidepaths: A sidepath for the North Carolina Lakes District Regional Bicycle Plan will have a regional economic impact in areas where most individuals frequent, especially near Lake Gaston, Kerr Lake, Hyco Lake, and Mayo Lake. Initially, sidepath options can include the following:

- A 10 – foot wide, detached two-way multi-use path.
- An 8 – 10 foot wide, one-way multi-use path.
- A combination of detached and attached multi-use path.



Sidepath (Multi-Use Trails)



Sidepath diagram

## PAVED SHOULDER

A paved shoulder refers to the part of the highway that is adjacent to the regularly traveled portion of the highway that is on the same level as the highway. In rural areas with low volumes of traffic, paved striped shoulders of at least 4 feet are needed for bicycle and pedestrian travel. Paved shoulders provide the operating space for bicyclists and pedestrians as well as space for emergency vehicles. When curb and gutter is completed on a new roadway, paved shoulders should be rehabbed to full bicycle lanes.

Below is a description of the surface, width, and available uses for paved shoulder:

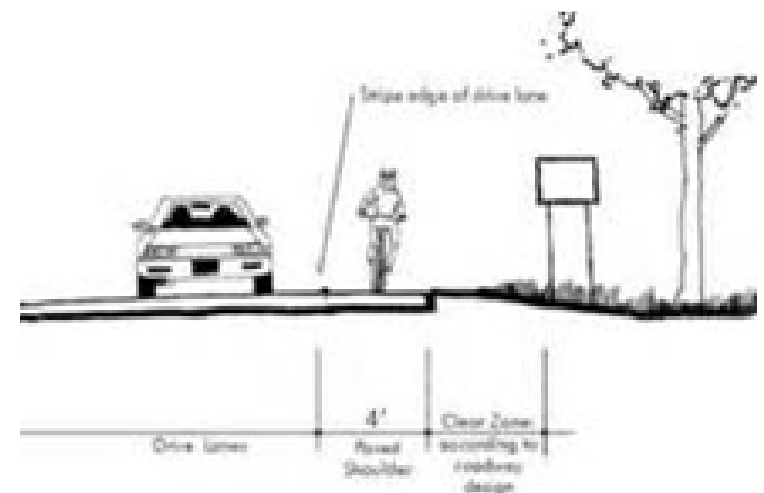
- Surface: Asphalt
- Width: 4-6 Feet
- Uses: Bicycling

Design Considerations for Paved Shoulders: Paved Shoulders for the North Carolina Lakes District Regional Bicycle Plan will provide considerable benefits to bicyclists and pedestrians in the region. Paved shoulders will reduce the amount of maintenance needed on roads; it will increase safety issues by providing additional space and recovery area for motorists, maintenance crews, and emergency responders in case of mechanical difficulty, a flat tire or other emergency. Initially, paved shoulders can include the following:

- All paved shoulders for bicycle, pedestrian, and motor vehicle use a minimum of 4 feet.
- Paved shoulders are measured at 6 feet width which helps bicyclists and pedestrians avoid debris and vehicle conflicts.
- On roadways with a speed limit of 50 miles per hour or more, 5 to 6 feet shoulder widths is recommended.



*Pedestrian riding his bicycle on a paved shoulder*



*Paved shoulder diagram*



### BICYCLE LANE

A bicycle lane is a portion of the roadway designated for preferential and exclusive use of individuals who cycle to various locations. Bicycle lanes are most commonly used in urban and village settings which aid the orderly flow of bicycle traffic but commercial driveways should be limited. Located next to motor vehicle travel lanes, bike lanes move in the same direction as vehicular traffic and are designated by paving markings as only for cyclists.

Below is a description of the surface, width, and available uses for paved shoulder:

- Surface: Asphalt
- Width: 4-6 Feet
- Uses: Bicycling

Design Considerations for Bicycle Lane: Bicycle Lane for the North Carolina Lakes District Regional Bicycle Plan will enable bicyclists to travel at their preferred speed. Bicycle Lane can facilitate predictable behavior and movements in the region. They can provide safety benefits to individuals, particularly in congested areas. Bike lane presence also visually narrows the roadway travel lanes to encourage lower vehicle speeds. Initially, bicycle lanes can include the following:

- Bicycle lanes should be one-way facilities.
- Bicycle lanes should carry bike traffic in the same direction as adjacent traffic.
- Pavement surfaces should be level and smooth.



*Bicyclist using a bicycle lane*



*Bicycle Lane signage in a rural community*

### SHARROWS (SHARED LANE MARKING)

Sharrows markings align cyclists and remind motorists the potential presence of cyclists and their right to travel with automobile traffic. The markings are utilized to establish the correct positioning within the lane and to encourage bicycle travel. A representation of a bicycle with two chevrons above it to symbolize motor vehicles and bicycles can share the same lane.

Below is a description of the surface, width, and available uses for sharrows:

- Surface: Asphalt
- Width: Please see AASHTO Guide for the correct placement
- Uses: Bicycling

**Design Considerations for Sharrows:** Sharrows for the North Carolina Lakes District Regional Bicycle Plan will advertise the presence of bikeway routes to all users. It will indicate the safest path for bicycle users through difficult situations, such as adjacent to parked cars, or through busy intersections. Sharrows also alerts drivers to the potential presence of bicyclists and shows the lateral position bicyclists are likely to occupy within the street. Initially, sharrows can include the following:

- 35 mph maximum speed for sharrow use.
- Sharrows should be placed 4 ft. from curb face or edge of pavement in locations without on-street parking.
- Sharrow markings should correspond to the difficulty bicyclists experience by taking the proper travel paths
- Shared lane markings are commonly placed on narrow travel lanes without spacing to mark bike lanes, adjacent to parking lots and in tandem with 14 foot wide outside lanes.
- Shared lane markings should be placed immediately after an intersection and spaced at intervals no greater than 250 ft.



*Sharrows marking*



*Bicyclist and motor vehicles riding in the same lane*

### **BUFFERED BIKE LANE:**

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space separating the bicycle lanes from the adjacent motor vehicle travel lane and parking lane. Buffered bike lane increase the space between the travel lane or parked cars and the bike lane. In areas with high volumes and speed of motor vehicle traffic, the buffered bike lane is a good choice. The buffer allows for a safer and more comfortable ride for more types of bicyclists.

Below is a description of the surface, width, and available uses for buffer bike lane:

- Surface: Asphalt
- Width: At least 7 feet wide for the bicycle travel area, with at least a 2 foot buffer. Mark with a chevron or diagonal hatching if the buffer is 3 feet or wider, with dotted lines inside the buffer boundary where cars cross.
- Uses: Bicycling

Design Considerations for Buffer Bike Lane: Buffered Bike lanes for the North Carolina Lakes District Regional Bicycle Plan will provide space for cyclists to pass one another without encroaching into the travel lane. This provides motorists greater distance from cyclists in a bike lane. Buffered bike lanes also provide a cushion of space with motor vehicles on streets with narrow bike lanes. By providing the additional space, cyclists can avoid potential obstacles such as debris. Initially, a buffered bike lane can include the following:

- Buffer shall be marked with 2 solid white lines with diagonal hatching if 3 feet in width or wider.
- A buffer bike lane shall have bicycle lane word and arrow markings that symbolize preferential use by bicyclists.



*Buffer Bike Lane*



*Buffer Bike Lane with Bike Lane signage*



## OFF-ROAD FACILITIES

As the project is implemented, the majority of facilities in the current plan are on-road, but as the NC Lakes District Regional Bicycle Plan moves forward, off-road facilities can be incorporated. Off-road facilities have access across natural barriers and trails that are free of debris, grass, and snow. Planning for off-road facilities in the NC Lakes District Region will ensure residents in the region have viable choices for personal transportation now and in the future. The following off-road facilities types may vary in development in width depending on funding availability. Below are the off-road facilities recommended in this plan. **Note: These off-road recommendations may not be appropriate for certain on-road bicycles.**

### CRUSHED STONE TRAILS:

Crush Stone Trails can provide individuals an all-weather surface. This type of trail is mostly utilized by pedestrians, bicyclists, and joggers. Wheelchair users and other non-motorized users can benefit from using crushed stone trails. Crushed Stone Trails provide available space for bicycle and pedestrian travel where off-road bicycle facilities are not directly in the way of traffic configuration.

Below is a description of the surface, width, and available uses for crushed stone trails:

- Surface: Crushed stone or granite dust
- Width: 6 Feet
- Uses: Walking or Bicycling

Design Considerations for Crushed Stone Trails: Crushed Stone Trails for the North Carolina Lakes District Regional Bicycle Plan will provide enough space for cyclists and pedestrians right-of-way share. This gives individuals a rustic approach to the natu-

ral environment. Crushed stone trails provide a cushion of space for mobility travel options. By providing a rustic approach to the natural environment, individuals and cyclist can avoid potential obstacles such as debris. Initially, crushed stone trails can include the following:

- All trail construction shall include standard clearing limits as follows: brush and branches shall be removed to a height of 8 feet within 3 feet of the trail.
- Remove all roots and organic debris to a depth of 4 inches, where appropriate.



Crushed Stone Trail



Crushed Stone Trail

### NATURAL SURFACE TRAIL:

Natural surface trails are unpaved trails that serve a variety of recreational groups, walkability, and local connectivity. This type of trail designed can accommodate multiple uses, such as hiking, equestrians, and bicycling than trying to adapt existing trails for multiple uses. For the North Carolina Lakes District Regional Bicycle Plan, natural surface trails will be beneficial around Lake Gaston, Kerr Lake, Hyco Lake, and Mayo Lake.

Below is a description of the surface, width, and available uses for crushed stone trails:

- Surface: Natural
- Width: 2 – 4 Feet
- Uses: Walking or Mountain Biking

Design Considerations for Natural Surface Trails: Natural surface trails for the North Carolina Lakes District Regional Bicycle Plan will accommodate the widest range of users among trail types presented. These paths, while constructed with native surface materials or compacted, can provide wide treads and clearances potentially accommodating significant volumes of hikers, equestrians and bicyclists. Initially, natural surface trails can include the following:

- Tread width varies from four to eight feet.
- Obstacles occasionally present with native materials.



*Natural Surface Trail*



*Natural Surface Trail*

**BOARDWALK:**

Boardwalk is a constructed walkway for pedestrian use. In the North Carolina Lakes District Regional Bicycle Plan, boardwalks will be an important factor for encouraging people to walk and bike. Boardwalks provide available space for bicycle and pedestrian travel that will be suitable for safety and convenience by providing designs of significant sections that will be suitable for transportation purpose.

Below is a description of the surface, width, and available uses for boardwalk:

- Surface: Wood or Manufactured Decking
- Width: 8 feet +
- Uses: Walking/Bicycling

Design Considerations for Boardwalk: Boardwalks for the North Carolina Lakes District Regional Bicycle Plan will be a viable assess for providing individuals more walkability opportunities in the region. Boardwalks will have a realistic trail system that will effectively meet the needs for residents and tourist who visit the region. Initially, boardwalks options can include the following:

- Boardwalks should be used for individuals to help minimize the bicycle impact to the natural environment. In other words, an elevated pathway can help individual expierence a safe and enjoyable bike ride without doing any damage.



*Boardwalk during the fall season*



*Boardwalk during the spring season*



### BRIDGE:

Bridges are structures providing passages over a river or a roadway. Bridges offers guidance for bike facilities on bridges. Particularly 42' to 48' railing and standard width of bike lane or shoulder as on approaches. Bridges for the North Carolina Lakes District Regional Bike Plan will be utilized by pedestrians, bicyclists, joggers, wheelchair users, and other non-motorized users. Bridges in the region will provide enough space for multi uses purposes that individuals can travel freely in the region.

Below is a description of the surface, width, and available uses for bridges:

- Surface: Varies
- Width: 8 feet +
- Uses: Walking/Emergency Access/Bicycling

Design Considerations for Bridges: Bridges for the North Carolina Lakes District Regional Bicycle Plan will promote transportation opportunities in the region. Bridges will serve the connections for the pedestrian and bicycle networks. Initially, boardwalks options can include the following:

- Improve the existing bridge networks over river crossing locations that will create the largest impact.



*Bridge during the spring season*



*Foot Bridge during the spring season*

## RETROFITTING ROAD TO ADD BIKEWAYS

The opportunity may arise to better accommodate a bicycle route through retrofitting. This can be accomplished by roadway widening or reconfiguring the lanes. In addition, a travel lane in a roadway may be narrowed to accommodate a bike lane. When retrofitting roads to accommodate bicycle facilities, the width recommendations in AASHTO Sections 4.5 and 4.6 for paved shoulders and bicycle lanes should be followed. Width of at least 5 feet is recommended from the face of a guardrail, curb, or other road-side barriers. (AASHTO section 4.5).

### ROADWAY WIDENING:

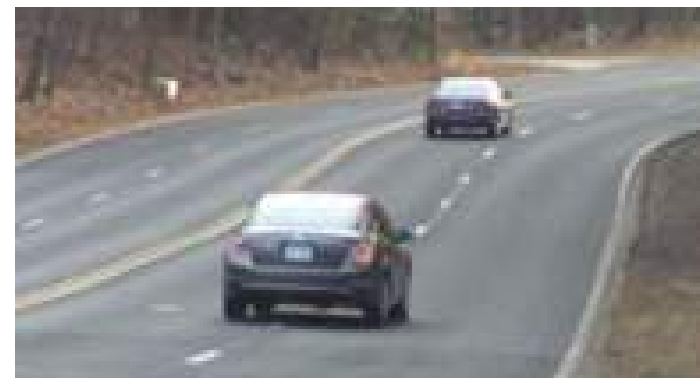
If the roadway is wide enough or if additional right-of-way can be acquired, paved shoulders or bike lanes can be added. Care needs to be taken in roadway widening projects to make sure that rough joints are not created on the shoulder where cyclists ride (AASHTO P. 4-29).



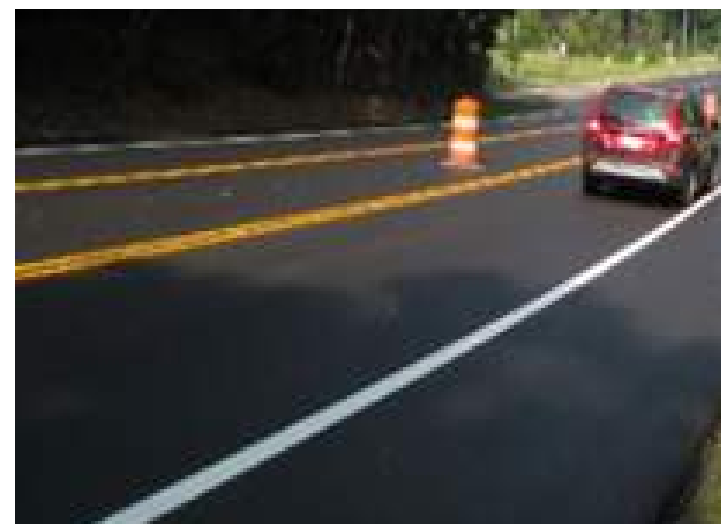
*Paved shoulders or bike lanes can be added*

### LANE RECONFIGURATION:

Bicycle lanes can be created on both sides of the street if a single lane can be removed. For example, a four-lane road with two lanes in each direction might be modified to allow for a bike lane on either side of the road with one lane in each direction with a central turn lane.



*Lane Reconfiguration-Before*



*Lane Reconfiguration-After*

### **LANE NARROWING:**

If the existing lane width is 14 feet, a bicycle lane can be added using the existing road, thus allowing for a 10 feet wide lane for vehicles and a 4 feet wide bicycle lane. The width allowed should be dependent on engineering judgement which considers traffic speed, road curvature and other factors. (AASHTO Pp. 4-28 through 4-30).



*Bike Lane Added to Existing Road, Creating a Cycle Lane*

## **BICYCLE ROUTE MAINTENANCE, SUPPORT AND SAFETY**

The routes along which cyclists ride need to be maintained properly, since deterioration or debris that would not be a problem to motorists could pose a major safety hazard to cyclists. The following components are considered important to creating a supportive and safe physical environment for cyclists:

### **TRANSITION FROM GUTTER TO PAVEMENT**

It is much safer for cyclists if the inlet grate is not extended out into the traveled route and located totally within the street gutter. The travel area width for bicycles should exclude the gutter width, since the joint is not always smooth and is often difficult to ride along. Pavement should be maintained so that a ridge does not build up at the gutter to pavement transition.

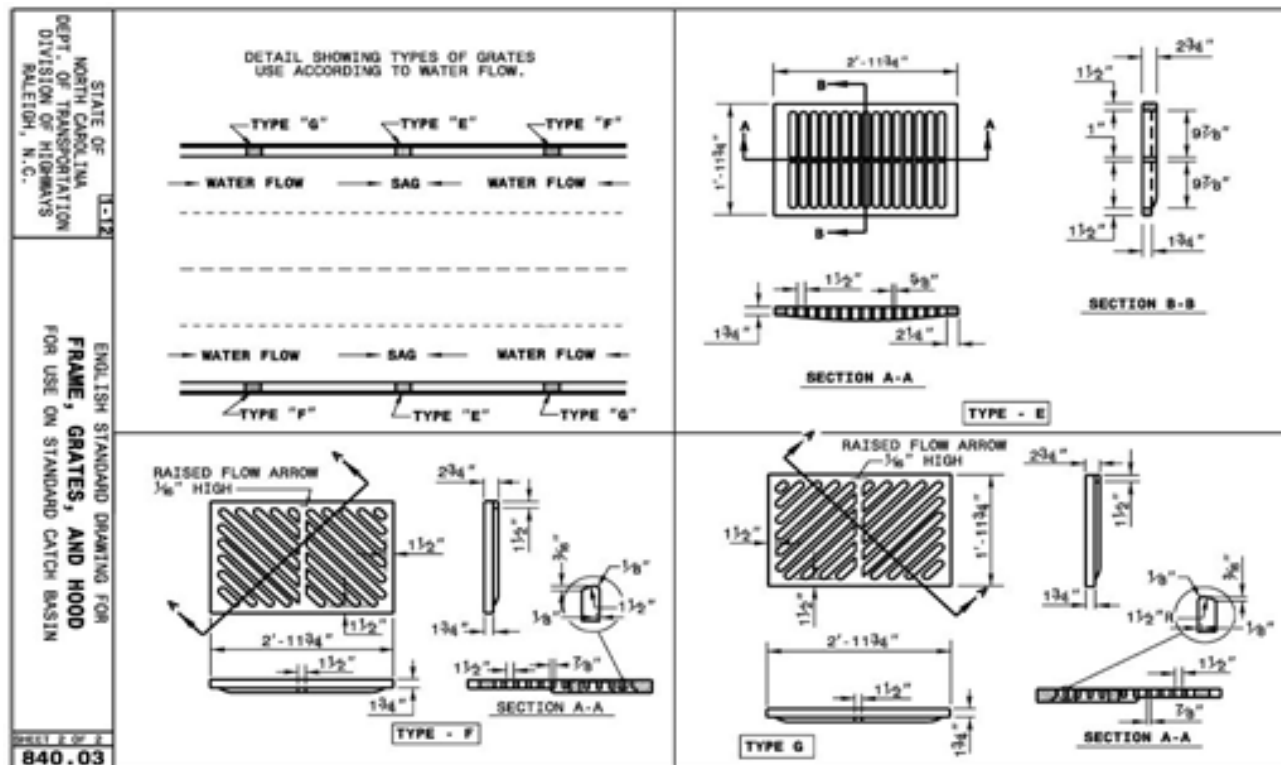


*Example of Travel Area Allowing for Gutter*



## DRAINAGE GRATES

The orientation of drainage grates is very important to the safety of cyclists. Openings of the grates should not run parallel to the curb. A gap of one inch or less between the drainage grate and its frame is advisable with openings in the slots of the grate narrow enough to prevent bicycle wheels from being caught. Drainage grates as well as utility covers should be flush with the road surface (AASHTO, Pp.4-55 and 4-56).



NCDOT recommends the use of type "E," "F," or "G" grates on standard catch basins.

### RUMBLE STRIPS

Rumble strips are a road safety feature designed to alert inattentive drivers that they are drifting from the roadway. The noise created rouses drivers and allows them to return safely to the roadway. The rumble strips can be difficult for cyclists to traverse and can cause the bicycle to shudder vigorously. Cyclists are forced to share the travel lane with motorists if rumble strips are placed along the right side of a road with a narrow shoulder or no shoulder space.

In order to accommodate both cyclists and motorists, a minimum clear path of four feet from the rumble strip to the outside edge of the paved shoulder is recommended. Another alternative is to place a rumble strip under the edge line to reduce the impact on the road shoulder and also providing the advantage of increasing the edge line's visibility at night.

Gaps in the rumble strips placed at 40 to 60 foot intervals allow cyclists to travel across the strip pattern. A gap of 12 feet allows cyclists to enter the shoulder without having to cross the rumble strip (AASHTO, P.4-9).



*Rumble Strips Allowing for Cycle Travel*

### ROADWAY SURFACING

Bicycles are more susceptible to changes in the roadway surface than motor vehicles. Bicycling conditions can be degraded by bumps, potholes, cracks and other surface defects. As was seen in the rumble strip section above, a smooth surface is important to the safety and comfort of the cyclist. Compaction and uneven settlement after trenching and construction can also present hazards for cyclists if this work affects the roadway surface near the curb where cyclists normally travel. Road overlay projects can improve conditions for cyclists, but care must be taken not to leave a ridge partially in the shoulder where cyclists travel (AASHTO, Pp.7-2 and 7-3).



*Roadway Surfacing creating a Potential Hazard for cyclists near curb*

## LANDSCAPING

Landscaping can enhance the appearance and appeal of a cycle route, but should be designed and maintained to ensure that roots and overgrowth do not impede cyclists by making the path hazardous. Sight lines should be maintained at intersections and driveways (AASHTO, P.7-4).



*Route Maintained to Minimize Overgrowth and Keep Sight Lines*

## MAINTENANCE MANAGEMENT PLAN

In order for the facilities to be maintained properly, a maintenance program is needed for the cycle routes. Sufficient funds should be budgeted, with neighboring jurisdictions joining forces for reduced cost and greater efficiency. A maintenance program should be established with practices that benefit the environment such as using recyclable materials and reducing impervious surfaces in order to develop a sustainable bike route infrastructure. The maintenance program should include the establishment of maintenance standards and a schedule for carrying out the maintenance activities and inspections (AASHTO, P.7-1). NCDOT will be responsible for much of the maintenance responsibility because this recommended program is on primarily State-maintained roads.



*Cycle Routes Should have a Maintenance Management Plan*

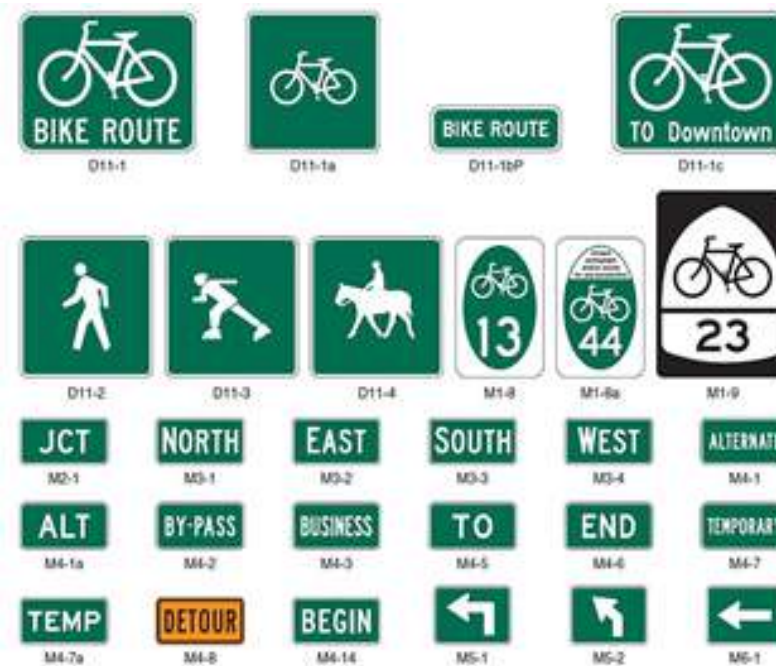


# SIGNAGE

## ON-ROAD FACILITY SIGNAGE

The routes for the NC Lakes District Regional Bicycle Plan are currently on-road and some signage will need to be placed in the public roadway rights of way. Any signage required for NC Lakes District Regional Bicycle Plan in the public roadway rights of way or where federal transportation funding is sought for signage would need to adhere to the Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices( MUTCD), Part 9 (currently Pp. 789-816 of the 2009 edition). Certain experimental treatments for bike-related signage, pavement markings and traffic signals are subject to approval by the FHWA and can be used once approved. See the following FHWA link that can help determine what can be implemented and what is currently experimental:

[http://www.fhwa.dot.gov/environment/bicycle\\_pedestrian/guidance/design\\_guidance/mutcd/](http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd/)



Examples of Guide Signs and Plaques  
MUTCD, P. 800,  
MUTCD, P. 793



Examples of Regulatory Signs and Plaques  
MUTCD, P. 793

## OFF-ROAD FACILITY SIGNAGE

More flexibility regarding signage is allowed for our future off-road routes. For example, trail heads and routes can be marked and identified by a trail post with directional signage, name of trail, and the difficulty of the route attached thus minimizing visual clutter and intrusion into the natural environment.



*Smithfield Trail, near Cairns, Queensland, Australia*

*East Coast Greenway, White Oak Trail, Cary, NC*



## BIKEWAY/TRAIL RESOURCES

- Albemarle Regional Bike Plan, 2013.  
<http://www.albemarlebikeplan.com/>
- Central Park NC Regional Bike Plan, Draft June, 2014
- East Coast Greenway  
<http://www.greenway.org/>
- Granville County Greenway Master Plan  
<http://granvillegreenways.org/>
- Mountains to the Sea Trail  
<http://www.ptrc.org/modules/showdocument.aspx?documentid=775>  
<http://www.ptrc.org/modules/showdocument.aspx?documentid=774>
- Virginia Tobacco Heritage Trail  
[www.virginia.org/biketobaccoheritagetrail](http://www.virginia.org/biketobaccoheritagetrail)

## APPENDIX B: REGULATORY & POLICY IMPLEMENTATION PLAN

### APPENDIX B FEATURES

Zoning	Subdivision Regulations	Street Ordinance	Other Regulations	NCDOT Policies
Bicycle Parking	Site Plan Requirements	Street Design	Development Review	Complete Streets
Bicycle Lanes	Accessways	Right-of-Way	Annexations	Bridge
Mixed-Use Districts	Paths	Bicycle Network Implementation	Bicycle Parking Ordinance	Bicycle
Access Requirements	Street Design	Signage	Bike/Ped Spending Ordinance	Greenway
			Committee Ordinance	

### OVERVIEW

The five counties comprising the Lakes District Bikeways do not have a reputation for a bike and pedestrian culture. Local land use policies and regulations are proponents, more for planning vehicle inclusion for development, than bike and pedestrian facilities. Thus, to encourage more bike mobility and safety throughout the Lakes District Bikeways, regulatory guidelines are needed for safe interaction between cyclists and motorists in a predominately rural setting.

Modern roadways in North Carolina are not principally built for cycling; therefore, recognizing the distinct, but sometimes aligned functional needs of motorized and non-motorized travel, is vital for successful use. Rural bikeways and cyclists should expect not only a different travel setting, but also to consider rural area safety considerations. Some recommendations are listed below:

- Rethinking the “far right” rule, or encouragement of cyclists to ride as far right of the roadway. Rural roadway travel speeds make it hazardous for vehicles passing that do not slow down first.
- Understand right-of-way rules for stopping and continuing, particular at wide or multi- area intersections.
- Stopping vs. yielding. The appropriate choice for cyclists should be considered based on road speeds and sight lines in rural settings.
- Lighting on bikes. A white light on the front and a red light in the rear is obligatory between one hour before dusk and one hour after dawn. Best practice would be to have these illuminating at all times on a rural bikeway – See and be seen.
- Helmets and other body protection layers are advised whenever riding. Guidelines for reflective and bright clothing are equally as important in rural settings as they are in urban places.



The rest of this section highlights prescriptive best practices that may apply to unincorporated areas, although, will generally apply more to municipal boundary areas. Some Kerr-Tar Local Governments have guidelines or plans for bike and pedestrian transportation facility improvements, nevertheless, 50 plus year of automobile focused development and redevelopment in small North Carolina towns has done little to encourage bicycle land use regulations.

The following information covers nine regulatory and policy interests, applicable to ordinances in both cities and counties, available to use as ordinance language in local development regulations.

## ZONING

- **Bicycle Facilities** – All new development, except single family dwellings, shall provide at a minimum a five space bicycle rack within 50 feet of a building entrance.



- **Bicycle Parking** – Developments shall provide secure, integrated bicycle parking at a rate of one bicycle rack space for every 50 vehicle parking spaces. One indoor bicycle storage space shall be provided for every two dwellings in townhome and apartment residential uses, unless individual garages are provided for each unit.



## NCLD REGIONAL BIKE PLAN

- Bicycle Lanes (municipalities) – Wide outside lanes shall be incorporated into the design of all new and/or improved arterial streets. Bike lanes, sidepaths or paved shoulders shall be incorporated in the design of all minor collector streets. Local streets shall have low traffic speeds and volumes allowing cyclists and motorists to safely share the road.



**Arterial Bike Lane**



**Collector Bike Lane**



**Shared Bike Lane**

- Mixed-Use Districts – A planned development district shall provide carefully planned spaces to promote efficient use of the land and roadway. A characteristic of mixed-use is access to good pedestrian, bicycle, and transit oriented shared sites. Therefore, new and redeveloped spaces that propose mixed-use tenants should be incentivized to offer multi-modal accessibility.



- Access Requirements – Site plans shall include specific provisions for incorporating pedestrian and bicycle access, circulation and linkage amenities into adjacent development. Proposal and alternative proposals for pedestrian and bicycle access shall include a summary of connectivity into the overall system of on-road and off-road trails and pathways.



## SUBDIVISION REGULATIONS

- Site Plan Requirements – The development shall include the number and type of bicycle parking facilities. The location and design of bicycle parking facilities shall be indicated on this site plan. If a traffic circulation plan is required, pedestrian and bicycle facilities' information shall be included.



- Accessways – The design of local subdivision streets shall provide for non-motorized travel and encourage slow auto speeds. Streets shall be designed to accommodate any required bike route or lanes



- Paths – When there is evidence that a pedestrian/cyclist would otherwise be forced to travel alongside a designated arterial roadway, or other roadway that may be hazardous for non-motorized forms of travel, a separate path may be required to connect site plans.



- Street Design – Street patterns in residential neighborhoods shall be designed for the needs of the bicyclist, pedestrian and motor vehicle alike. Private streets, or those not publicly dedicated, must be constructed in compliance with municipal specific street standards in order to be permitted.





## STAND ALONE STREET STANDARDS ORDINANCE

- **Applicability** - City streets that are shared bikeways shall create a safe and pleasant environment for all citizens. County roads that are shared bikeways shall consider adequate right-of-way width and road shoulder pavement to enhance safety for cyclists and pedestrians alike.



- **Street Design** – Streets shall be designed in light of topography and existing and planned street patterns. Bike facilities planning will be a required element for street improvement planning.
- **Right-of-Way** – Wider ROW shall be encouraged when feasible at the discretion of the city, county, or department of transportation traffic engineer.



- **Bicycle Network** – Bicycle facilities shall be employed where designated in the North Carolina Lake District Regional Bike Plan. Bike facilities include shared-use pathways, shared-use lanes, bike lanes, and paved shoulders.
- For new development, signage shall be provided by the project sponsor for designated routes.



- The usable width for bicycle facilities is normally from face of curb to lane stripe. Secondary roads usable width is normally from lane stripe to edge of pavement.

## DEVELOPMENT REVIEW

- **General Procedures** – A non-auto analysis of access to alternative modes of transportation available in a study area for pedestrian and bicycle facilities shall undergo technical review for multi-modal development and redevelopment planning.

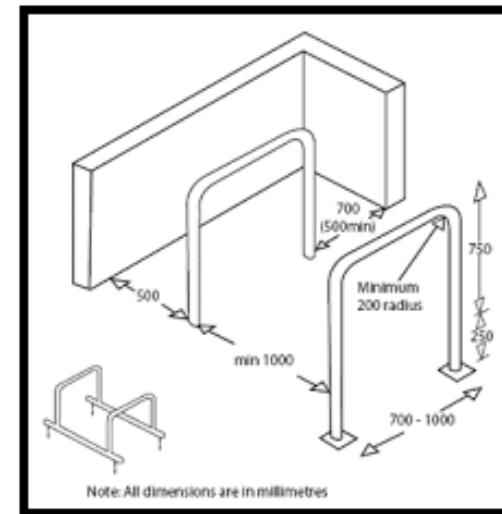


## ANNEXATIONS

- Adequate Transportation – Annexed properties shall require safe and accessible bicycle facilities to exist, or can and will be constructed. Bicycle destinations from the annexed site shall be determined and safe and accessible bicycle facilities serving those destinations shall be mapped.

## BICYCLE PARKING

- Purpose – Bike facilities regulations ensure adequate bicycle parking based on the demand generated by the different use categories and the level of safety necessary to encourage the use of bicycles.
- Parking Requirements – The required number of bicycle parking spaces shall be based on the primary uses on a site. Exemptions to property accessory uses may apply.
- Standards – A bicycle parking space required by this ordinance shall be at least 6 feet long and 2 feet wide with a 5 foot access aisle. In all cases where bicycle parking is required, no fewer than two spaces shall be required.
- Signs – If required bicycle parking is not visible from the street or main entrance, a sign must be posted at the main entrance indicating the parking location

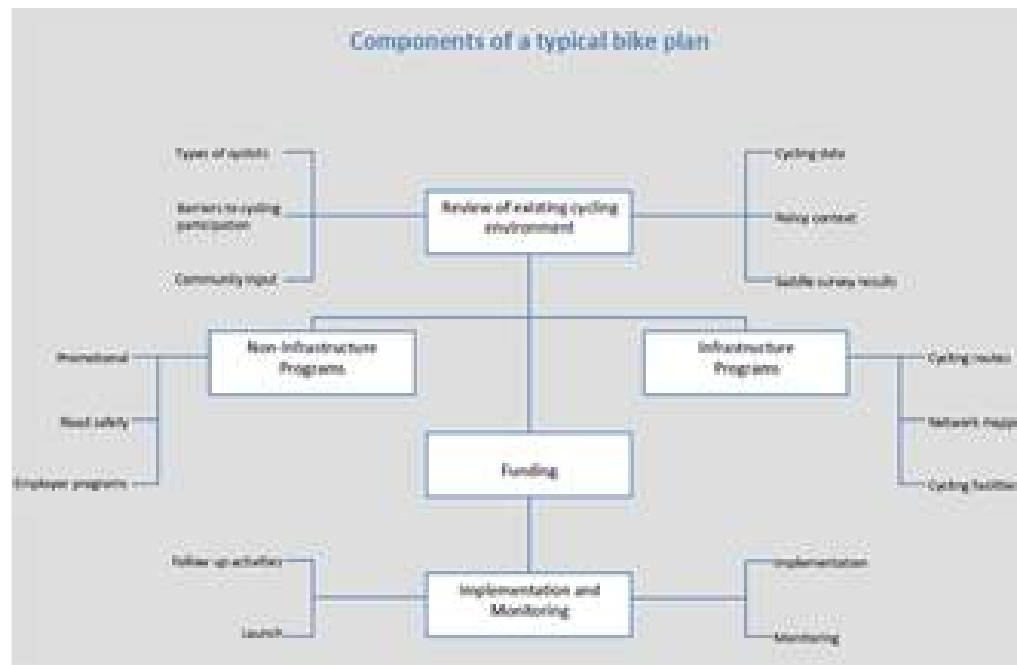


## BICYCLE AND PEDESTRIAN SPENDING ORDINANCE

- Purpose – An allocated percentage of local revenues shall be used for bicycle facility enhancement purposes, separate from designated recreation and park appropriated funds. Actions related to construction activities, including planning, environmental review, and design costs shall be primary uses for bicycle and pedestrian facilities revenue. Additional revenue sources will be explored for construction and maintenance of new and existing facilities

## COMMITTEE ORDINANCE

- Bicycle and Pedestrian Standing Committee – North Carolina Lakes District communities may nominate and appoint members to serve two year terms. A regional transportation planner can coordinate and announce meetings, in addition to assisting the committees' chosen work.
- Purpose – The Bicycle and Pedestrian Advisory Committee shall serve to promote non-automotive forms of travel and the development of safe facilities into an integrated transportation network for all Kerr-Tar Region citizens.





- Duties – Responsibilities of the committee shall be as follows:
  1. To promote walking, bicycling, and people-powered transportation.
  2. To review and make recommendations on long-range transportation plans as related to pedestrian and bicycle issues.
  3. To promote safety education programs.
  4. To serve in a liaison capacity between local governments, the Kerr-Tar Rural Planning Organization, the Kerr-Tar Region, special interest/advocacy groups, and North Carolina Department of Transportation.

## NCDOT POLICIES

- Complete Streets Policy - <http://www.completestreetsnc.org>
- Bridge Policy - <https://connect.ncdot.gov/projects/Roadway/RoadwayDesignAdministrativeDocuments/Bridge%20Policy.pdf>
- Bicycle Policy - [http://www.ncdot.gov/bikeped/download/bikeped\\_laws\\_Bicycle\\_Policy.pdf](http://www.ncdot.gov/bikeped/download/bikeped_laws_Bicycle_Policy.pdf)
- Greenway Policy - [http://www.ncdot.gov/bikeped/download/bikeped\\_laws\\_Greenway\\_Admin\\_Action.pdf](http://www.ncdot.gov/bikeped/download/bikeped_laws_Greenway_Admin_Action.pdf)
- Greenway Guidelines (Bridges) - <http://www.ncdot.gov/bikeped/download/GuidelinesForGreenwayAccommodations.pdf>

## APPENDIX C: EDUCATION IMPLEMENTATION PLAN

### INTRODUCTION

#### *BICYCLE STRATEGIES AND PROGRAMS TO FACILITATE CYCLING IN THE NCLD REGION*

In addition to the physical infrastructure, the North Carolina Lakes District (NCLD) Regional Bicycle Plan must include programs and strategies for success that target efforts to improve the populations' safety and health as well as providing ways to promote and incorporate cycling along the NCLD routes into everyday life. In our region, bicycle tourism provides an economic development opportunity and programs and strategies within the NCLD Regional Bicycle Plan should seek to advance this aspect as well. These programs and strategies are vital for the success of pedestrian and bicycle projects and should encompass all age groups, abilities and cultures as well as including pedestrians, cyclists and potential cyclists and motorists

The five "E" strategies and programs promoted by the American League of Cyclists focuses on creating great places for cycling. If these strategies are successfully promoted and implemented in the region, they will greatly contribute to the health and safety of the population in addition to encouraging people to incorporate cycling into their lifestyle. Such strategies and programs are critical to the success of pedestrian and cycling projects. These strategies and programs fall under the main headings of Evaluation, Enforcement, Encouragement, Education, and Engineering and all contribute to a successful bicycle plan. The Engineering portion is covered in the Facilities Guidelines chapter earlier in the NCLD Regional Bicycle Plan and comprises the physical structure and design of the routes.

### STRATEGIES AND PROGRAMS EXPLAINED

**Evaluation:** Evaluation is a necessary component that ensures that facilities are monitored and maintained. In addition, evaluation is necessary to make sure that motorists and cyclists are obeying the law.

**Enforcement:** The focus of the enforcement element is to make sure that the roads are safe for all users-not only motorists, but cyclists and pedestrians as well. Motorists, cyclists and pedestrians must know and respect one another's rights. Law enforcement must understand the law as it applies to all modes of transportation and know how to apply it fairly to keep the public safe. Enforcement programs also improve bicyclists' safety and perceptions of safety.

**Encouragement:** In order to promote and increase cycling, people of all ages need encouragement. Opportunities and incentives can be created to help get people on a bike. Bike maps, signage and bicycle-themed celebrations structured around the NCLD routes can all contribute towards encouraging people to try a short trip by bike.

**Education:** The aim of the education component is to enable people of all abilities and skills to cycle. In order to facilitate this, it is important for all sectors of the population to learn about the rights and responsibilities of road users including motorists, cyclists and pedestrians. This knowledge includes not only educating the public at large, but also acquainting law enforcement agencies with their responsibilities as well as increasing the expertise of professionals such as planners, transportation engineers and landscape architects who will be designing greenways and bikeways.

**Engineering:** The physical environment is a key element in determining whether or not a person will ride a bike. In addition to having a network of well-connected bike routes, the design, surfacing and signage are also important (Please see the Facilities Guidelines chapter).

## NCLD STRATEGIES & PROGRAMS IN PLACE

Policy or Program in Place (● = In place)	Person	Roxboro	<u>Granville</u>	<u>Stovall</u>	Oxford	<u>Stem</u>	Butner
<b>EVALUATION</b>							
1. Does your county/ town have a program or plan to reduce motor vehicle/cyclists crashes?			●	●	NR	●	
2. Does your county/town have a comprehensive bicycle plan?			●	●	NR	●	
3. Does your county/town have a greenways plan?			●	●	NR	●	●
4. Does your county/town have a Greenways Commission or Bicycle and Pedestrian Advisory Committee or similar group that meets on a regular basis and provides input into local cycling related policies?			●	●	NR	●	●
5. Does your county/town have a "Complete Streets" policy or ordinance allowing for the accommodation of cyclists on all road projects?					NR		
<b>ENFORCEMENT</b>							
6. Does your county/town allow two cyclists to ride side-by-side (two abreast)?	●		●	●	NR	●	*
7. Does your county/town have public safety officers or law enforcement officers on bikes?					NR		
8. Are the rights and responsibilities of all road users included in the law enforcement training in your county/town?		●	●	●	NR	●	●
<b>ENCOURAGEMENT</b>							
9. Does tourism promotion in your county/town include bicycling?		●	●	●	NR	●	●
10. Is there a bicycle shop in your county/town?	●				NR		
11. Does your county/town have a group that promotes and encourages cycling (a bicycle advocacy group)?	●		●	●	NR	●	
12. Does your county/town have any rides or major community cycling events?					NR		●
13. Does your county/town participate in National Bike Month by celebrating cycling with community rides, media outreach or Bike to Work Day?					NR		
14. Does your county/town have an up-to-date bicycle map?	● (CTP)				NR		
<b>EDUCATION</b>							
15. Are educational opportunities available to planners and engineers in your county/town for bicycle facilities design?			●	●	NR	●	●
16. Are motorists and cyclists trained on their rights and responsibilities as road users in your county/town?					NR		
17. Does your county/town have bicycling education classes for adults available?					NR		
18. Is there a "Watch for Me NC" safety campaign in your county/town?			● currently applying	● currently applying	NR	● currently applying	● next year
19. Does your county/town have a "Safe Routes to School" program that also includes bicycle education elements for children such as bicycle rodeos?			●		NR		

**Note:** Underlined towns indicate where county planners responded, since these towns have no planning related staff.

NR=No Response to 3/12/15 questionnaire



## NCLD STRATEGIES & PROGRAMS IN PLACE (CONTINUED)

Policy or Program in Place (● = In place)	Vance	<u>Middleburg</u>	Henderson	Kittrell	<u>Warren</u>	Norlina
<b>EVALUATION</b>						
1. Does your county/ town have a program or plan to reduce motor vehicle/cyclists crashes?						NR
2. Does your county/town have a comprehensive bicycle plan?					● (CTP)	NR
3. Does your county/town have a greenways plan?					● (CTP)	NR
4. Does your county/town have a Greenways Commission or Bicycle and Pedestrian Advisory Committee or similar group that meets on a regular basis and provides input into local cycling related policies?			In progress			NR
5. Does your county/town have a "Complete Streets" policy or ordinance allowing for the accommodation of cyclists on all road projects?						NR
<b>ENFORCEMENT</b>						
6. Does your county/town allow two cyclists to ride side-by-side (two abreast)?					●	NR
7. Does your county/town have public safety officers or law enforcement officers on bikes?			●			NR
8. Are the rights and responsibilities of all road users included in the law enforcement training in your county/town?						NR
<b>ENCOURAGEMENT</b>						
9. Does tourism promotion in your county/town include bicycling?					●	NR
10. Is there a bicycle shop in your county/town?						NR
11. Does your county/town have a group that promotes and encourages cycling (a bicycle advocacy group)?						NR
12. Does your county/town have any rides or major community cycling events?	●					NR
13. Does your county/town participate in National Bike Month by celebrating cycling with community rides, media outreach or Bike to Work Day?						NR
14. Does your county/town have an up-to-date bicycle map?	● (CTP)	● (CTP)		● (CTP)		NR
<b>EDUCATION</b>						
15. Are educational opportunities available to planners and engineers in your county/town for bicycle facilities design?						NR
16. Are motorists and cyclists trained on their rights and responsibilities as road users in your county/town?						NR
17. Does your county/town have bicycling education classes for adults available?						NR
18. Is there a "Watch for Me NC" safety campaign in your county/town?						NR
19. Does your county/town have a "Safe Routes to School" program that also includes bicycle education elements for children such as bicycle rodeos?			●		●	NR

**Note:** Underlined towns indicate where county planners responded, since these towns have no planning related staff.

NR=No Response to 3/12/15 questionnaire

## NCLD STRATEGIES & PROGRAMS IN PLACE (CONTINUED)

Policy or Program in Place (● = In place)	<u>Macon</u>	Warrenton	<b>Franklin</b>	<u>Centerville</u>	Louisburg
<b>EVALUATION</b>					
1. Does your county/ town have a program or plan to reduce motor vehicle/cyclists crashes?					
2. Does your county/town have a comprehensive bicycle plan?	●(CTP)				
3. Does your county/town have a greenways plan?	●(CTP)				
4. Does your county/town have a Greenways Commission or Bicycle and Pedestrian Advisory Committee or similar group that meets on a regular basis and provides input into local cycling related policies?					
5. Does your county/town have a "Complete Streets" policy or ordinance allowing for the accommodation of cyclists on all road projects?					
<b>ENFORCEMENT</b>					
6. Does your county/town allow two cyclists to ride side-by-side (two abreast)?	●				●
7. Does your county/town have public safety officers or law enforcement officers on bikes?					●
8. Are the rights and responsibilities of all road users included in the law enforcement training in your county/town?		●			●
<b>ENCOURAGEMENT</b>					
9. Does tourism promotion in your county/town include bicycling?	●				
10. Is there a bicycle shop in your county/town?					
11. Does your county/town have a group that promotes and encourages cycling (a bicycle advocacy group)?					
12. Does your county/town have any rides or major community cycling events?					
13. Does your county/town participate in National Bike Month by celebrating cycling with community rides, media outreach or Bike to Work Day?					
14. Does your county/town have an up-to-date bicycle map?					●
<b>EDUCATION</b>					
15. Are educational opportunities available to planners and engineers in your county/town for bicycle facilities design?		●			
16. Are motorists and cyclists trained on their rights and responsibilities as road users in your county/town?					
17. Does your county/town have bicycling education classes for adults available?					
18. Is there a "Watch for Me NC" safety campaign in your county/town?					
19. Does your county/town have a "Safe Routes to School" program that also includes bicycle education elements for children such as bicycle rodeos?	●	●			

**Note: Underlined towns indicate where county planners responded, since these towns have no planning related staff.**

**NR=No Response to 3/12/15 questionnaire**

## SURVEY SUMMARY

Granville County and several municipalities within Granville County (Butner, Stem, and Stovall) are already engaging multiple bicycle-related programs in each of the 'E' categories. Franklin, Person, Vance and Warren Counties (and municipalities) have some programming in place, but a more comprehensive effort will be needed to effectively engage all areas of programming for a bicycle friendly region. The existing efforts highlighted in the survey can serve as key building blocks for future programming.

## RECOMMENDATIONS

As can be seen in the survey results, outreach is needed in many of our counties and towns to further the objectives of the NCLD Regional Bicycle Plan. A few suggestions of existing programs that have been successfully used in other parts of the state are listed below:

- Programs from other jurisdictions to develop best practices
  - Professional Development Courses- teaching how to implement, such as "Complete Streets"
- Programs that address both cyclist and motorist behavior
  - National Program
- League of American Bicyclists training course
  - State Programs
    - » Watch for Me NC
    - » Safe Routes to School
    - » Walk/Bike NC

- State Event
  - » Cycle North Carolina
  - » Crumley Roberts (Attorneys at Law)- teaching children throughout NC about proper bike riding skills. Focusing on; rules of the road, helmet safety, main hand signals. Visit [www.crumleyroberts.com/community/bike-safety/](http://www.crumleyroberts.com/community/bike-safety/)
- Local Programs
  - » Open Streets Event-See Carrboro's Open Streets event (Walk , Bike, Play, Skate) as a sample program.

Recommendation	Website
Complete Streets	<a href="http://completestreetsnc.org/">http://completestreetsnc.org/</a>
Watch for Me NC	<a href="http://watchformenc.org/">http://watchformenc.org/</a>
Cycle NC	<a href="http://cnc.ncsports.org/">http://cnc.ncsports.org/</a>
Bicycle Safety Rodeos	<a href="http://www.crumleyroberts.com/community/bike-safety/">http://www.crumleyroberts.com/community/bike-safety/</a>
Open Streets Events	<a href="http://openstreetsproject.org/">http://openstreetsproject.org/</a>
League of American Bicyclists Training Courses	<a href="http://bikeleague.org/content/become-instructor">http://bikeleague.org/content/become-instructor</a>
Safe Routes to School	<a href="https://connect.ncdot.gov/projects/BikePed/Documents/NCDOT_SRTS_Description.pdf">https://connect.ncdot.gov/projects/BikePed/Documents/NCDOT_SRTS_Description.pdf</a>



## POTENTIAL PARTNERS AND SUPPORT GROUPS: IDEAS OF WHERE TO START

In addition to town, county and regional planners, the following local organizations are among those that can be engaged in order to utilize some of the programs above to help facilitate conditions advancing the objectives in the NCLD Regional Bicycle Plan:

- School districts and local PTA's
- Local police and sheriffs' departments
- Municipal and county park and recreation departments
- Local Chambers of Commerce
- Tourism and business groups
- Area merchants (including any local bicycle shops)
- District and division NCDOT
- Public health agencies
- Senior centers and retirement communities

## CONCLUSION

In North Carolina, almost 200 bicyclists and pedestrians are killed each year as a result of being struck by an automobile. The Alliance for Biking and Walking ranked North Carolina 42nd and 46th worst for pedestrian and bicyclist fatality rates per capita, respectively (Alliance for Biking and Walking, 2014 Benchmarking Report, <http://www.walkbikenc.com/pillars-of-plan/safety/>). The League of American Bicyclists ranks all states in the USA in terms of their bicycle friendliness. North Carolina currently ranks 23rd in 2014, achieving 39.5 points out of a possible 100. Through the implementation of the strategies and programs mentioned in this chapter, the NCLD Regional Bicycle Plan will do its part to contribute to improving the bicycle friendliness of the state, improving the health and increasing the safety of the population, as well as increasing opportunities for tourism and economic development.

## SOURCES

- Albemarle Regional Bicycle Plan, Executive Summary, 2013, P.11.
- Blue Ridge Bike Plan, Policy and Program Tables, 2013, Pp.22-23.
- The League of American Cyclists, "The Essential Elements of a Bicycle Friendly America," Copyright 2000-2013, <http://bikeleague.org/content/5-es>
- The League of American Cyclists, "2014 Report Cards," <http://bikeleague.org/content/report-cards>
- WalkBikeNC Plan. "Programming for Health, Safety and Active Living," October 2013, P.7-29 to 7-32 (the Table shows Education Efforts). <http://www.walkbikenc.com/plan-resources/#program>
- <http://www.pedbikeinfo.org/programs/education.cfm>
- NCDOT Program: Let's Go NC-Bicycle and Pedestrian Curriculum. Here is the link, <https://connect.ncdot.gov/projects/BikePed/Pages/LetsGoNC.aspx>
- "Watch for Me" with this link <http://watchforme.org/>



## APPENDIX D: SIGNAGE PLAN

### INTRODUCTION

The ability to navigate through a community or a region is vitally important for its economic prosperity. Visitors to a region need to be able to find local services, points of interest, and feel that they can safely travel to their destination by whatever transportation mode they select. The North Carolina Lake District route totals 425 miles of on-road and non-road rustic scenic segments that encompasses, multitude of recreation opportunities in Vance, Granville, Franklin, Warren, and Person counties.

The North Carolina Lakes District (NCLD) Signage Plan will serve as a framework for implementing an attractive and effective signage system that directs individuals to key destinations within the lakes district. The NCLD Signage Plan will enhance and improve the pedestrian and bicycle realm and make the choice of using nonmotorized transportation an easier choice to make. This plan has been created specifically for the pedestrian and bicycle realm and does not include vehicular wayfinding.

### IMPLEMENTATION

The first phase of implementing the North Carolina Lakes District Regional Bicycle Plan is to install wayfinding/directional signage along segments of the initial route that will be displayed at pivot points throughout the region. The Federal Highway Administration's (FHWA) Manual on Uniform Traffic Control Devices indicates that signage may be provided at decision points along designated routes, including signs to inform bicyclists of bicycle route direction changes and confirmation signs for route direction, distance and destination. Guide and informational signs are intended to help cyclists and pedestrian find their way in unfamiliar areas and provide insight into the coherence of a network of routes. Placing

signs throughout the lakes district region will indicate to bicyclists, tourists, and citizens their direction of travel, the location of destinations, and the riding distance to those destinations making the bicycle system more accessible to all individuals.

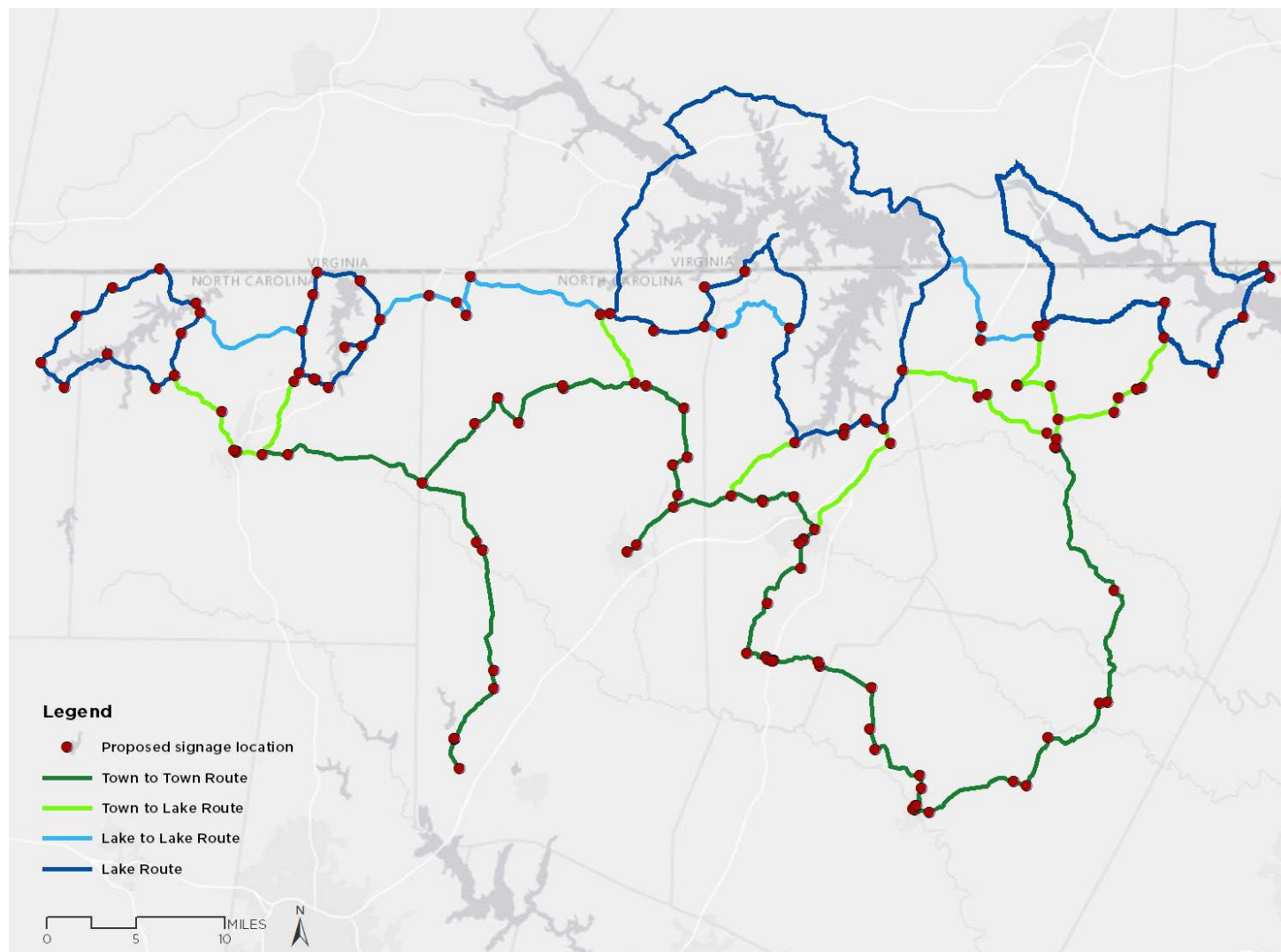
### OVERVIEW

The NCLD Regional Bicycle Plan includes 25 Route Segments totaling an estimated 425 miles and connecting 4 area lakes and 13 small towns and cities in Person, Granville, Vance, Warren, and Franklin counties. The routes highlight the region's lakes as well as connect communities, natural, and recreational areas.

The signage plan provides general intersection layouts and sign locations. The following map includes recommended signage at street intersections along proposed routes where major decision points occur along the route.



## NCLD REGIONAL BIKE PLAN SIGNAGE RECOMMENDATIONS



## SIGNAGE BEST PRACTICES

Signage is defined as all of the visual graphics (public advertisements, billboards, etc.) or groups of graphics that communicate information to the public. Directional signage in general helps individuals navigate to and through the proximity of any given location. This type of signage is typically referred to as wayfinding, which allows individuals to follow an intended route. The following types of signage will provide a recognizable 'look and feel' for the NCLD signage plan. The signs are separated into relevant categories and comprise a full range of signage required to develop a comprehensive wayfinding system that will be user-friendly throughout the North Carolina Lakes District.

### COMMUNITY TRAIL LOGO

A community trail logo for the North Carolina Lakes District can provide a unifying element that can appear on proposed signage and can be used for other printed materials, such as maps or promotional brochures. The logo can provide a simple identifier for the overall system and can be a representation of the various modes of non-motorized transportation typical for NCLD. Community trails improve the economy through tourism and civic improvement; preserve and restore open space; and provide opportunities for physical activity to improve fitness and mental health. Below is example of a community trail logo:



*Foothills Rails to Trails Coalition community trail logo illustration. From City of Bonney Lake, WA website: [www.ci.bonney-lake.wa.us](http://www.ci.bonney-lake.wa.us)*

### MAP BASED SIGNS

Map based signage for the NCLD will be the main orienting element for pedestrian wayfinding system. This is the walking map and shows detailed information about the local precinct such as landmarks, suggested walking routes, and recreational areas as well as relevant pedestrian detail such as safe road crossings, public toilets and seating. Map based signage will indicate to an individual where they are within the lakes district and how they can position themselves based upon their preferred destination or recreational activity.

Map based signage will:

- Allow for a larger area to be illustrated
- Allow for more destinations to be included
- Allow for the use of symbols to indicate the approximate locations of amenities and facilities
- Allow the individual to estimate travel time and to comprehend a larger area

Below are illustrations of map based signage:



*Women viewing map to see the location of her next destination. From Visual Voice website: [www.visualvoice.com.au](http://www.visualvoice.com.au)*



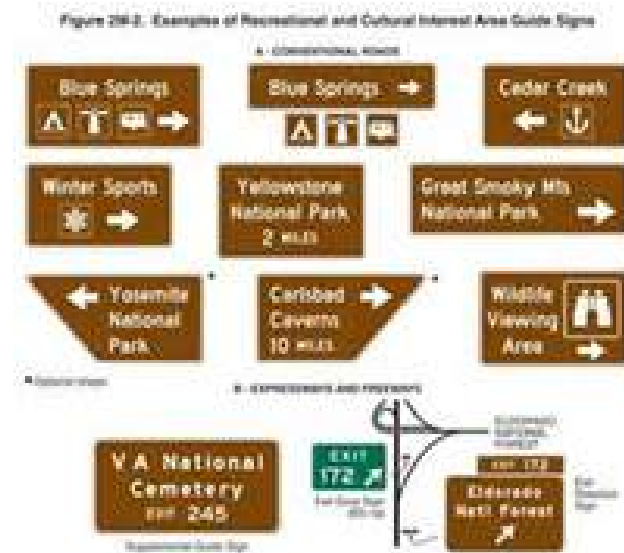
*RHS Garden Harlow Carr illustration. From Merritt Cartographic: [www.merrittcartographic.co.uk](http://www.merrittcartographic.co.uk)*

## DIRECTIONAL SIGNAGE

Directional signage for the North Carolina Lakes District will play an integral part of success for tourism. Directional signage will indicate the name of major destinations and points to the direction of a primary destination for individuals and groups trying to locate their point of interests. Directional signs offer complete information about various directions and locations. Directional signs are also utilized to help individuals or groups when they are unfamiliar with an area. In areas that gain a significant amount of visitors, implementing directional signage will be a good way to make sure tourists can find the attractions they're looking for; especially on main roads and highways where there are multiple directions, these signs enable travelers to reach their desired destination. Below are examples of directional signage:



Outdoor signage illustration. From [www.cias.rit.edu](http://www.cias.rit.edu)



Recreational directional signage illustration.  
From: [www.mutcd.fhwa.dot.gov](http://www.mutcd.fhwa.dot.gov)



## TRAIL MAKER SIGNAGE

Trails are pathways that have strong linkages with natural environment, open space networks, and cultural heritage in the region. For the North Carolina Lakes District, trail marker signage will be along main recreational marks and routes that will provide individuals and groups reassurance that they are on track while contributing to the recognizable look and feel of the community trails system. Individuals walking on an identified trail route will follow the trail markers that have been developed for the hiking trails. Trail signage can:

- Provide a recreational and educational experience
- Improve recreational access
- Increase visitors' understanding of the local environment
- Promote an area's history and heritage
- Add to an area's tourism potential
- Decrease risk to visitors



*Example trail marker signage from the Carolina Thread Trail in Charlotte, NC.*

## BICYCLE ROUTE MARKER SIGNAGE

Bicycle route guide signage informs bicyclists of bicycle route direction changes and confirms distances and directions. Bicycle route marker signage will direct bicyclists along designated routes throughout the lakes district. The ability to navigate will help familiarize individuals to identify the best routes to distances. Specific guidance of bicycle signage will provide individuals and groups to desirable destinations such as parks, recreation areas, trails, historic and cultural sites, and other important places. Bicycle route marker signage can serve both wayfinding and safety purposes that will help individuals address misperceptions about time and distance. An ideal spacing interval for bicycle route marker signage will be displayed where they are most visible and do not interfere with other regulatory signage.

Bicycle route marker signage will provide bicyclists:

- Direction of travel
- Location of destination
- Travel time/distance to those destinations

Below are examples of bicycle route marker signage:



*Optional bike signage illustration From [www.bikepgh.org](http://www.bikepgh.org)*

## GENERAL SIGNING INSTRUCTIONS

The North Carolina Lakes District signage plan will provide intersection layouts and signs that will be feasible for bicyclist use. New signage will replace existing signage that is unsuitable and unreadable. The “M” signs and “D” signs illustrated in the table below will be used to direct bicyclists, inform motorists of bicycle presence on the roadway, and aid in navigation for bicyclists touring the North Carolina Lakes District. Sign M-18a can be customized with a logo or brand mark for the NCLD to establish continuity between the regional routes. The “W” signs are suitable for periodic placement along the route to remind motorists to be alert and mindful of the presence of bicyclists.

## GENERAL PLACEMENT

When two bikeways intersect, the general approach is to place a directional sign prior to the decision point followed by a confirmation sign or pavement marking after the intersection to confirm intended direction. While this approach provides redundant information, it ensures that the system does not break down if one sign is compromised.

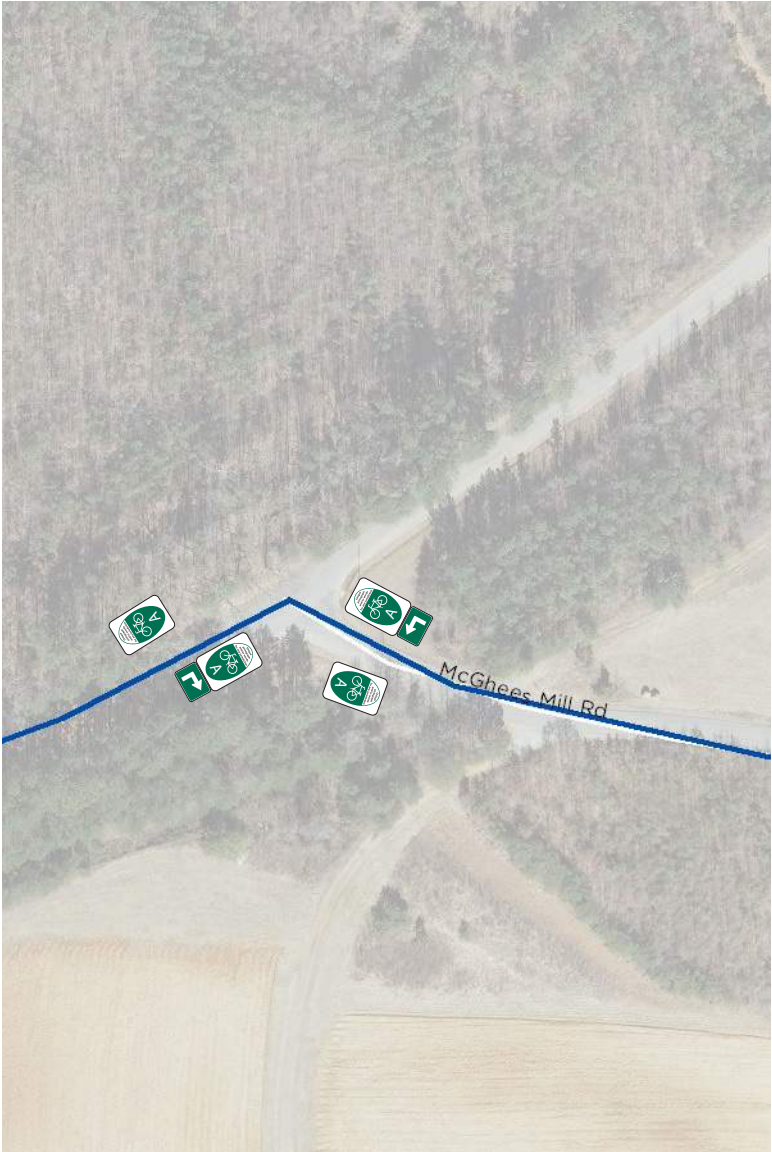
Typical placement at intersections is 50’ to 100’ away from the entrance of the intersection both for signs on the approach and confidence builders used after crossing through the intersection. Placement should be selected to avoid sign clutter and ensure that there are no visual barriers to other roadway signs. In addition to MUTCD compliant posts, signs may be placed on existing posts, poles, or other supports as practical, if such supports allow mounting in accordance with the MUTCD.

The following pages illustrate potential placement for bicycle route signs at key intersections. Each intersection should be evaluated based on the instructions and placement guidelines above as well as for compliance with MUTCD and NCDOT requirements. In addition to placement at intersections, the M1-8a signs may be periodically placed along any route to build confidence that the traveler is indeed on their intended path.

Below are potential signage that will be suitable for the North Carolina Lakes District region:

Sign Graphic										
MUTCD Code	M1-8a	M6-3	M6-1	M5-1L	M5-1R	M5-2L	M5-2R	W16-1P	W16-1P	M6-4
# of signs	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.	To be determine.
Notes						L - Arrow needs to point left	R - Arrow needs to point right			

ROUTE A PLACEMENT PLAN



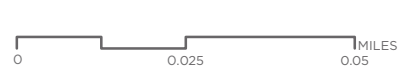
Map 1. Route A - Person County



Map 2. Route A - Person County

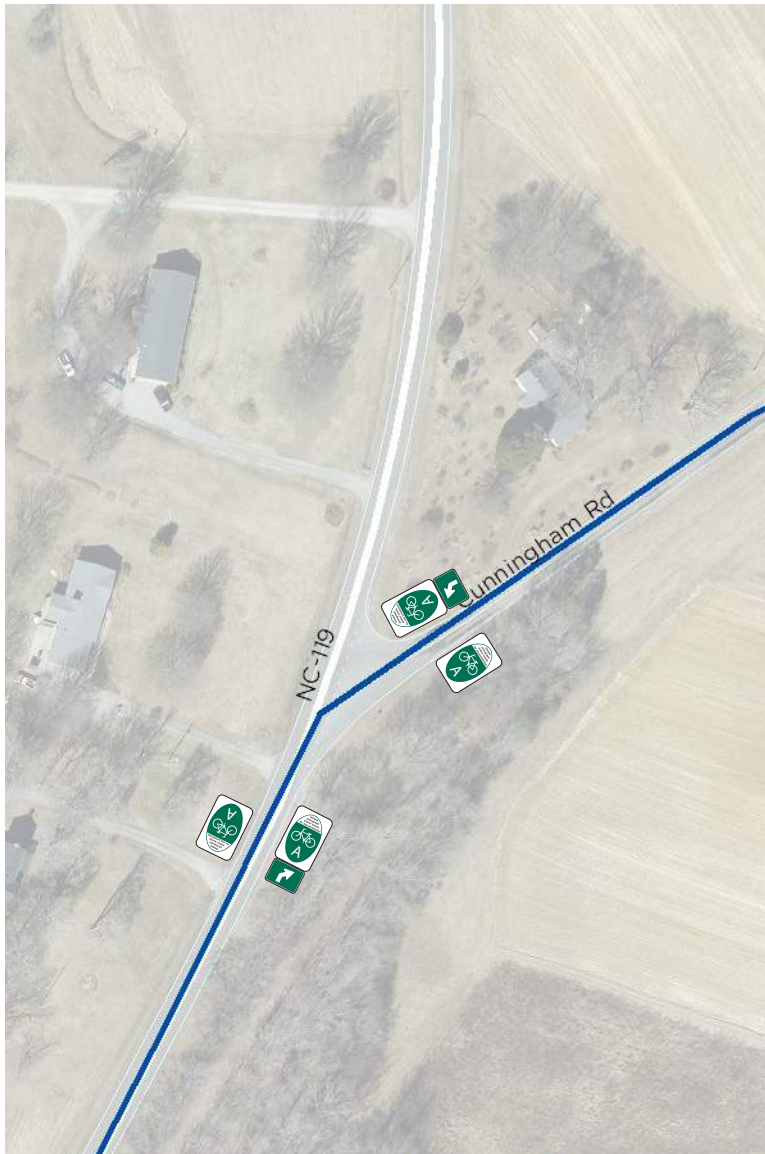
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

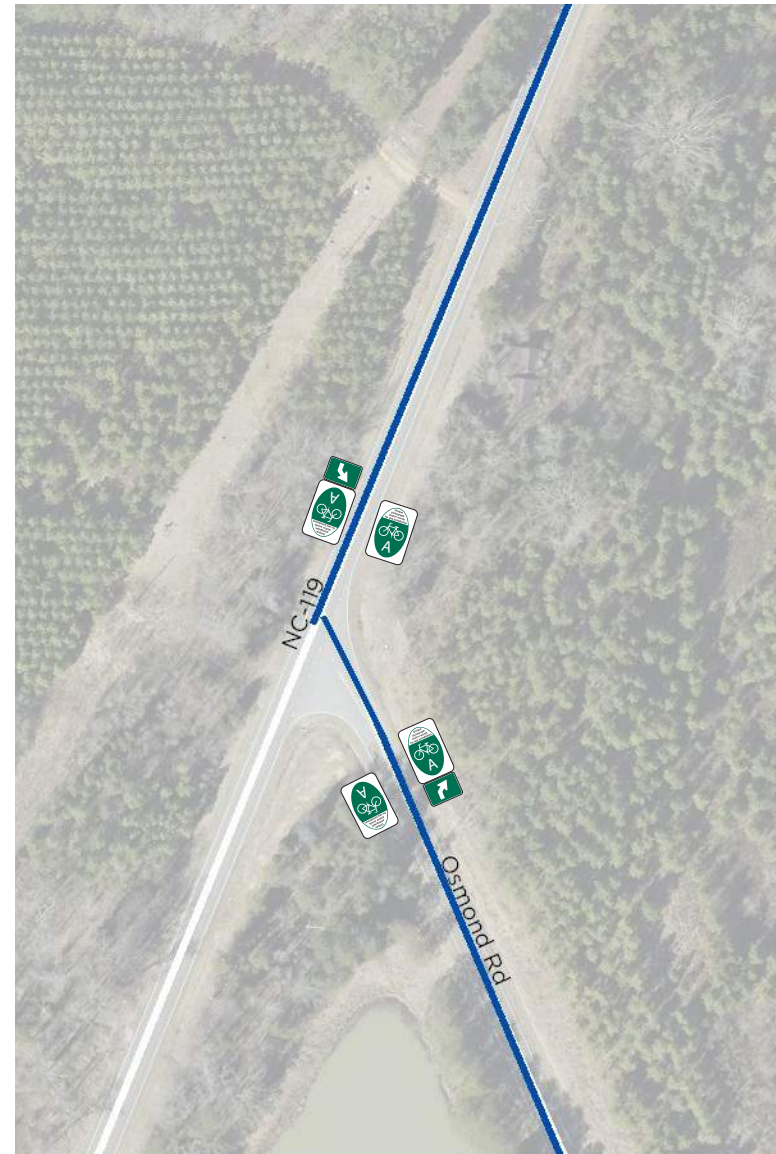




# ROUTE A PLACEMENT PLAN



Map 3. Route A - Person County



Map 4. Route A - Person County



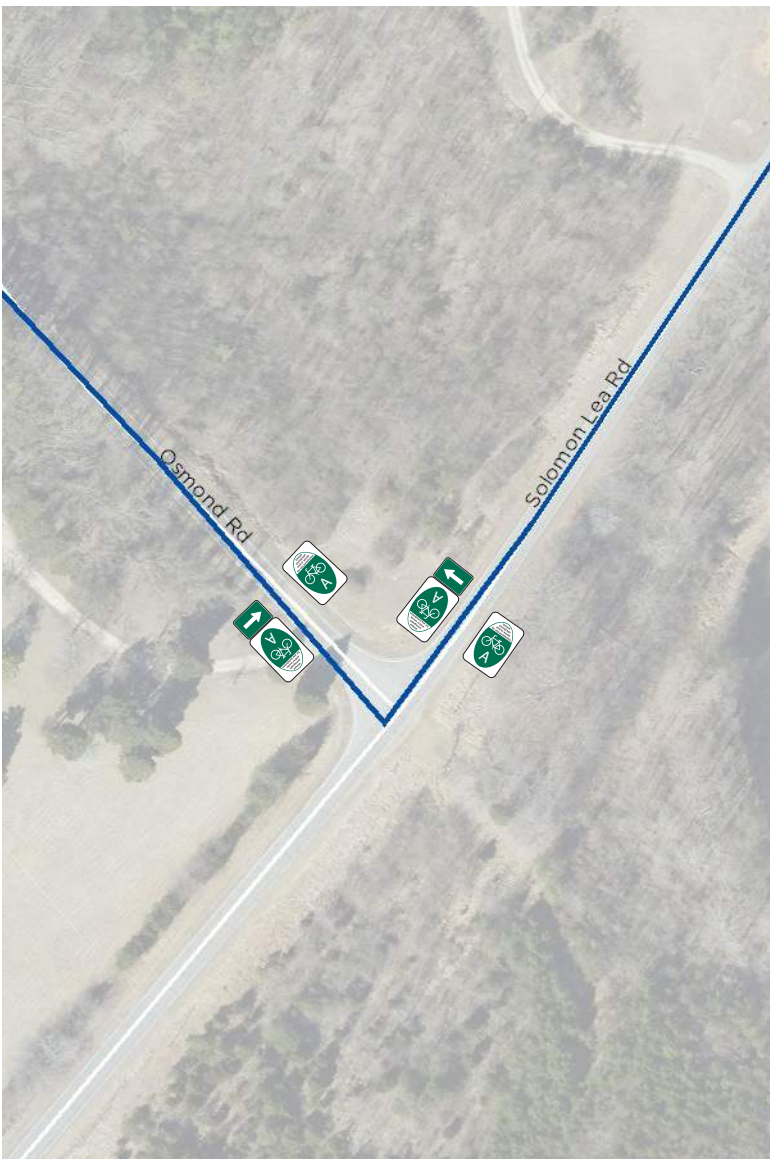
## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES



ROUTE A PLACEMENT PLAN



Map 5. Route A - Person County



Map 6. Route A - Person County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route





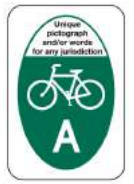
# ROUTE A PLACEMENT PLAN



Map 7. Route A - Person County



Map 8. Route A - Person County



1



2



## Kerr Tar Bicycle Routes

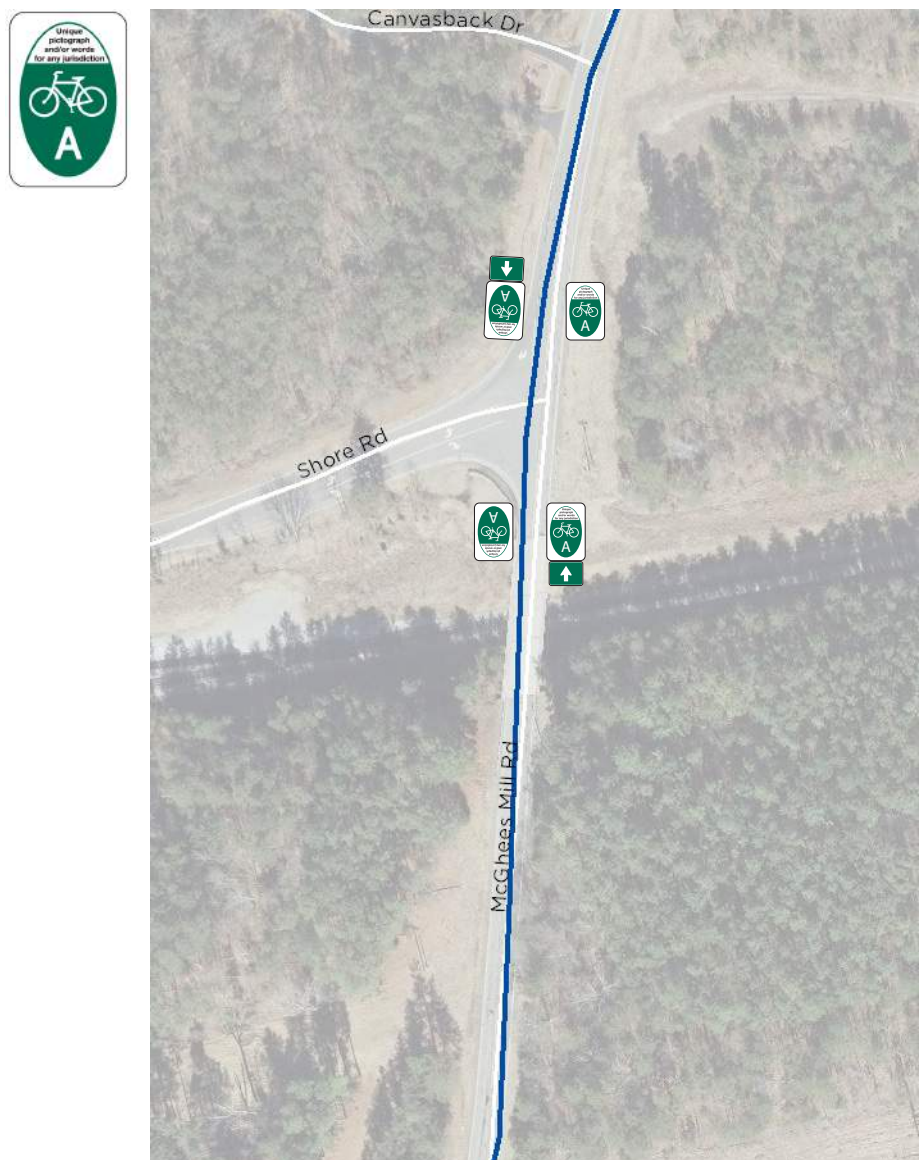
— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES

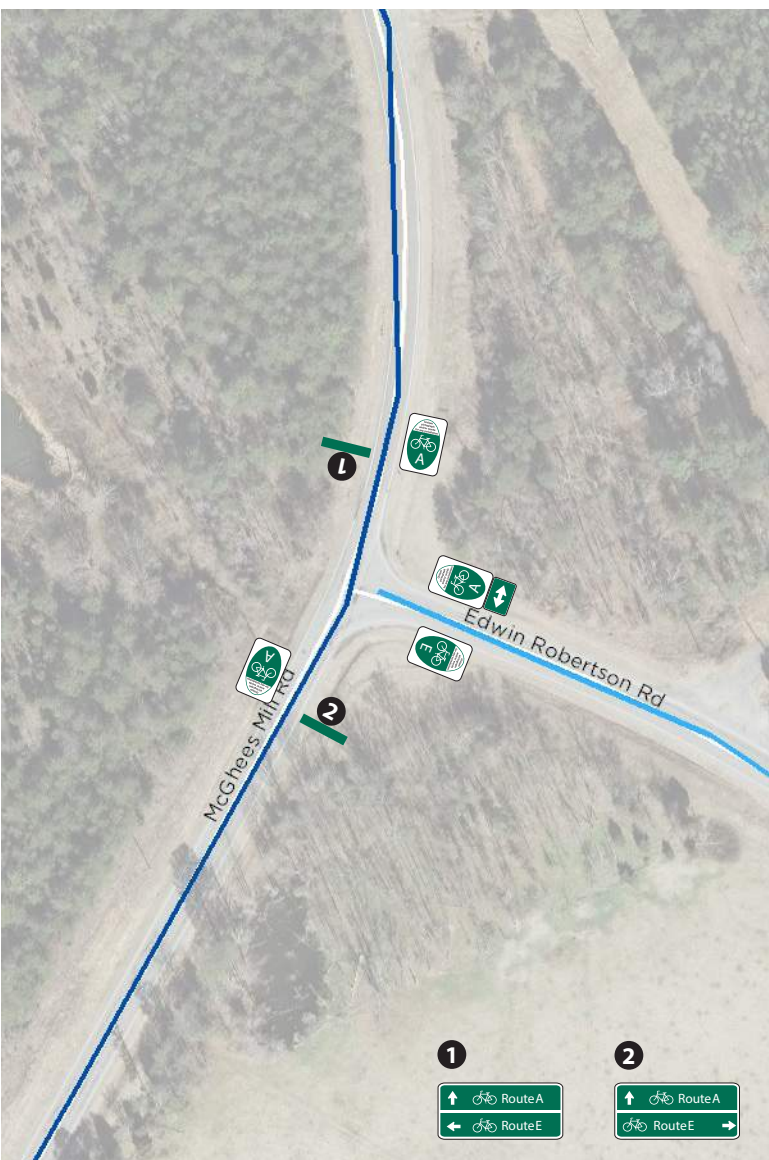




ROUTE A PLACEMENT PLAN



Map 9. Route A - Person County



Map 10. Route A - Person County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE A PLACEMENT PLAN



Map 11. Route A - Person County

Kerr Tar Bicycle Routes

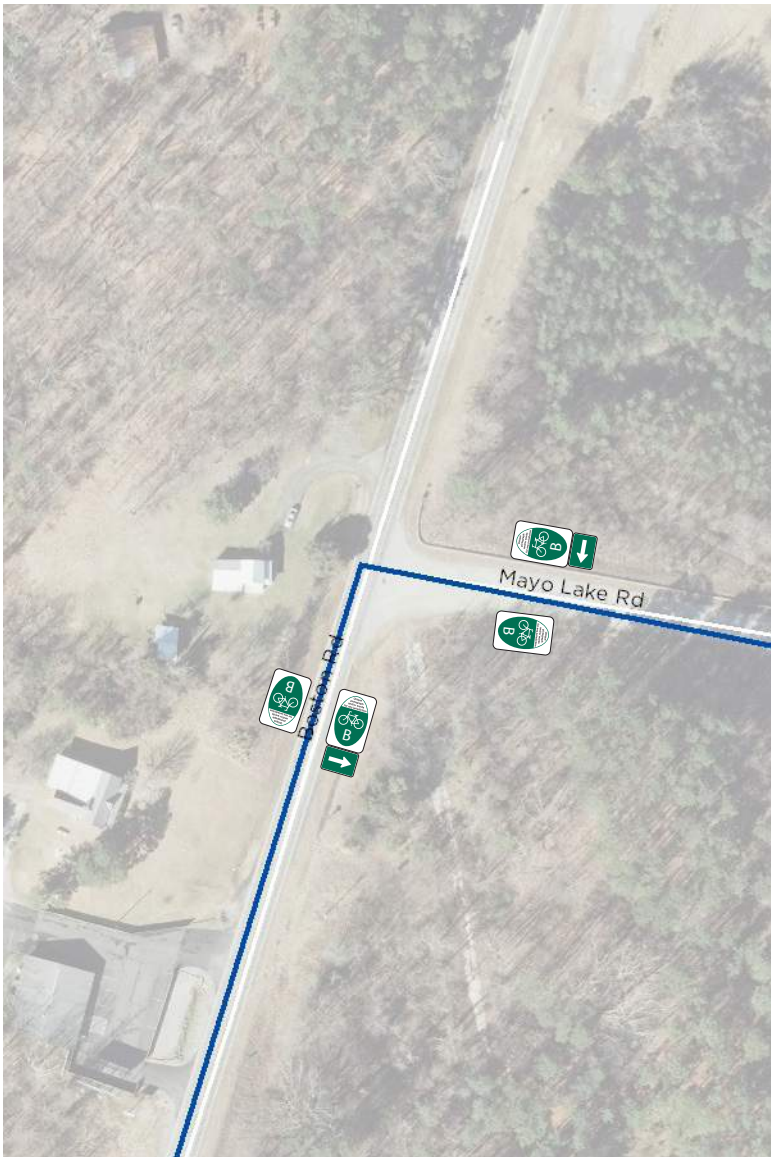
— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES

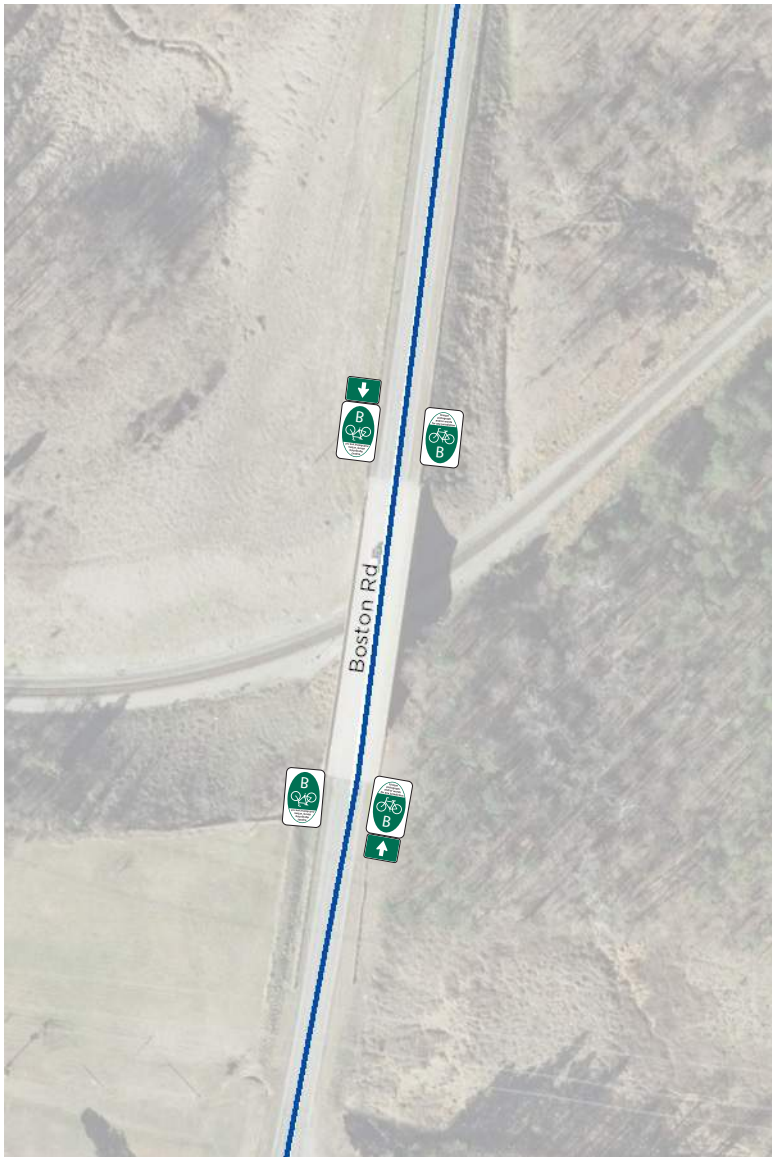




ROUTE B PLACEMENT PLAN



Map 12. Route B - Person County



Map 13. Route B - Person County

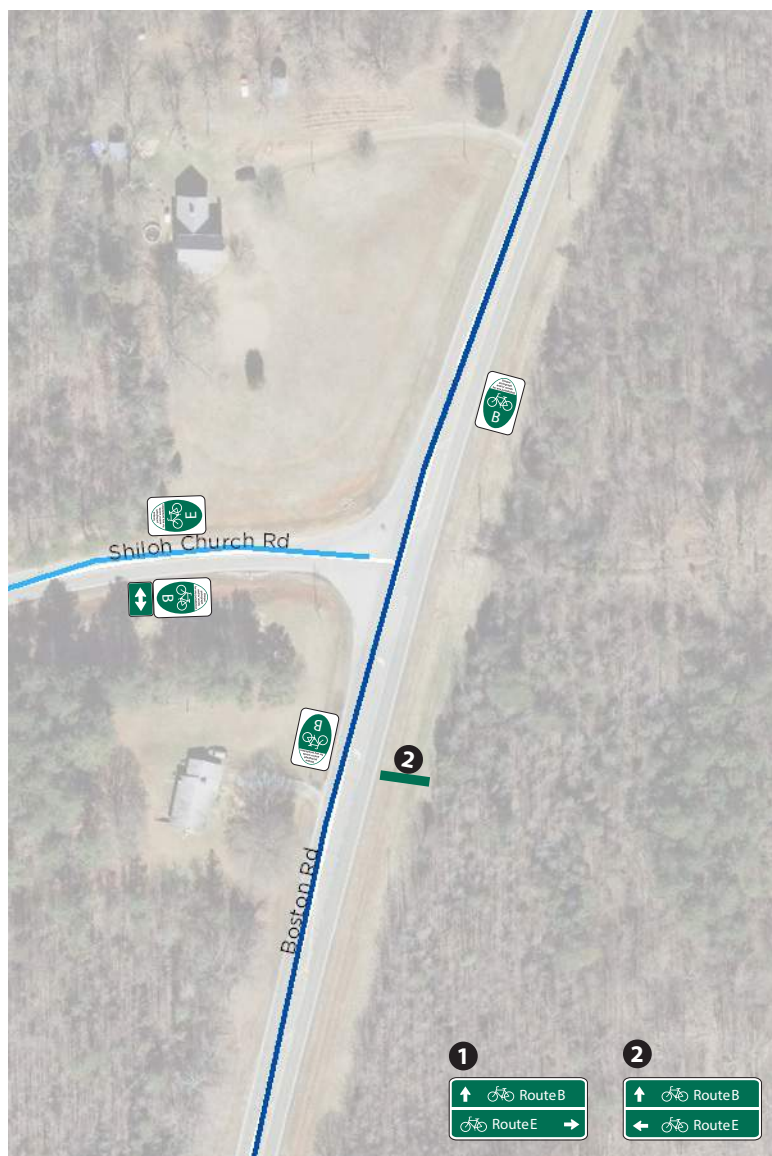
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

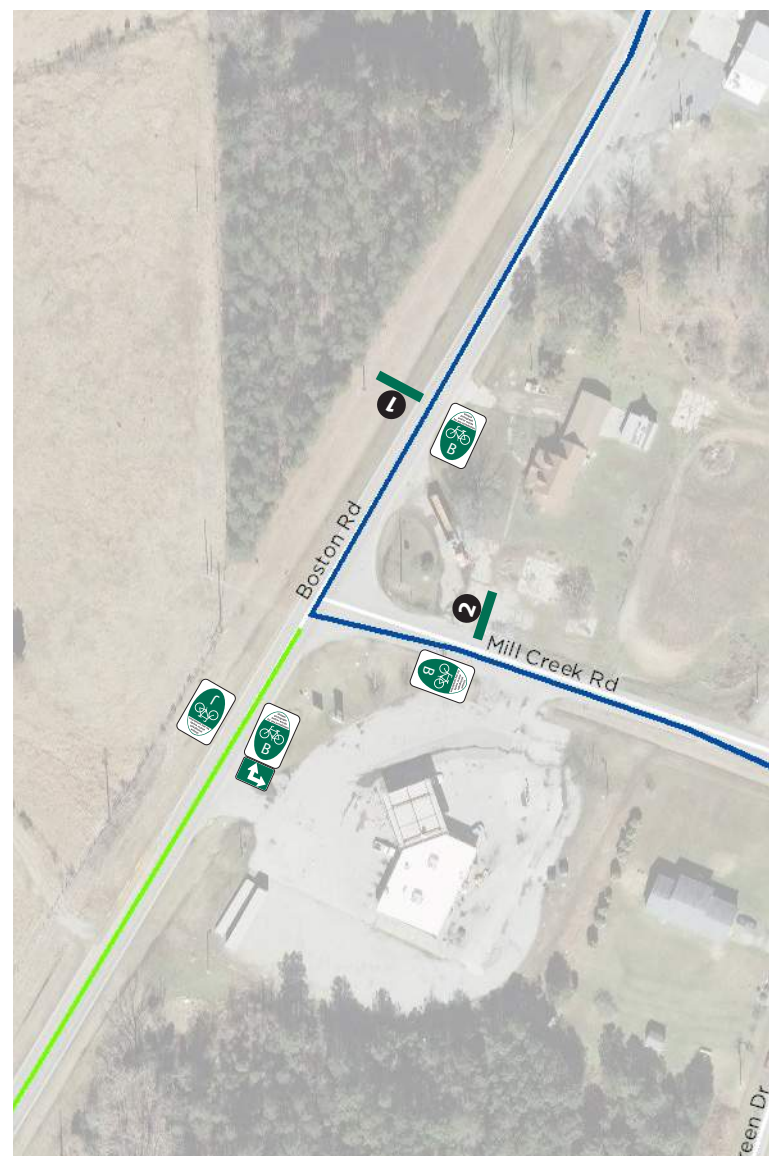




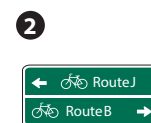
## ROUTE B PLACEMENT PLAN



Map 14. Route B - Person County



Map 15. Route B - Person County



## Kerr Tar Bicycle Routes

— Lake Route      — Lake to Lake Route

— Town to Town Route

 Town to Lake Route



ROUTE B PLACEMENT PLAN



Map 16. Route B - Person County



Map 17. Route B - Person County

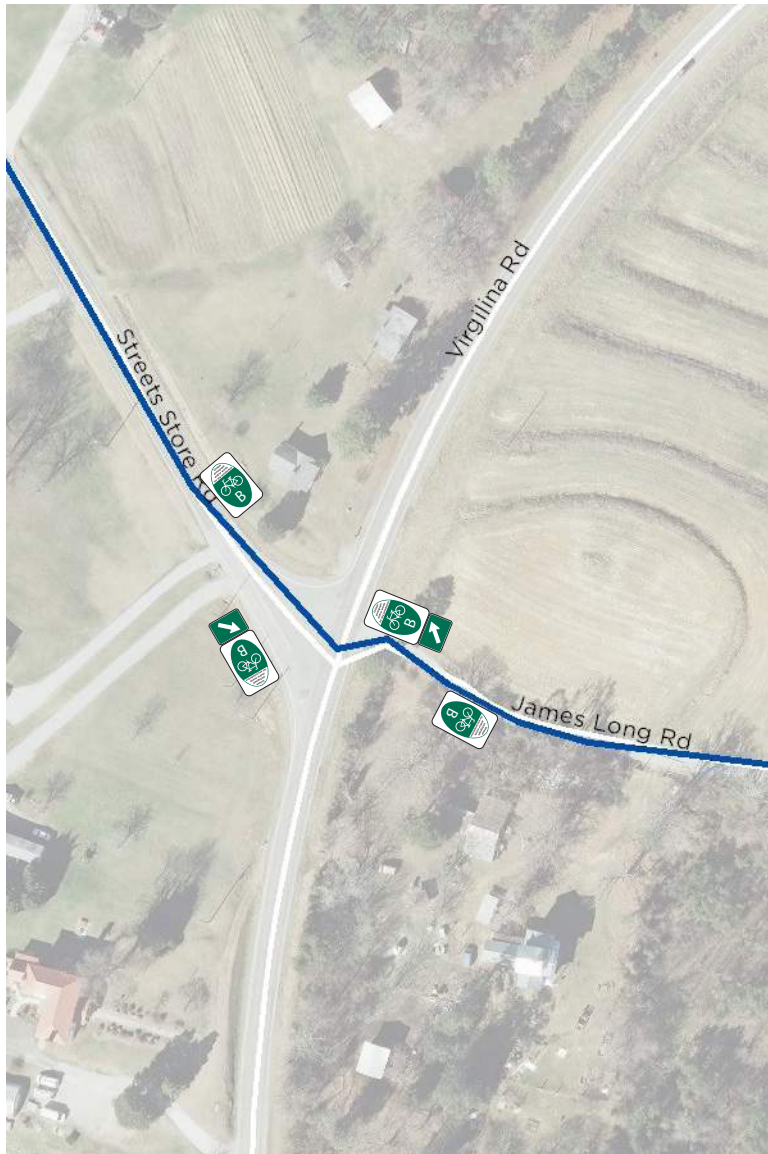
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

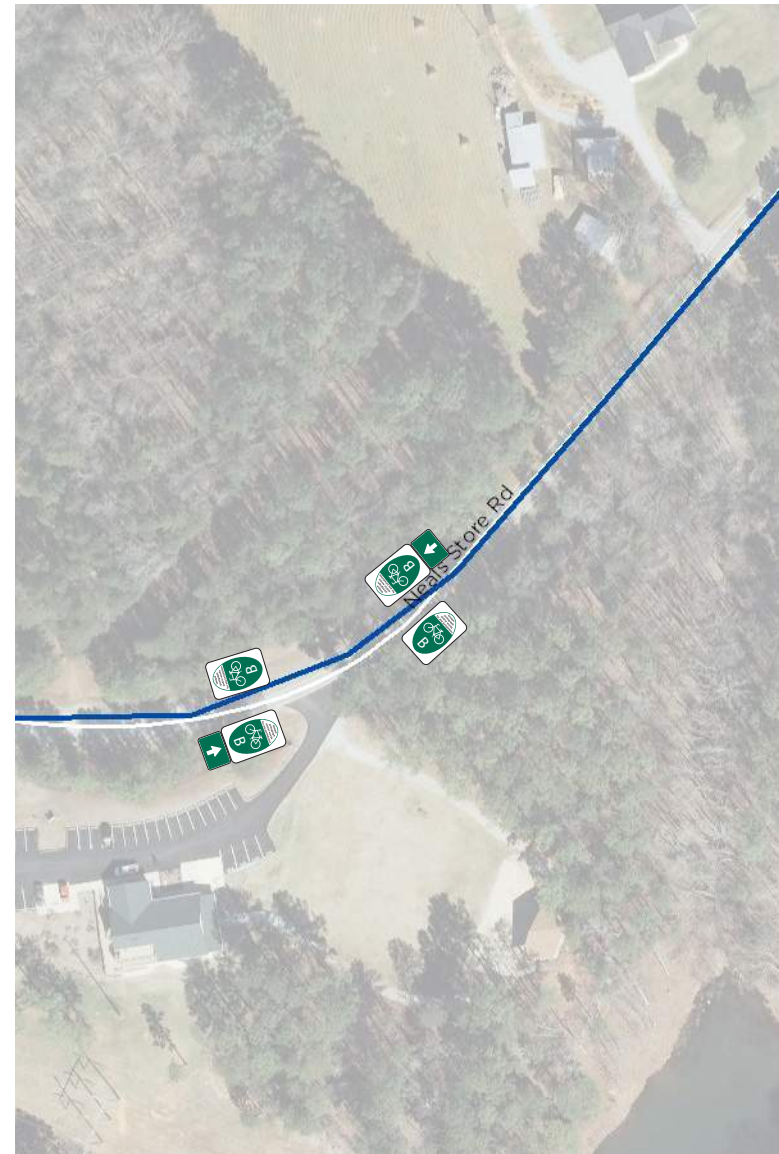




# ROUTE B PLACEMENT PLAN



Map 18. Route B - Person County



Map 19. Route B - Person County

## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES

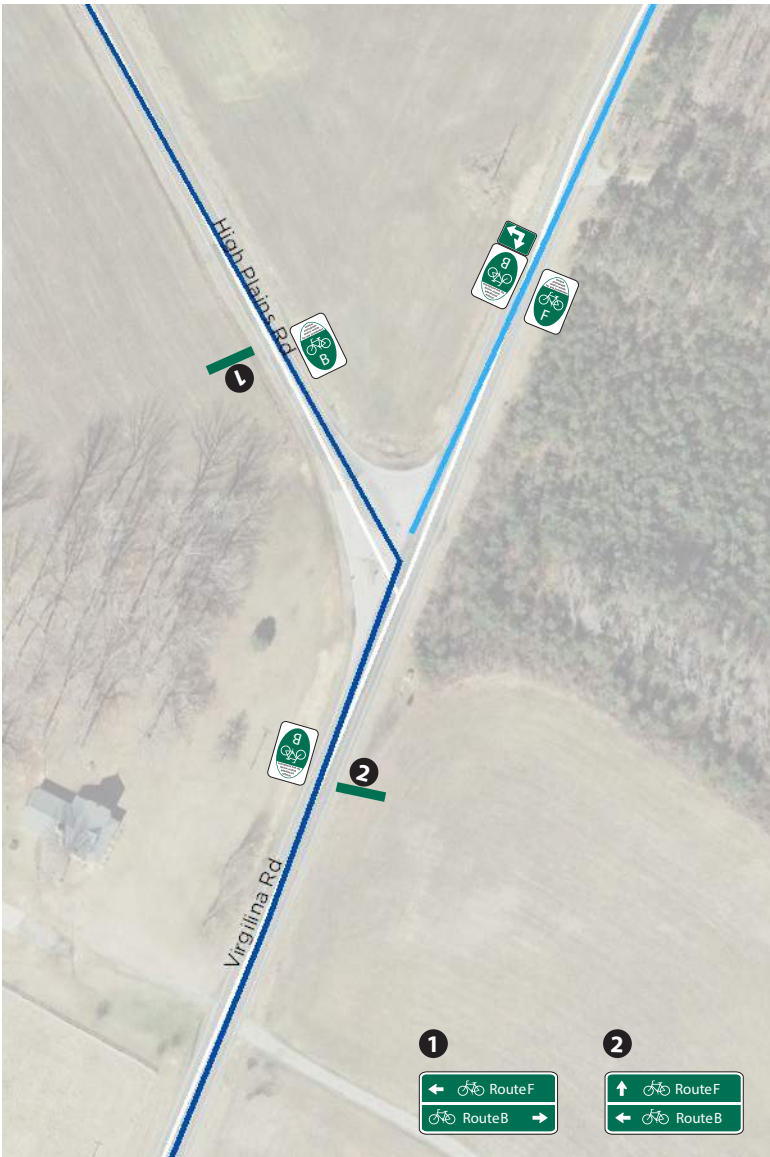




ROUTE B PLACEMENT PLAN



Map 20. Route B - Person County



Map 21. Route B - Person County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE B PLACEMENT PLAN



Map 22. Route B - Person County

## Kerr Tar Bicycle Routes

— Lake Route    — Lake to Lake Route    — Town to Town Route    — Town to Lake Route

0 0.025 0.05 MILES

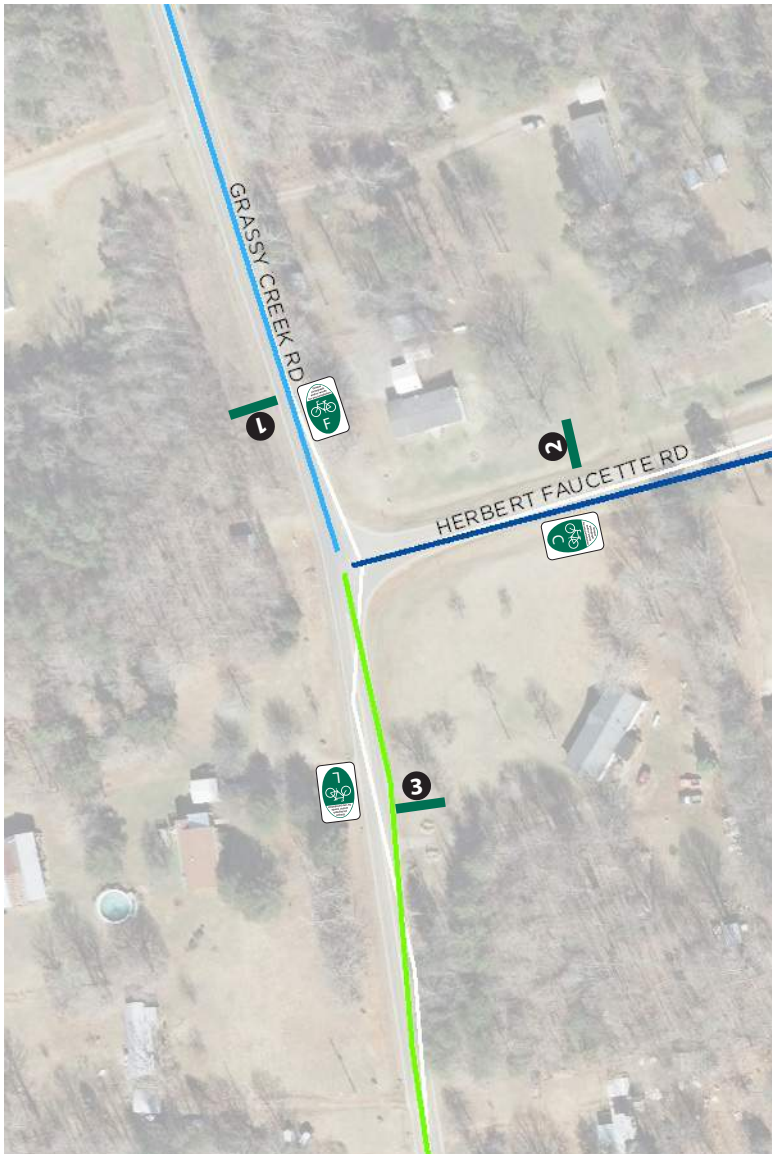




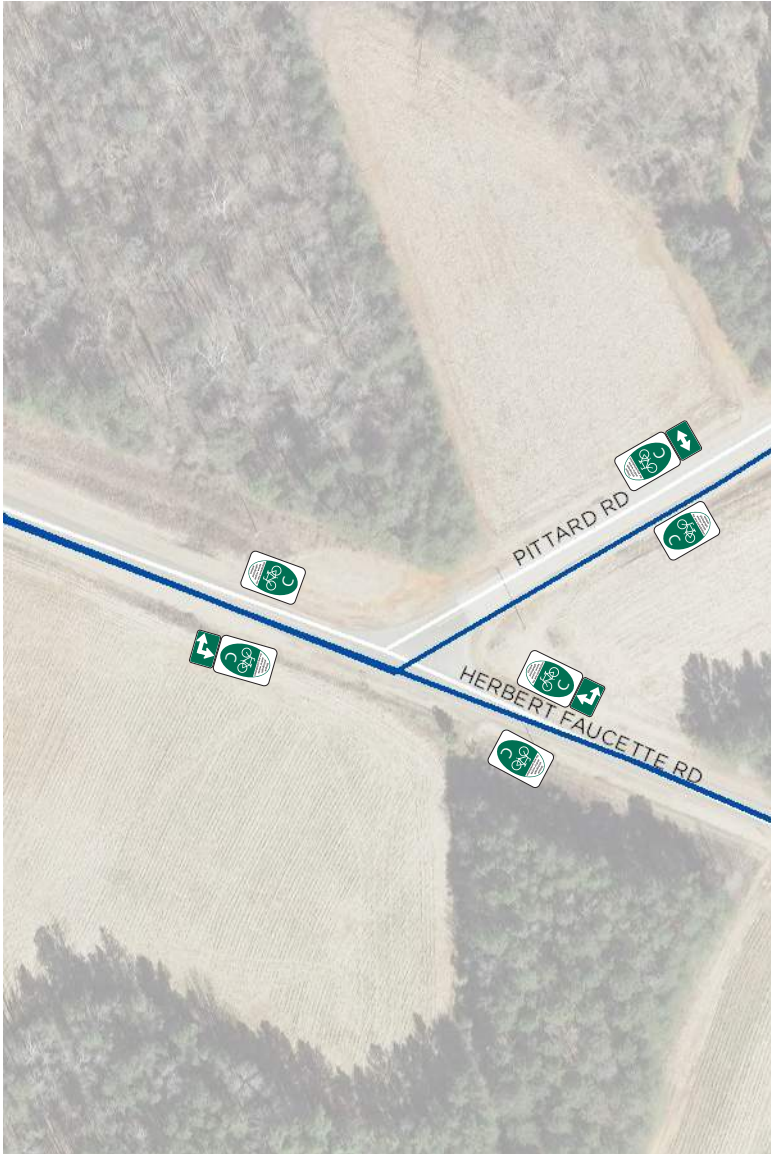
ROUTE C PLACEMENT PLAN



- 1**  
← Route C  
↑ Route L
- 2**  
← Route L  
Route F →
- 3**  
↑ Route F  
Route C →



Map 23. Route C - Granville County



Map 24. Route C - Granville County

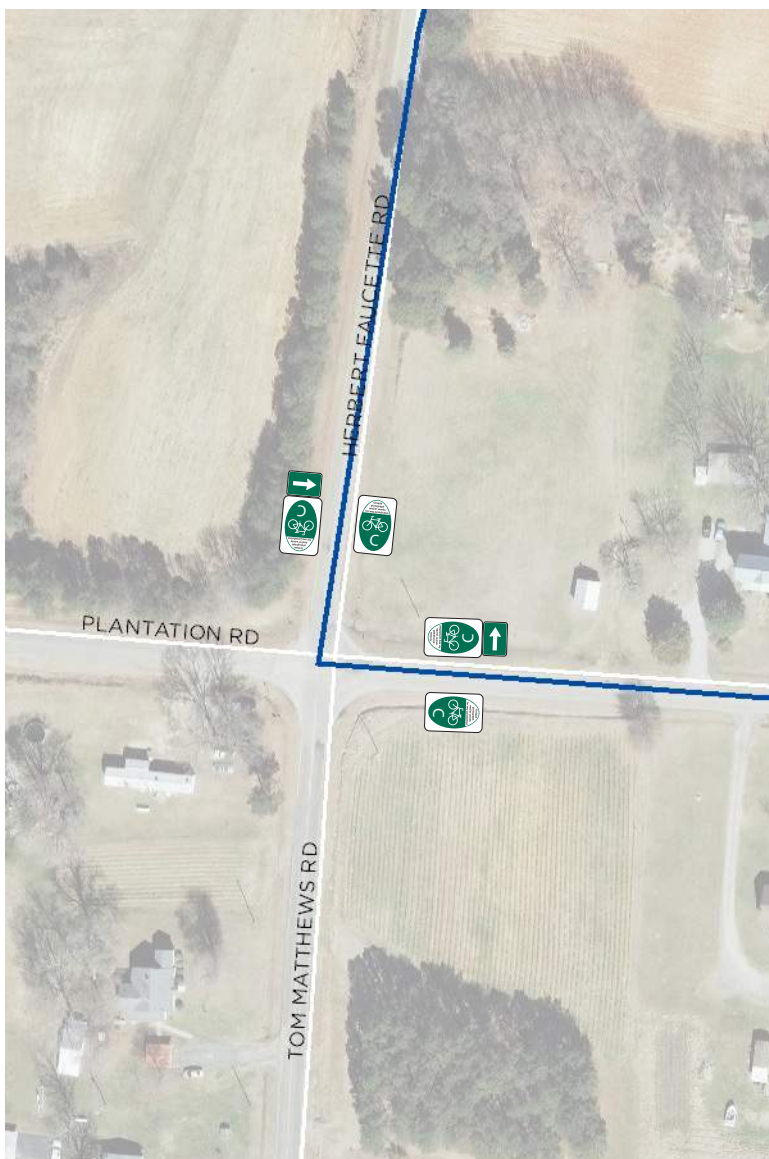
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

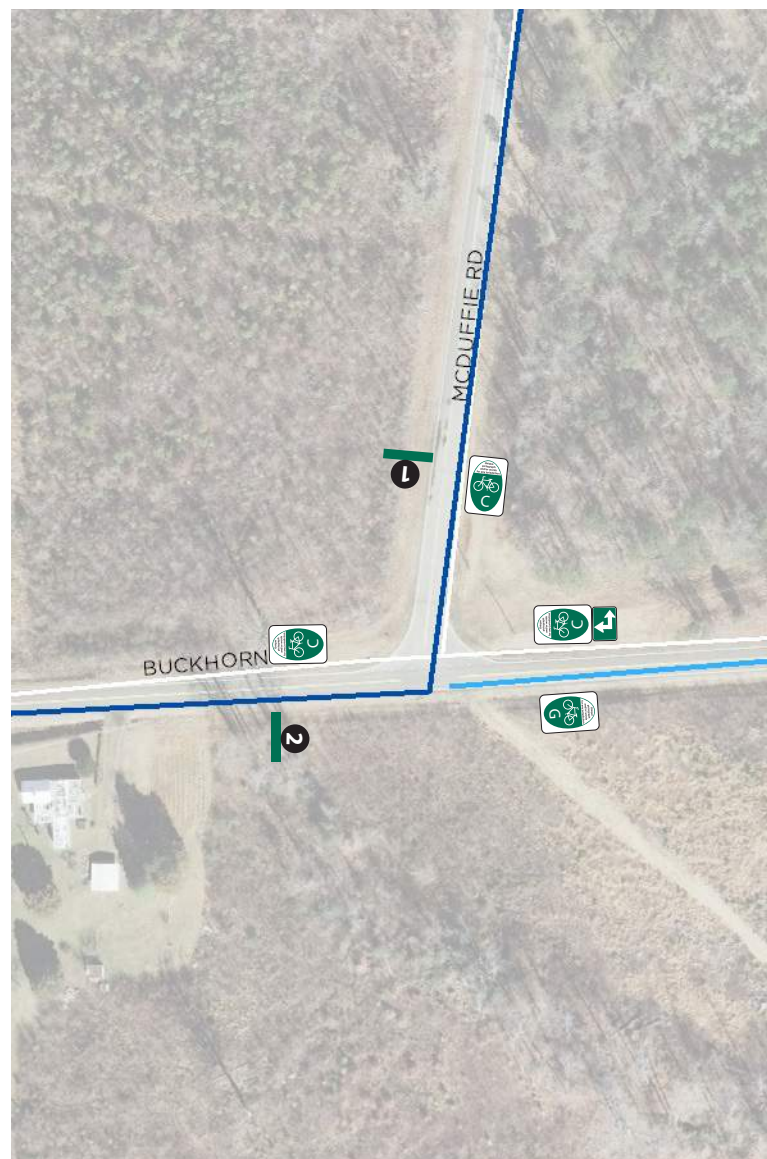




# ROUTE C PLACEMENT PLAN



Map 25. Route C - Granville County



Map 26. Route C - Granville County



1



2



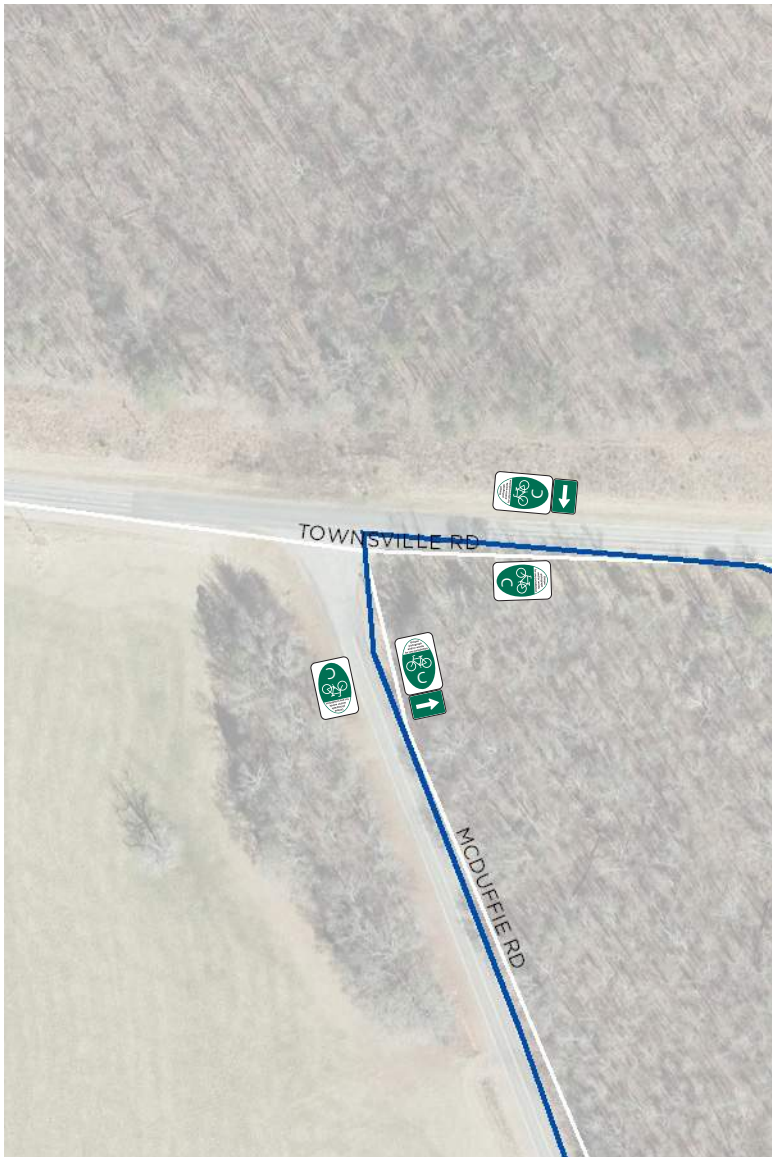
## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES



ROUTE C PLACEMENT PLAN



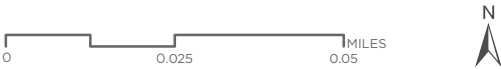
Map 27. Route C - Granville County



Map 28. Route C - Granville County

Kerr Tar Bicycle Routes

— Lake Route	— Lake to Lake Route	— Town to Town Route	— Town to Lake Route
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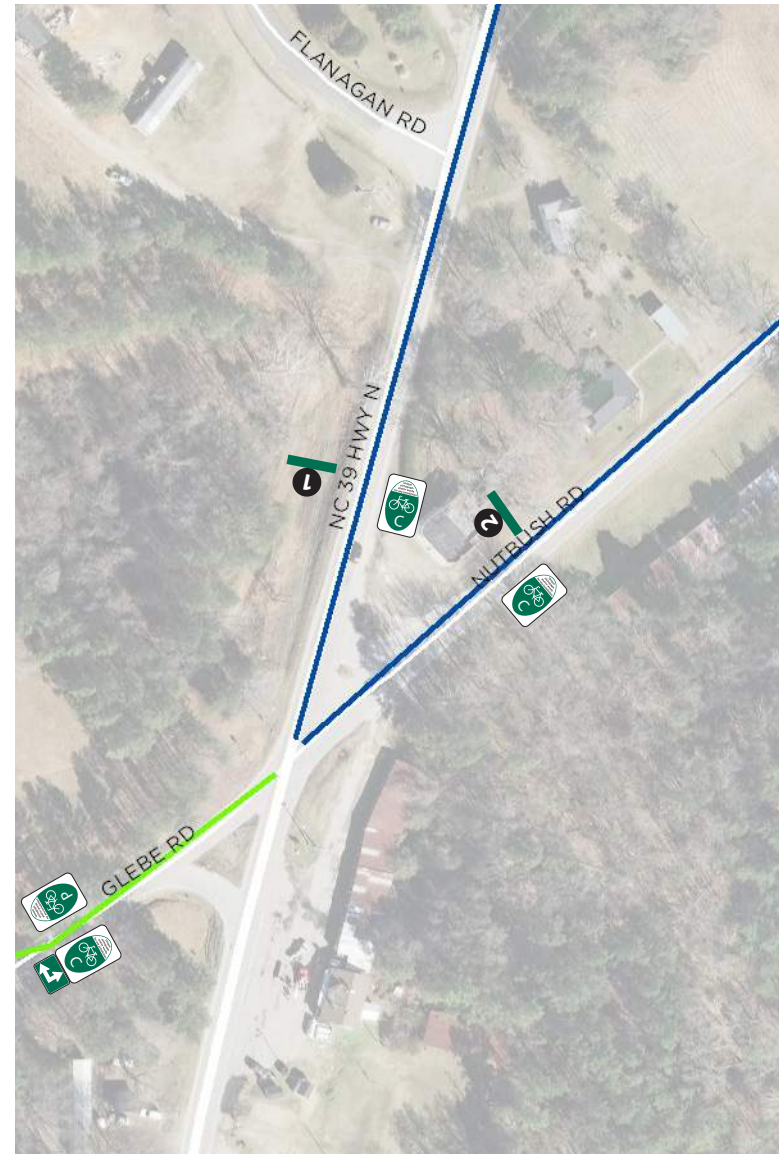




# ROUTE C PLACEMENT PLAN



Map 29. Route C - Vance County



Map 30. Route C - Vance County

Kerr Tar Bicycle Routes

— Lake Route — Lake to Lake Route — Town to Town Route — Town to Lake Route

0 0.025 0.05 MILES



1



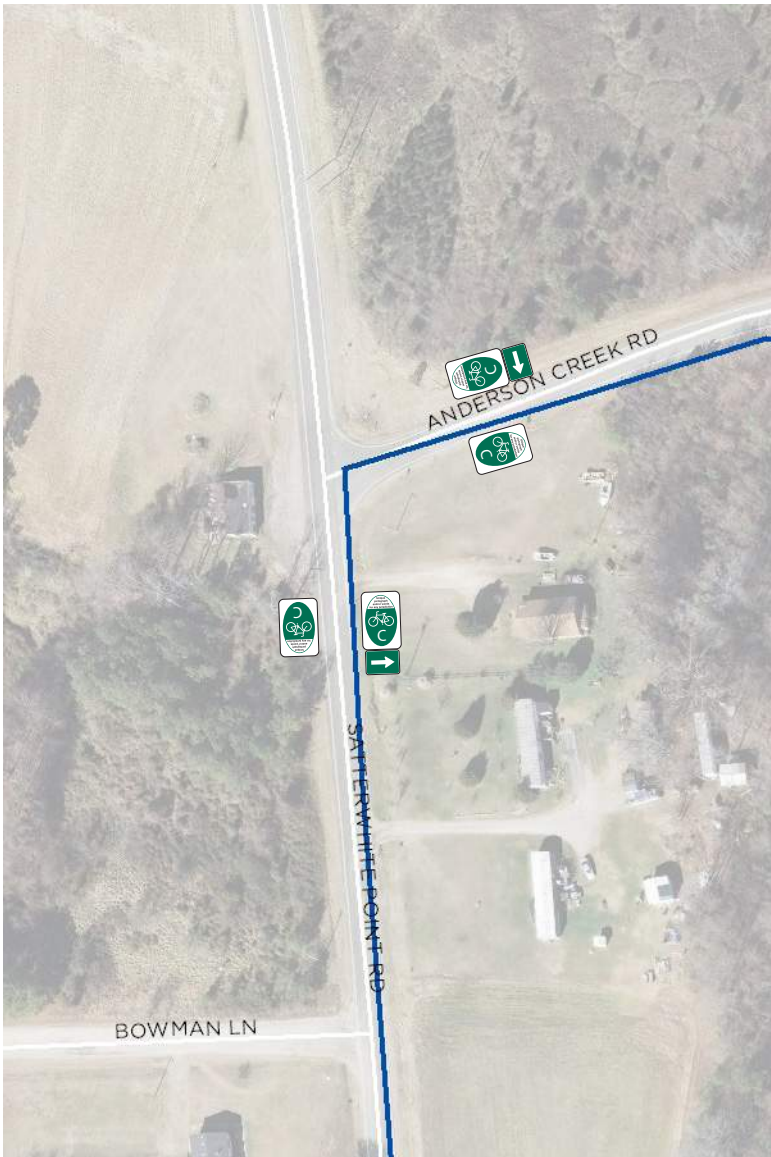
2







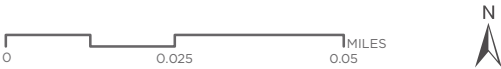
Map 31. Route C - Vance County



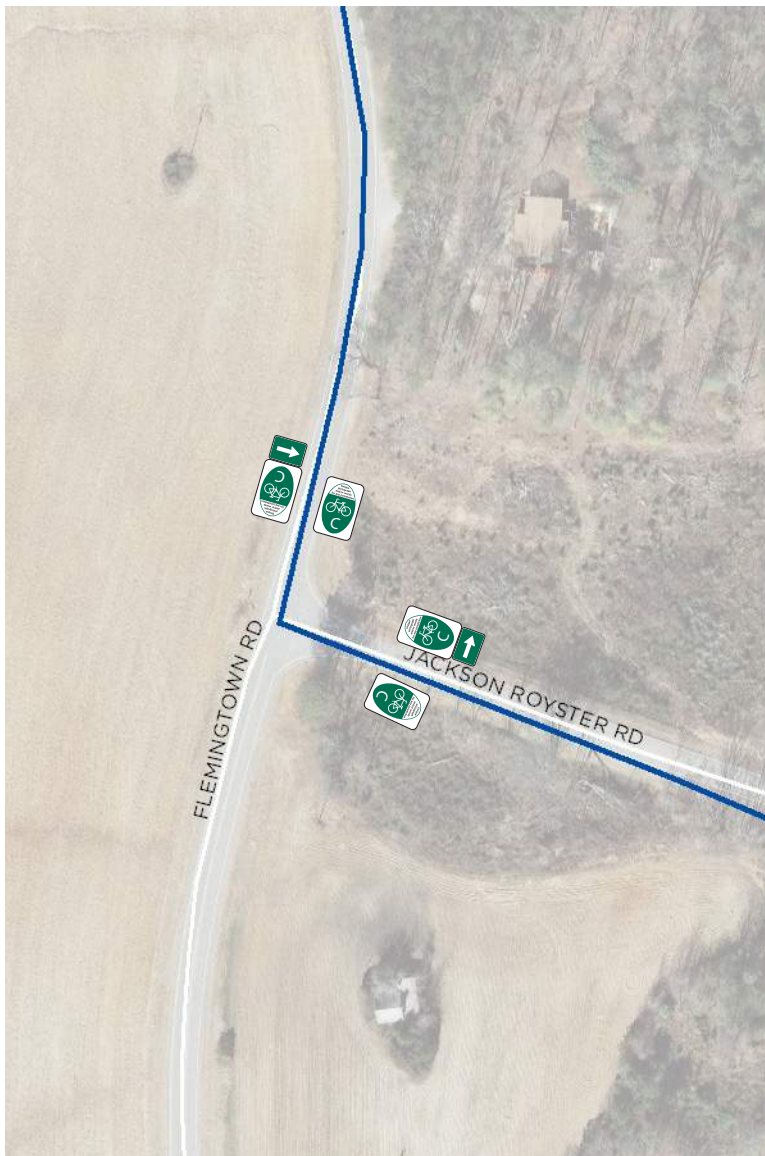
Map 32. Route C - Vance County

Kerr Tar Bicycle Routes

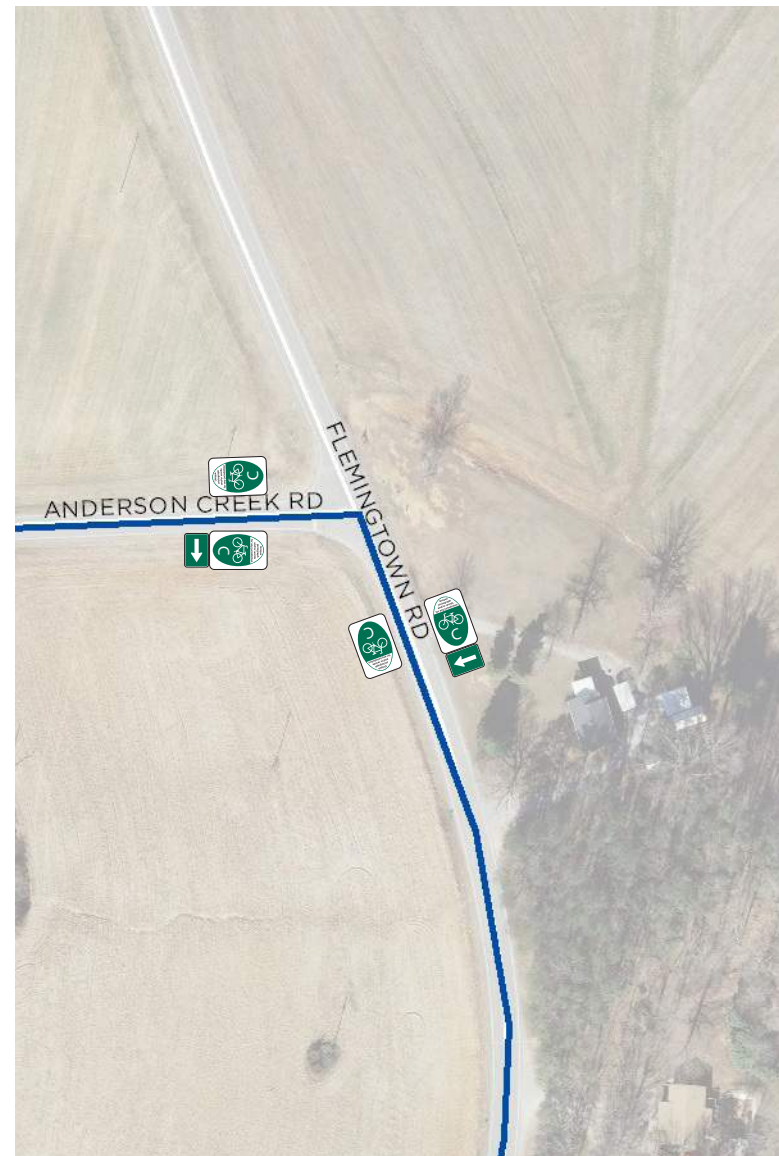
Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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# ROUTE C PLACEMENT PLAN



Map 33. Route C - Vance County



Map 34. Route C - Vance County



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





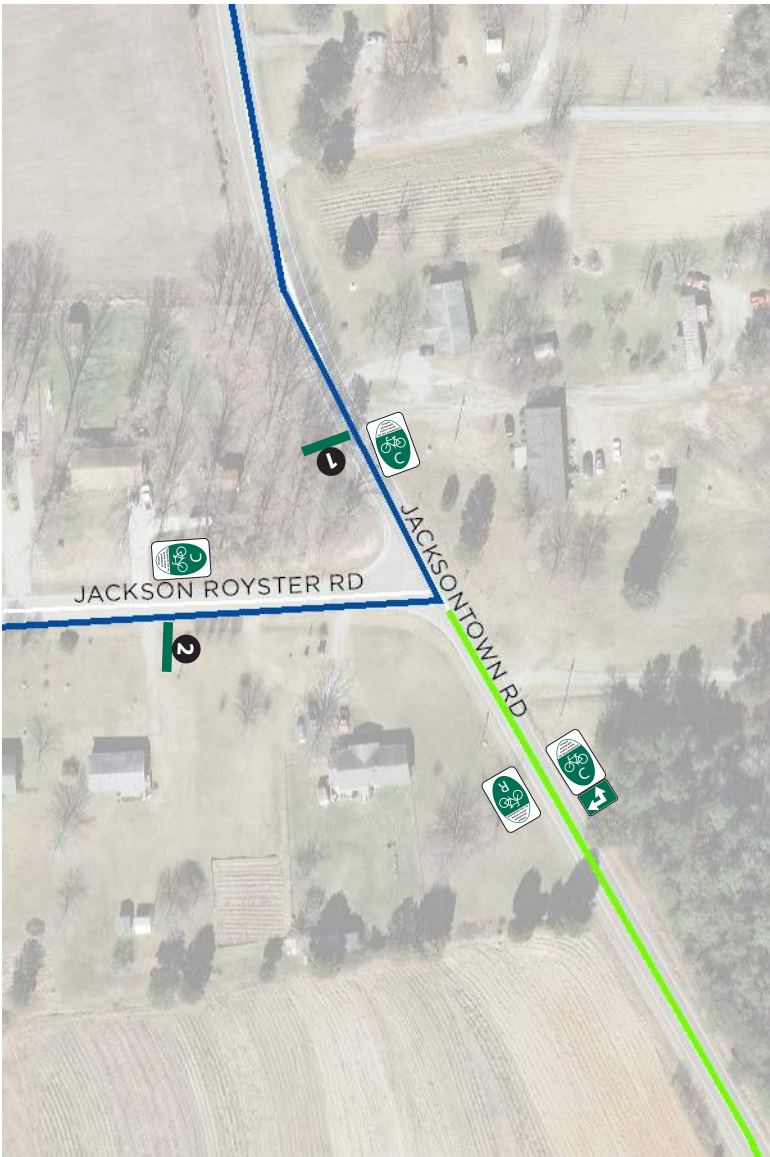
ROUTE C PLACEMENT PLAN



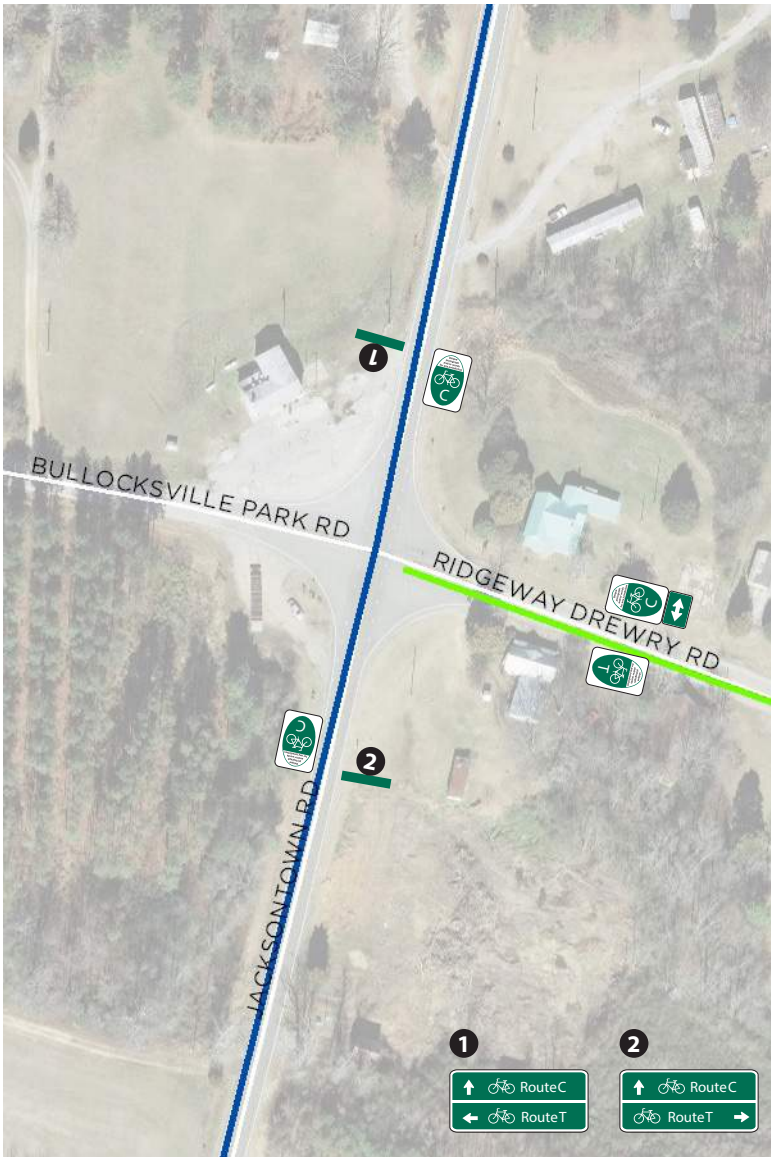
- 1
- ↑ Route R

Route C →
- 2
- ← Route C

Route R →



Map 35. Route C - Vance County



Map 36. Route C - Vance County

Kerr Tar Bicycle Routes

- Lake Route

— Lake to Lake Route

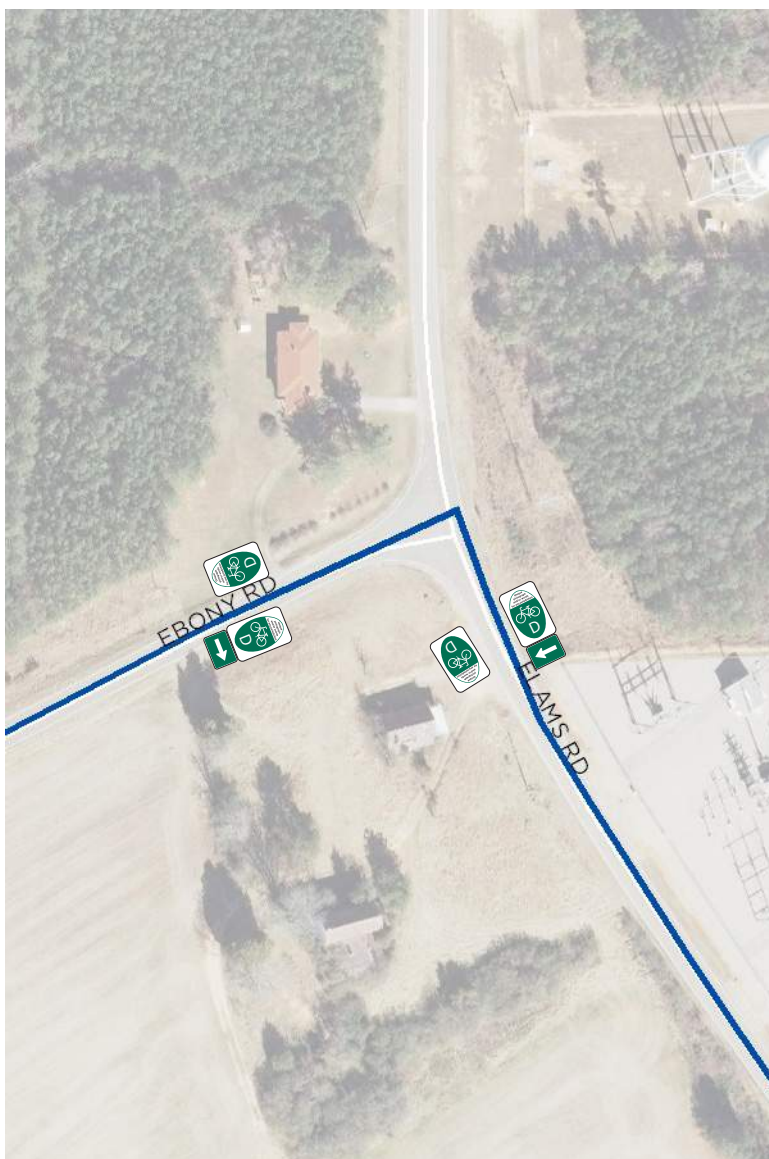
— Town to Town Route

— Town to Lake Route

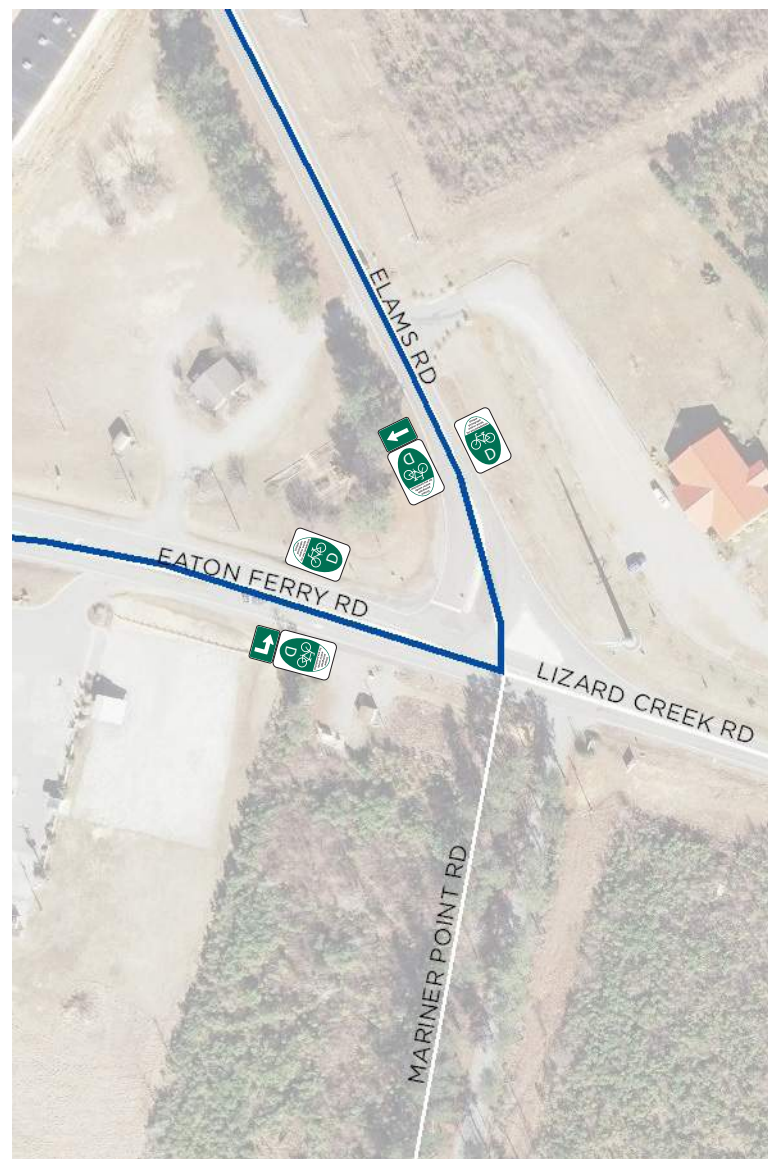




# ROUTE D PLACEMENT PLAN



Map 37. Route D - Warren County



Map 38. Route D - Warren County



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

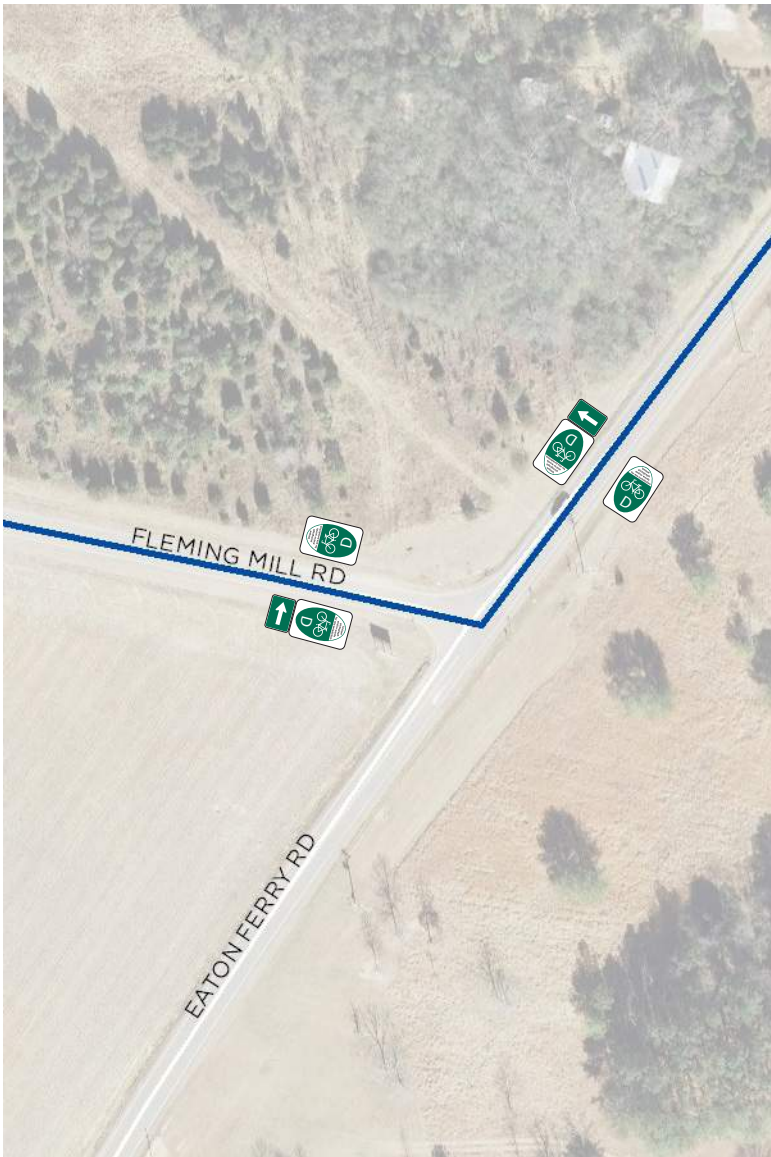
0 0.025 0.05 MILES



ROUTE D PLACEMENT PLAN



Map 39. Route D - Warren County



Map 40. Route D - Warren County

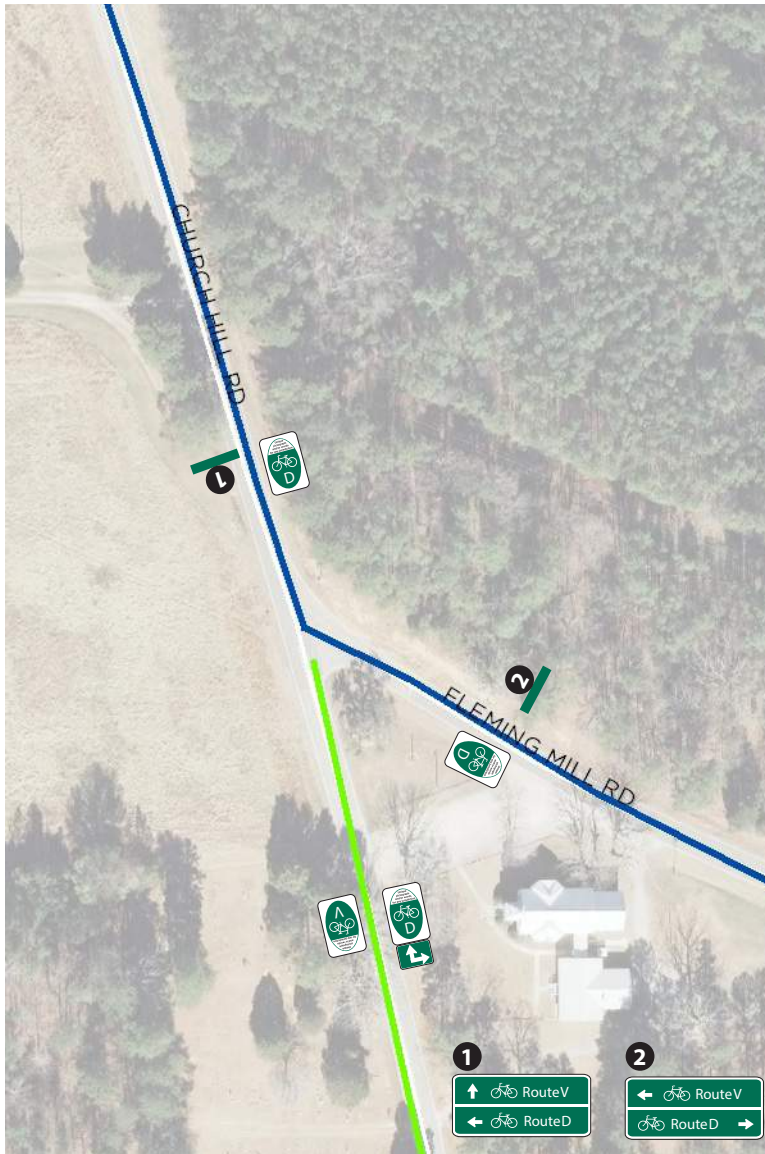
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route





# ROUTE D PLACEMENT PLAN



Map 41. Route D - Warren County



Map 42. Route D - Warren County



## Kerr Tar Bicycle Routes

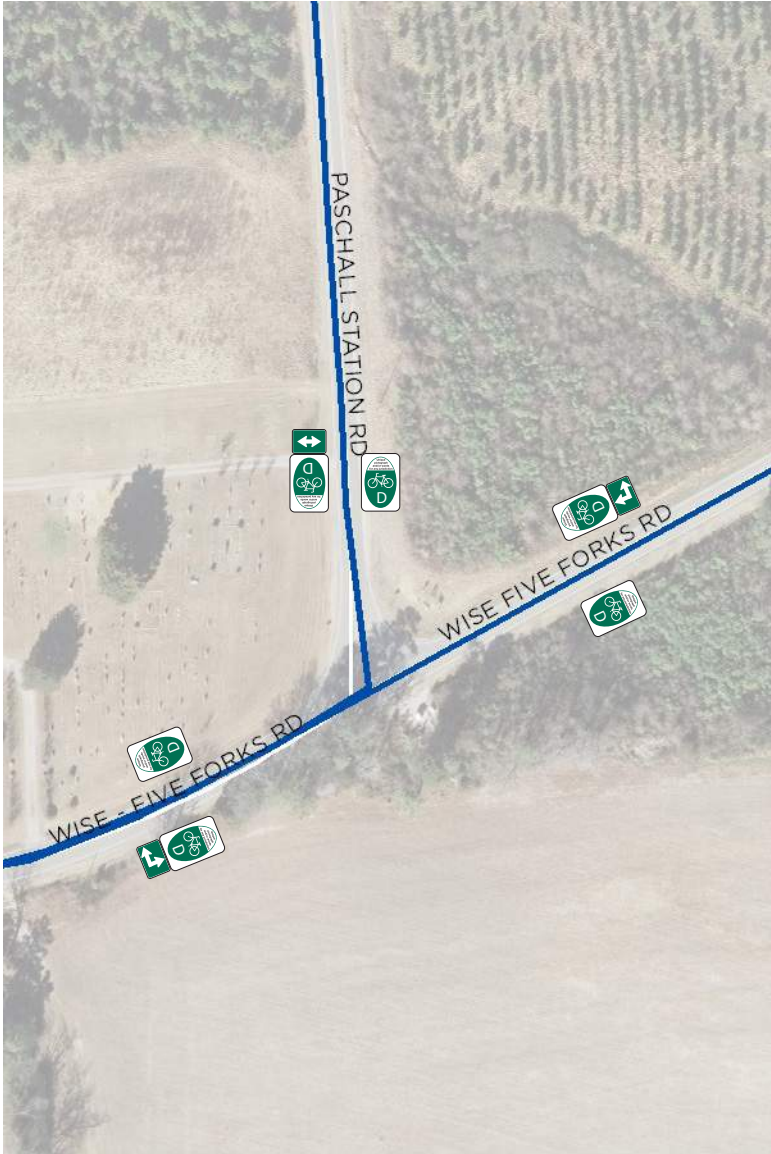
— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE D PLACEMENT PLAN



Map 43. Route D - Warren County



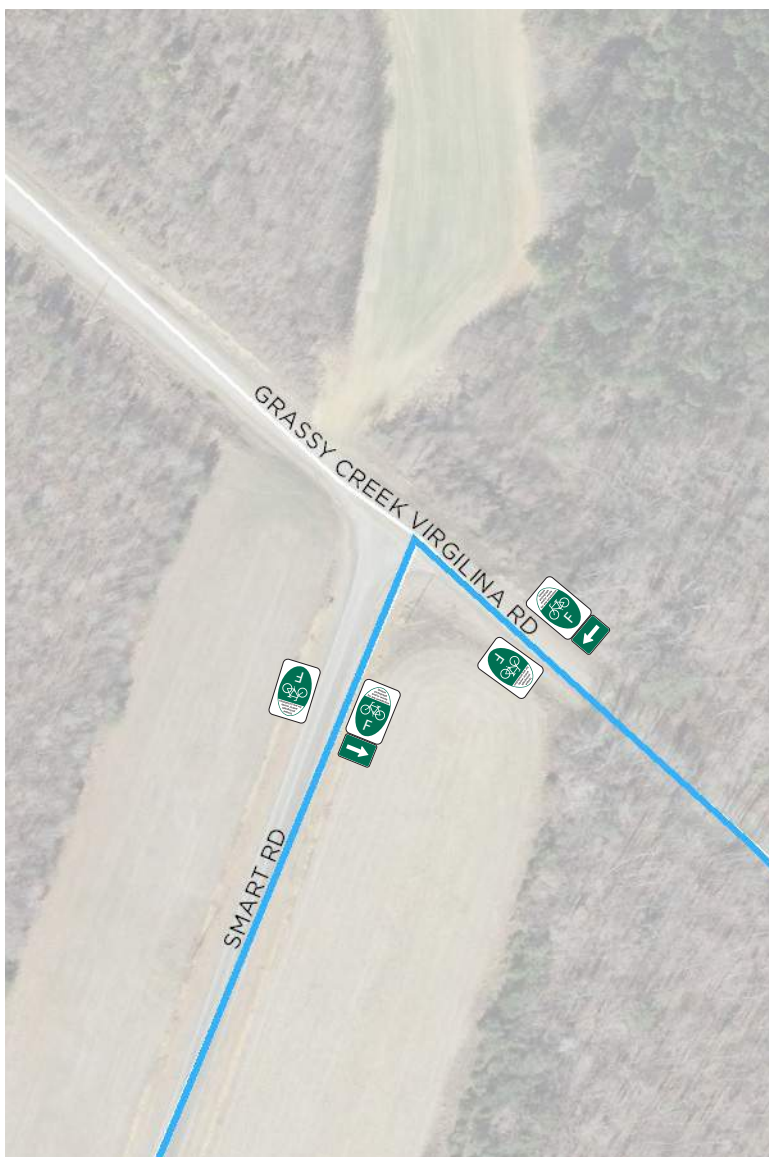
Map 44. Route D - Warren County

Kerr Tar Bicycle Routes

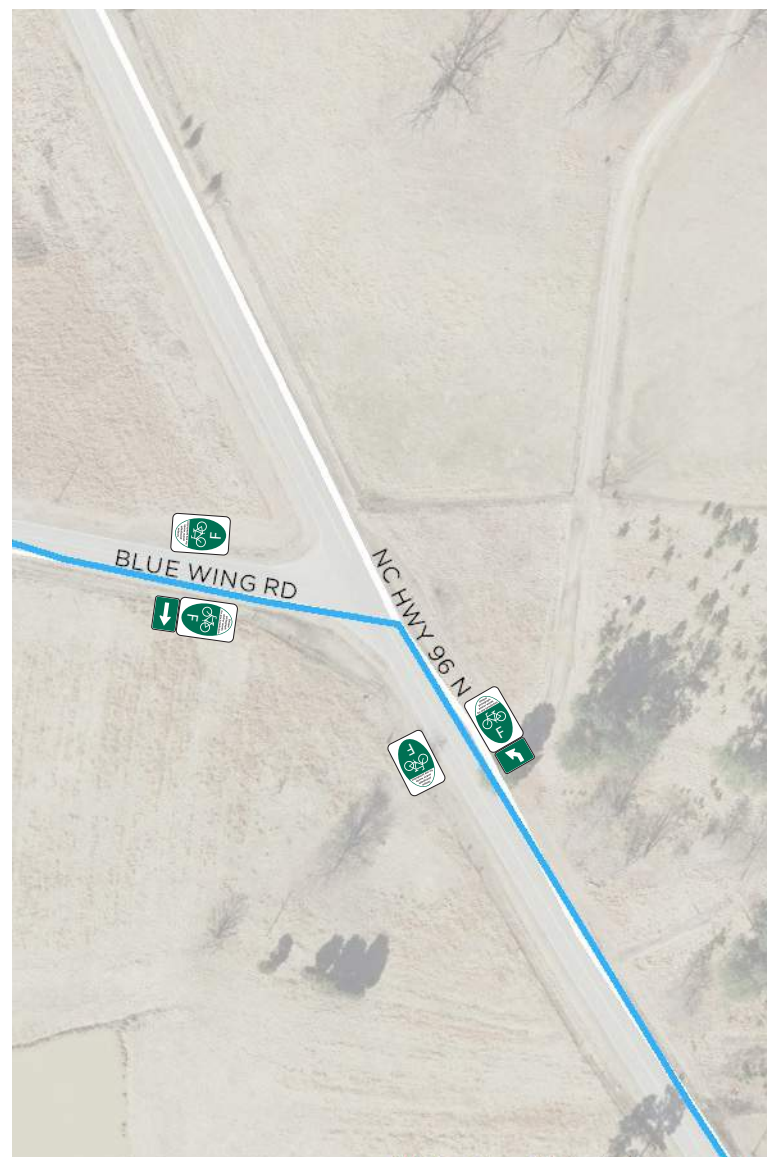
- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE F PLACEMENT PLAN



Map 45. Route F - Granville County



Map 46. Route F - Granville County



## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES

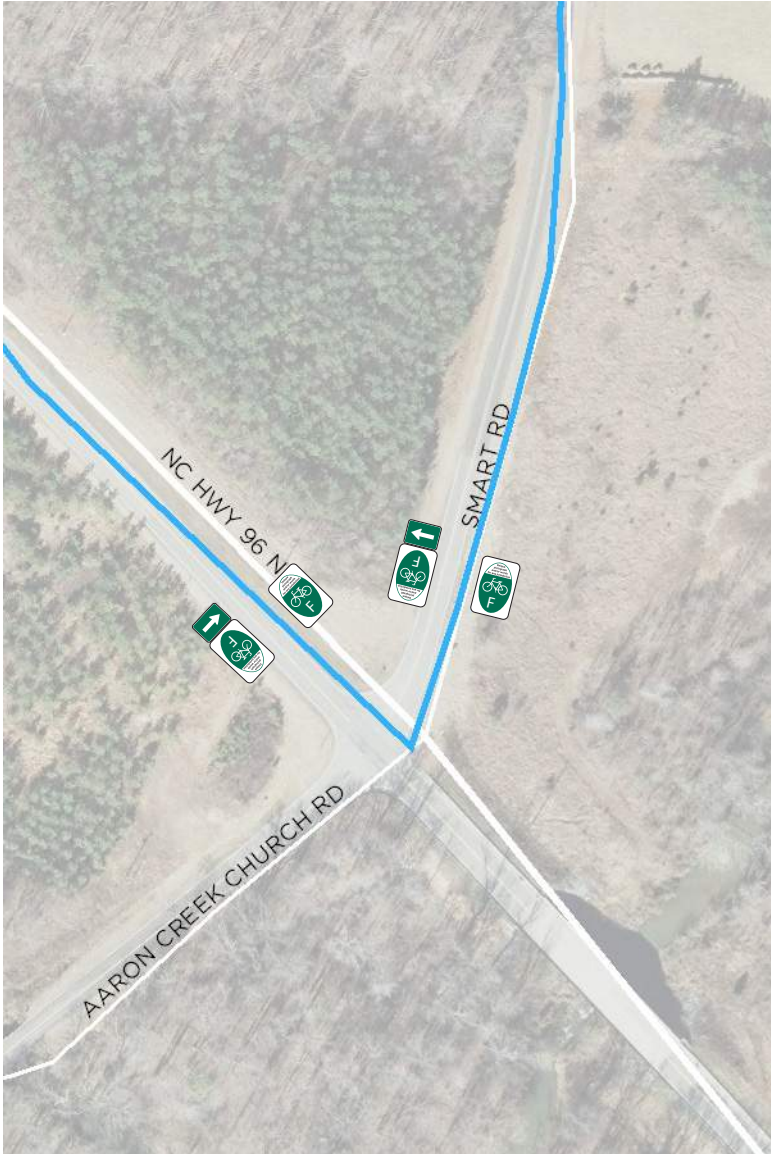




ROUTE F PLACEMENT PLAN



Map 47. Route F - Granville County



Map 48. Route F - Granville County

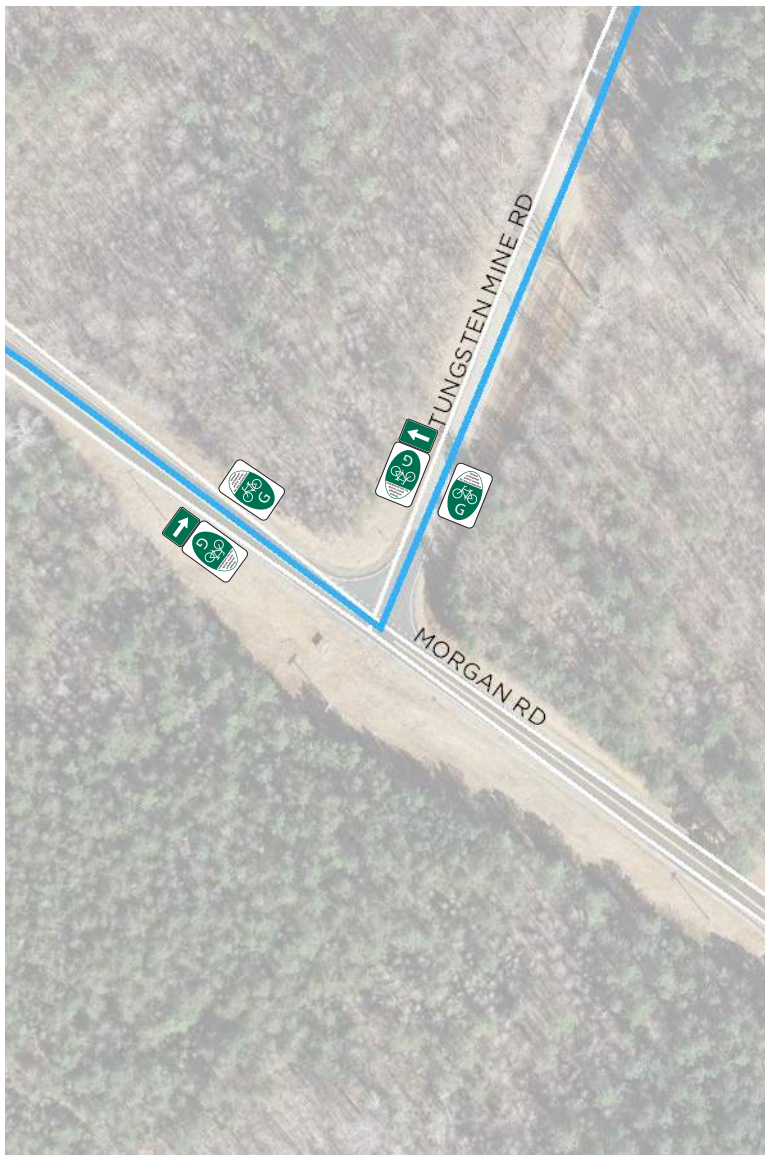
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

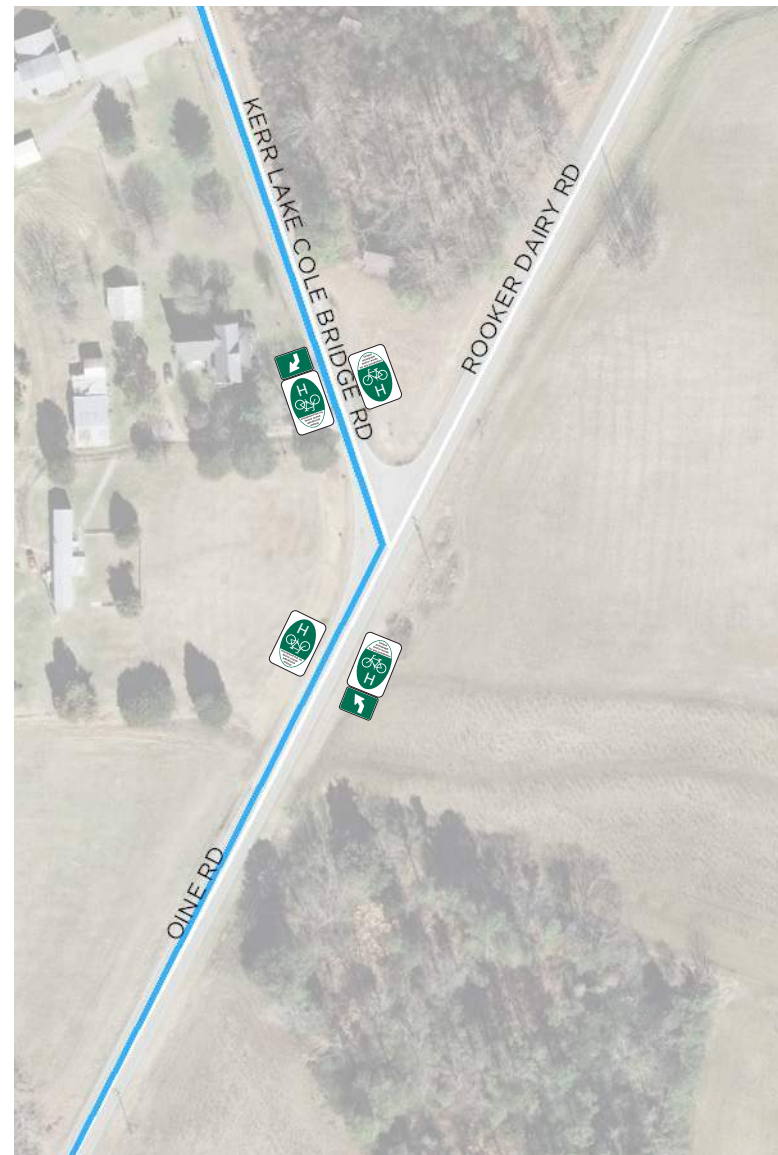




# ROUTE G & ROUTE H PLACEMENT PLANS



Map 49. Route G - Granville County/ Vance County



Map 50. Route H - Warren County



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

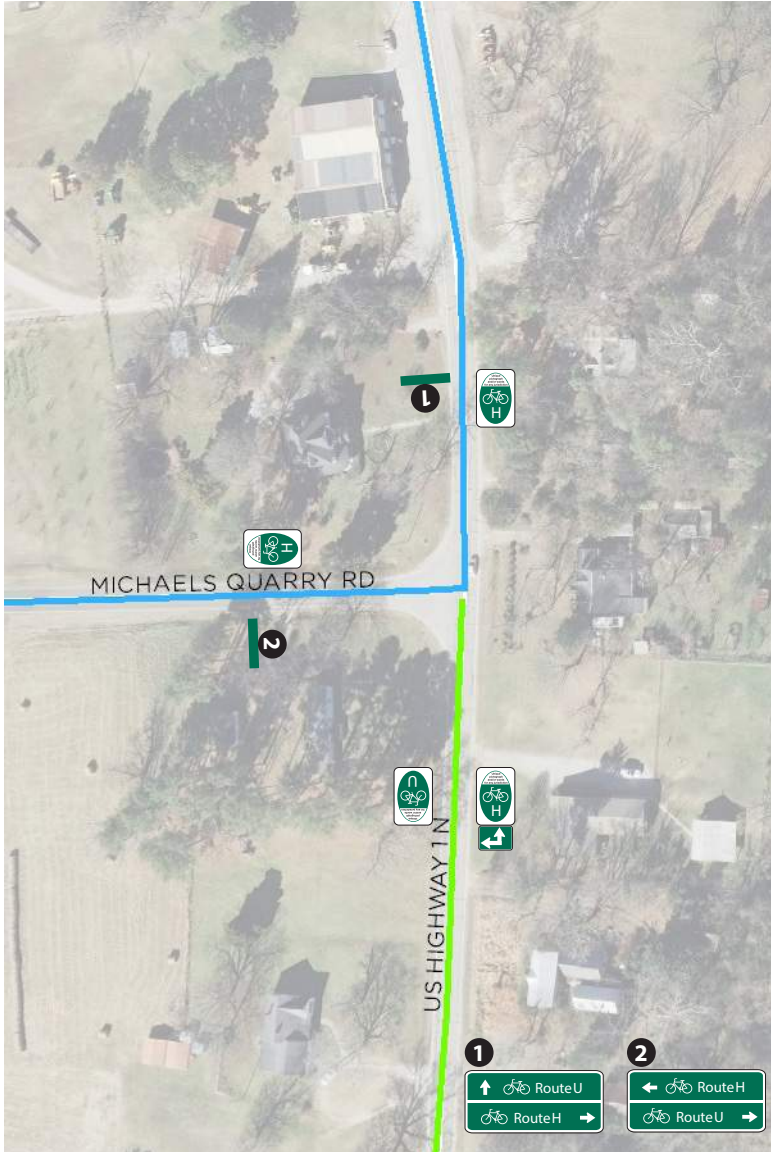
0 0.025 0.05 MILES



ROUTE H PLACEMENT PLAN



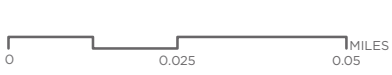
Map 51. Route H - Warren County



Map 52. Route H - Warren County

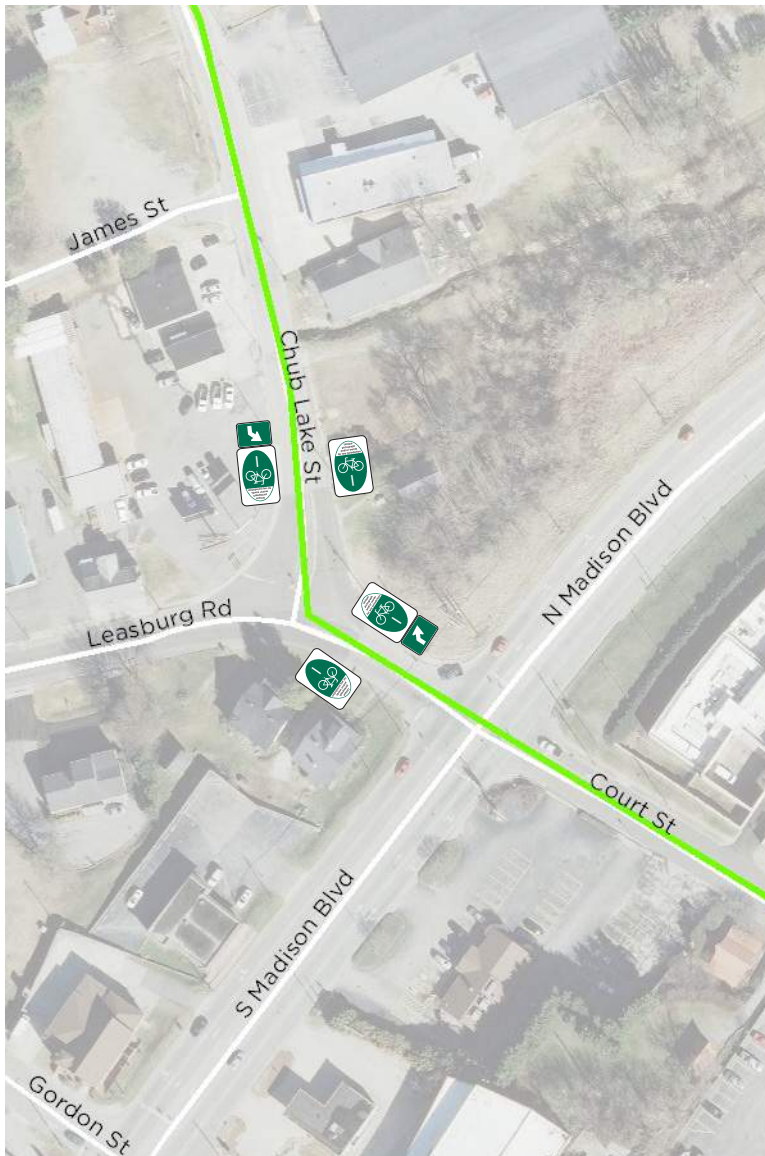
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

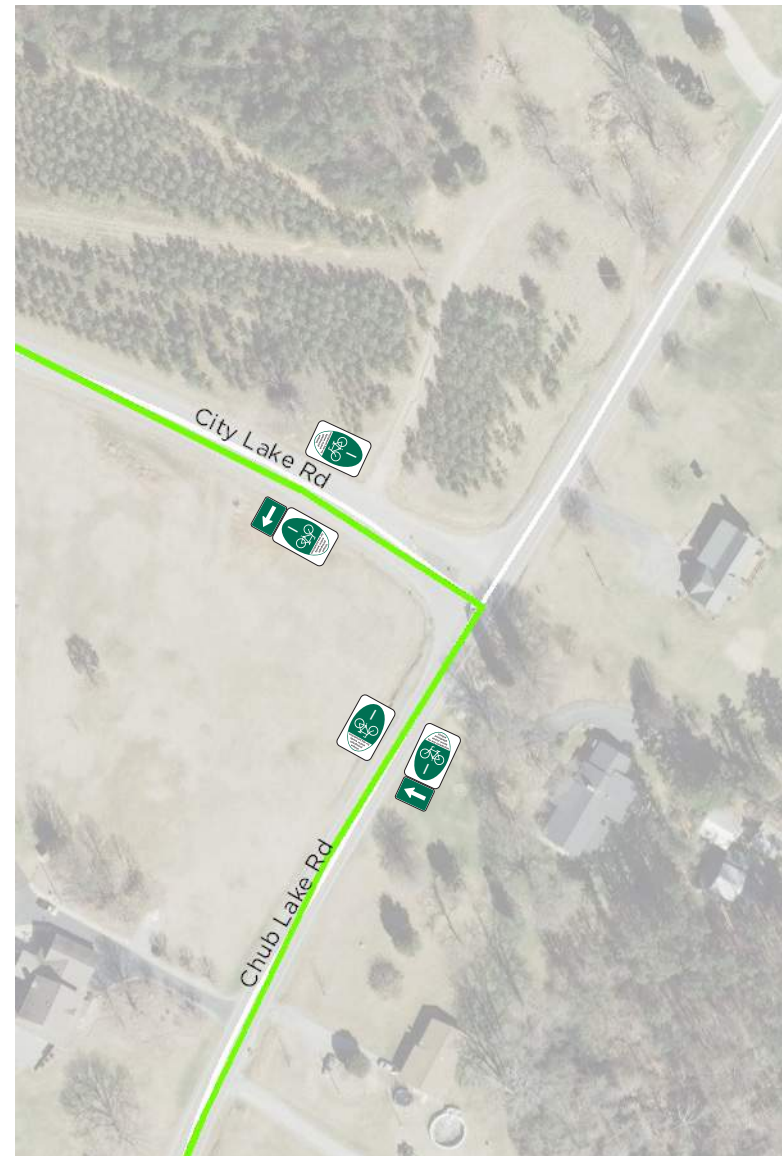




# ROUTE I PLACEMENT PLAN



Map 53. Route I - Person County



Map 54. Route I - Person County



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES

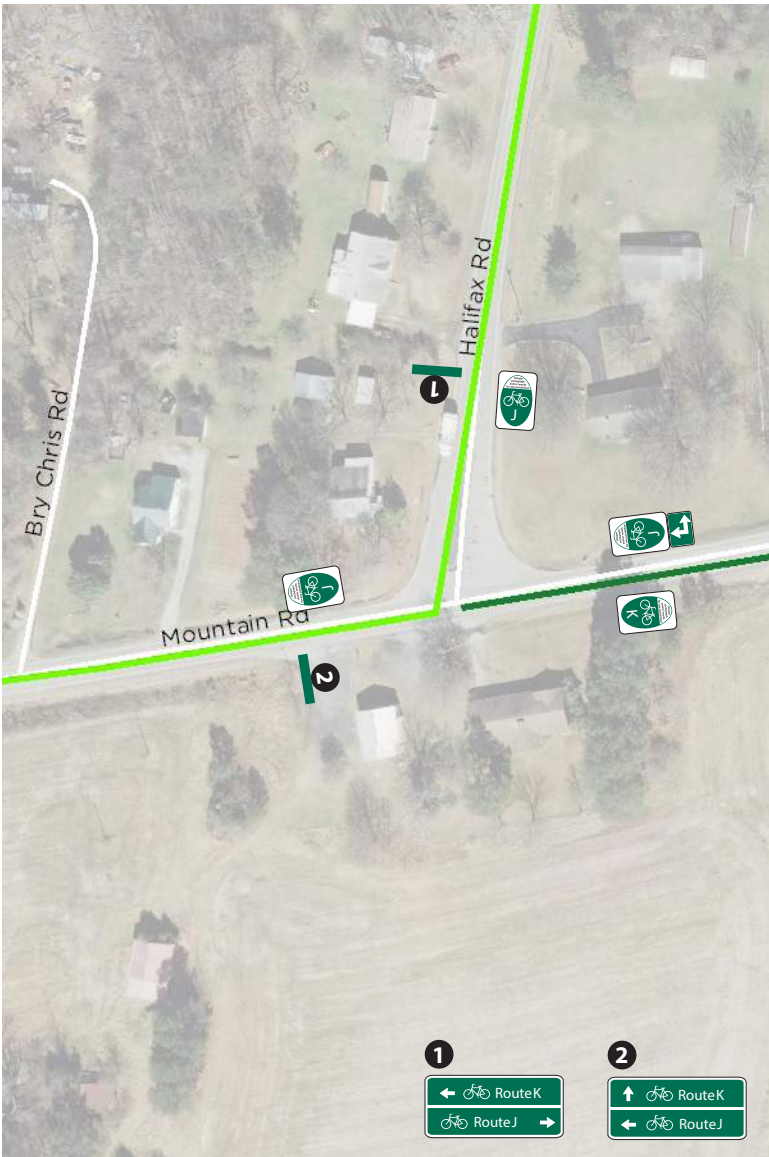




ROUTE I & ROUTE J PLACEMENT PLANS



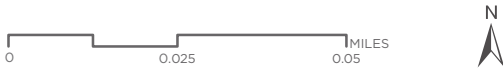
Map 55. Route I & J - Person County (2 intersections)



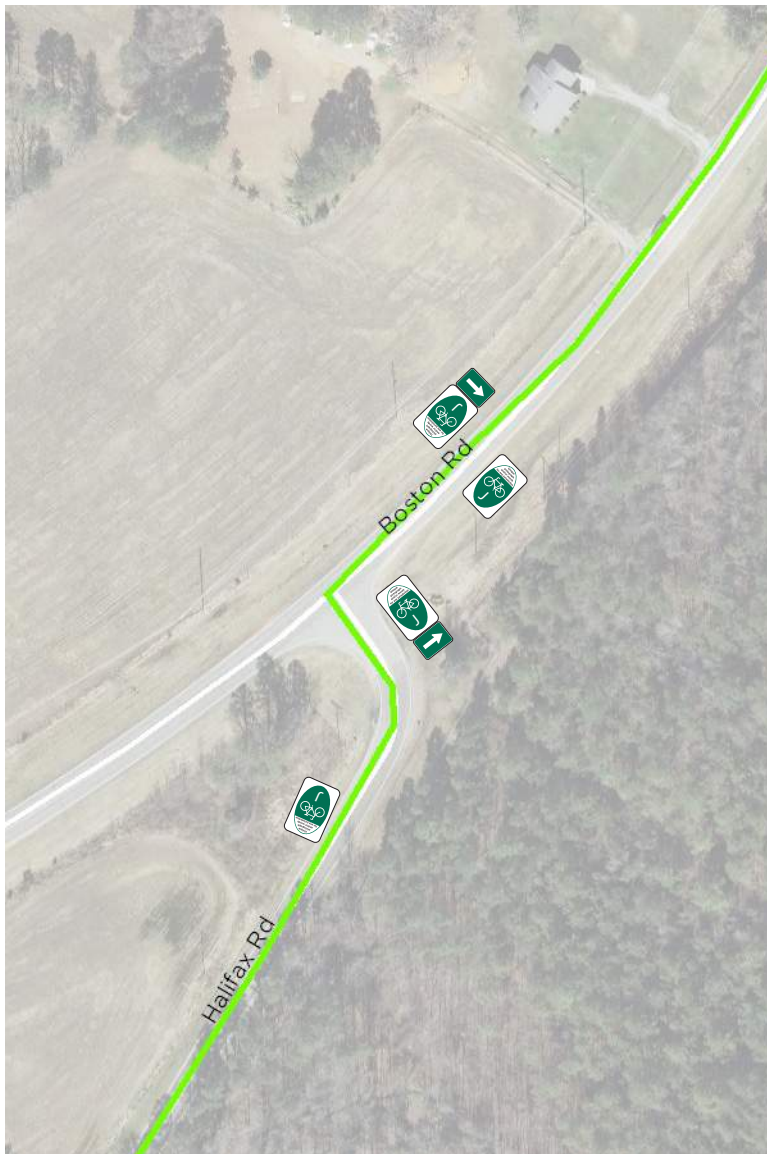
Map 56. Route J - Person County

Kerr Tar Bicycle Routes

 Lake Route	 Lake to Lake Route	 Town to Town Route	 Town to Lake Route
--	--	--	---



# ROUTE J PLACEMENT PLAN



Map 57. Route J - Person County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

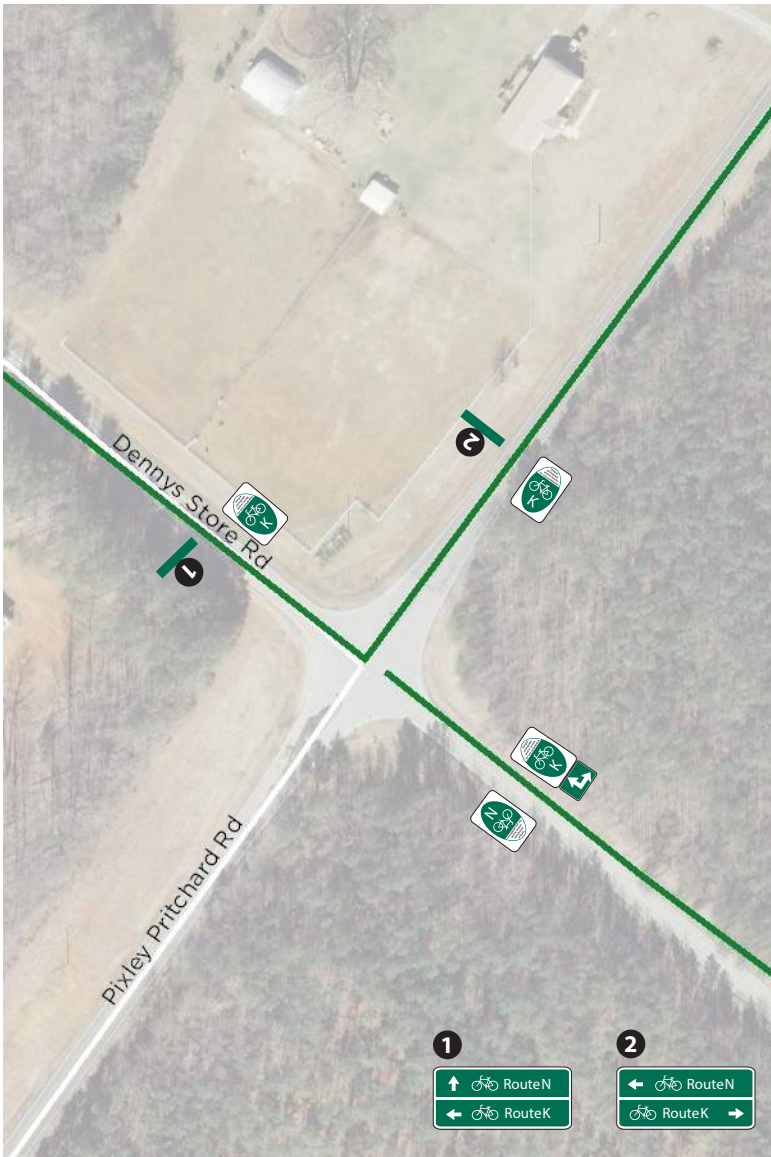




ROUTE K PLACEMENT PLAN



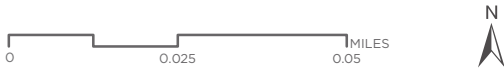
Map 58. Route K - Person County



Map 59. Route K - Person County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

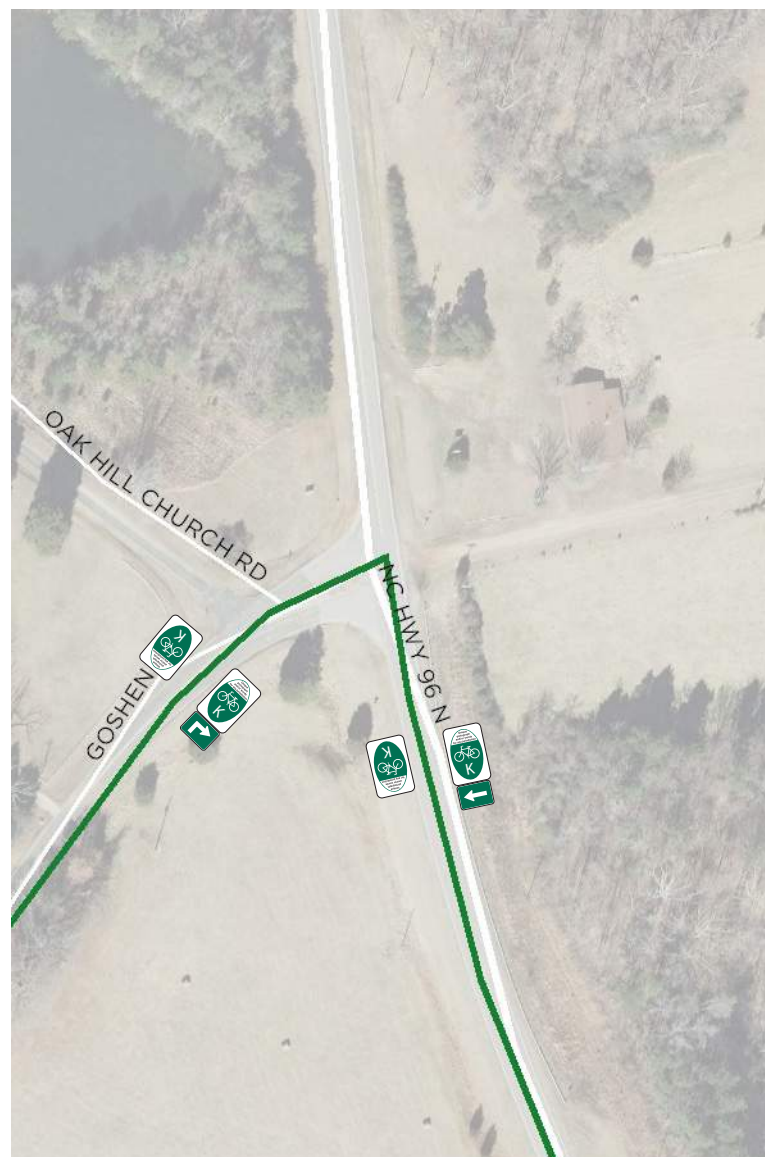




# ROUTE K PLACEMENT PLAN



Map 60. Route K - Granville County



Map 61. Route K - Granville County



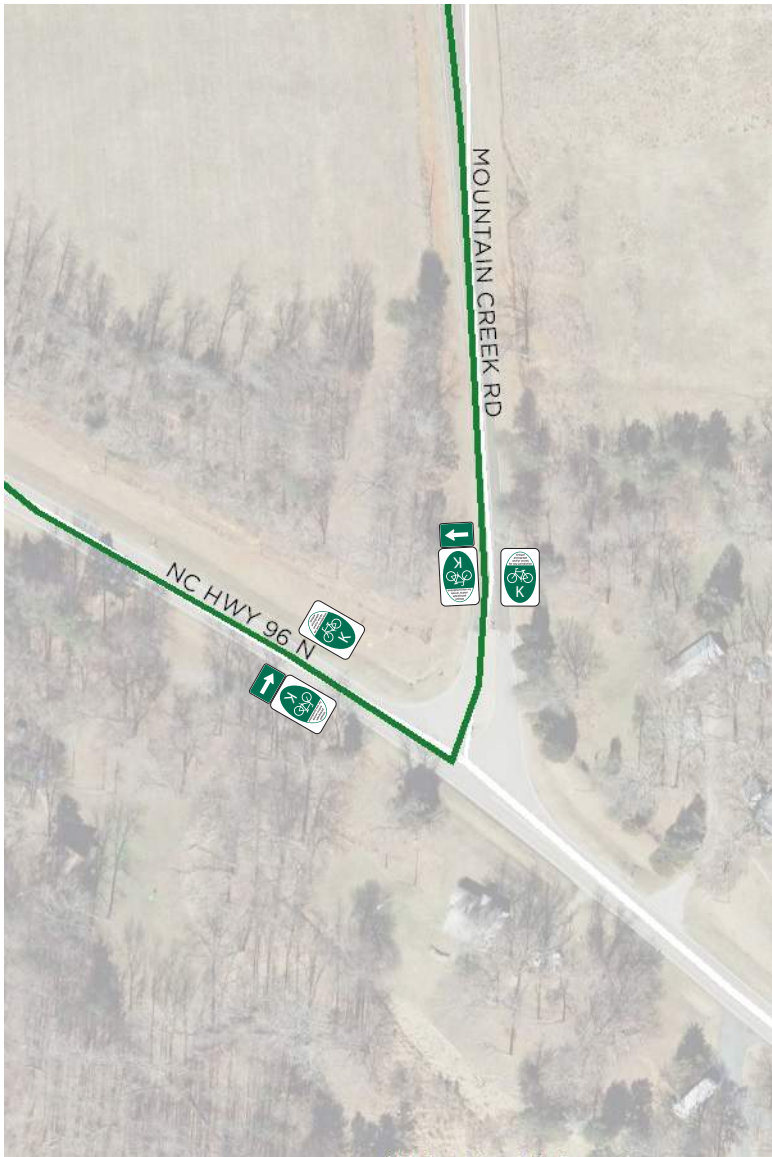
## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

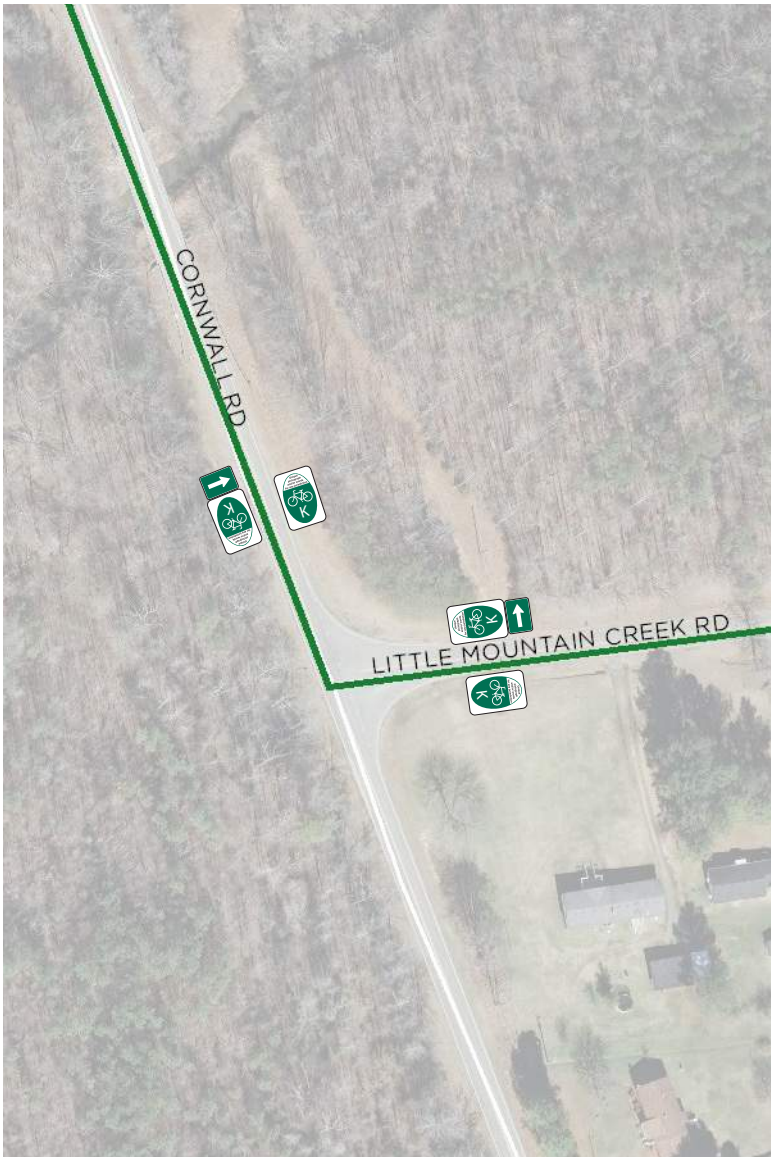
0 0.025 0.05 MILES



ROUTE K PLACEMENT PLAN



Map 62. Route K - Granville County



Map 63. Route K - Granville County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

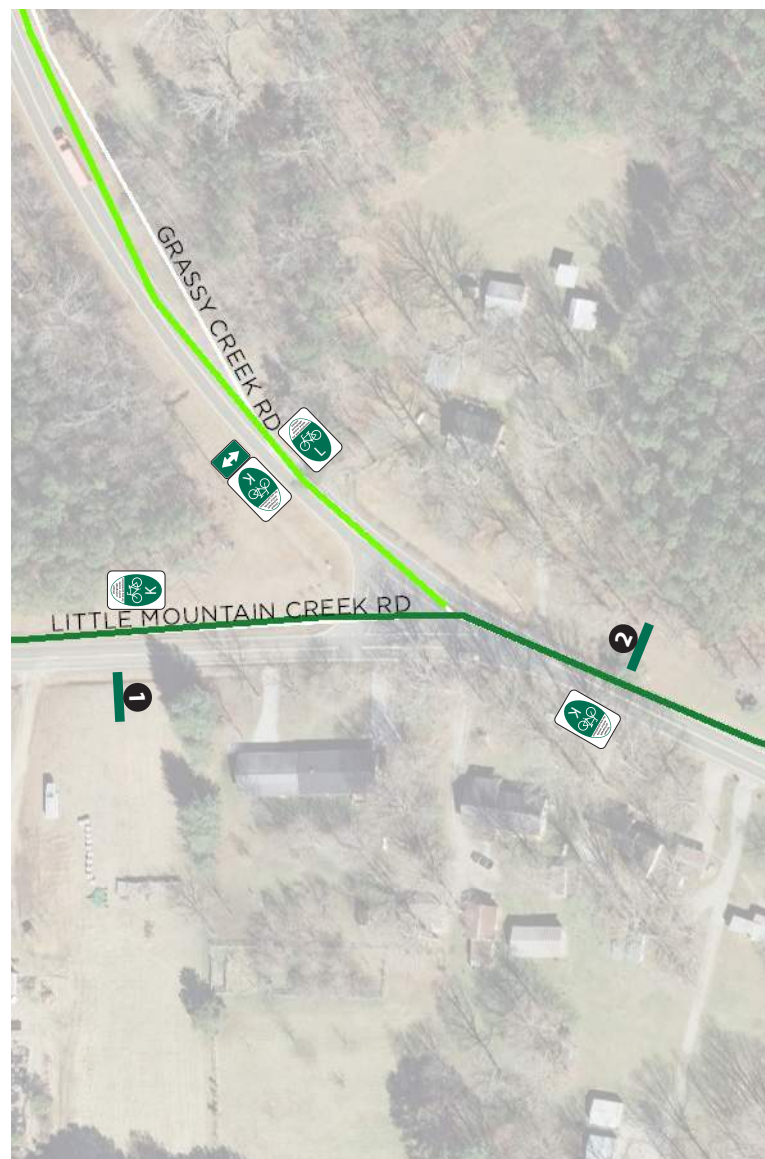




# ROUTE K PLACEMENT PLAN



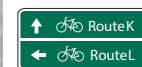
Map 64. Route K - Granville County



Map 65. Route K - Granville County



1



2



## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES

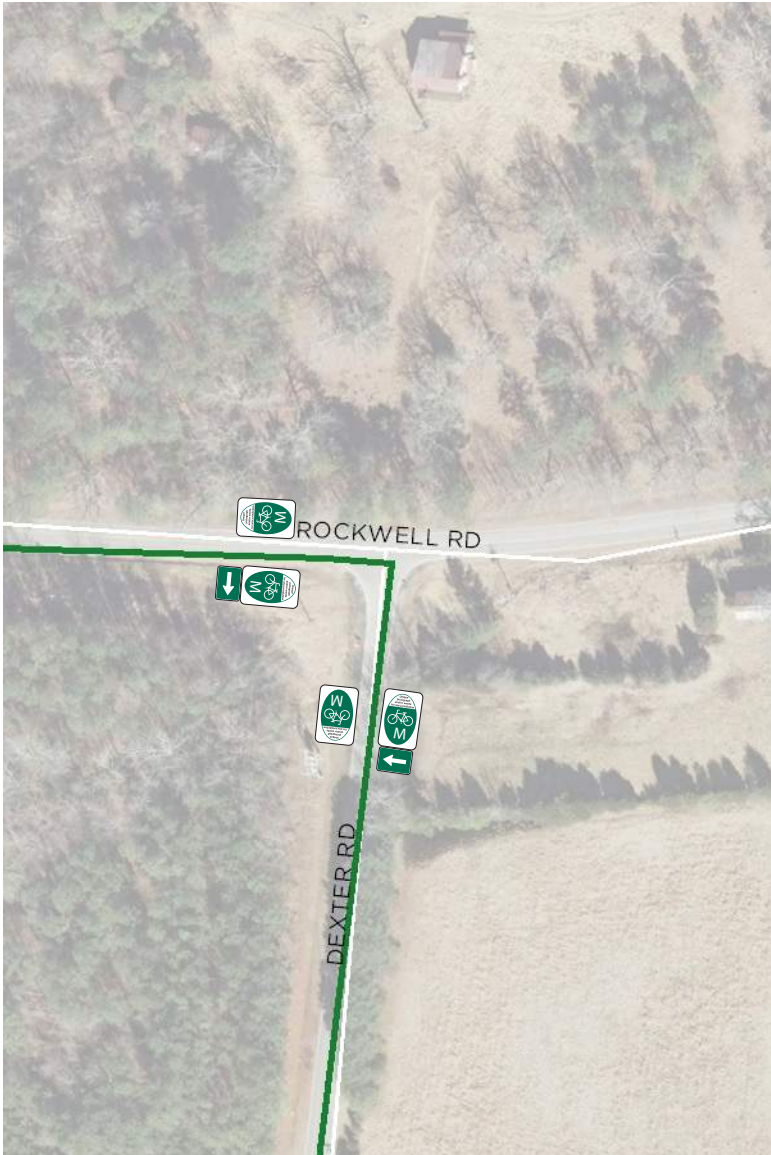




ROUTE K & ROUTE M PLACEMENT PLANS



Map 66. Route K - Granville County



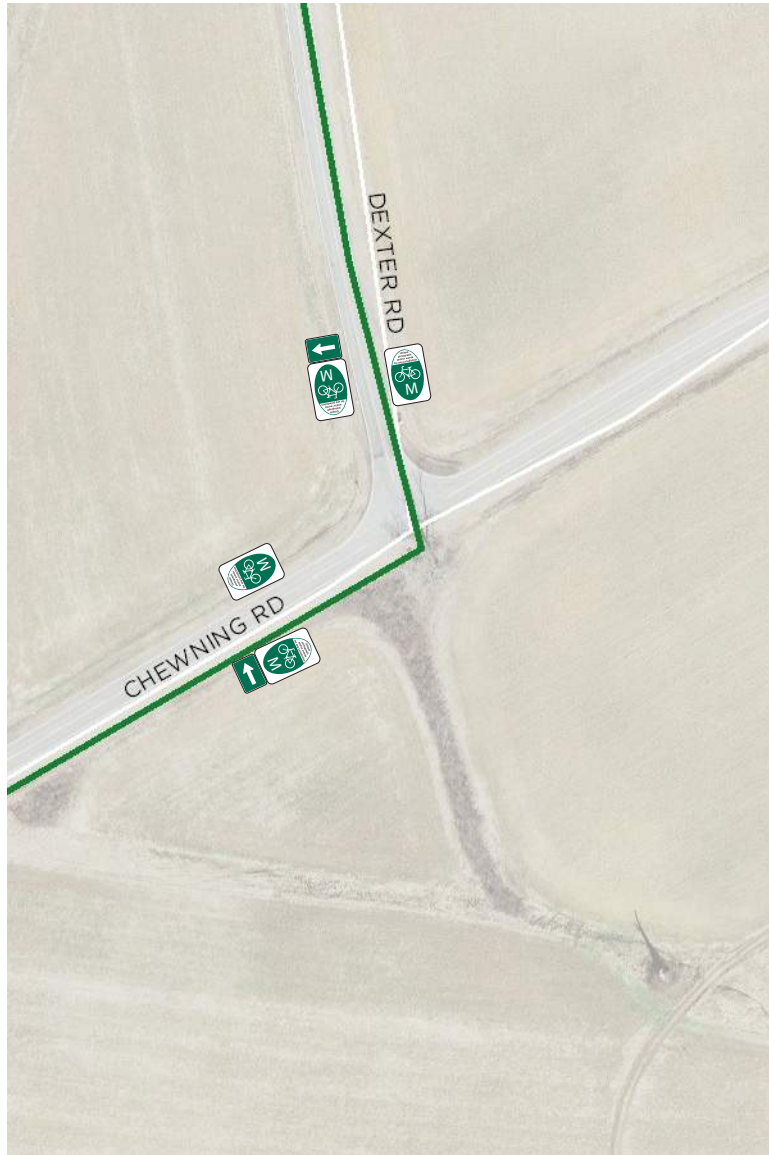
Map 67. Route M - Granville County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE M PLACEMENT PLAN



Map 68. Route M - Granville County



Map 69. Route M - Granville County



## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES

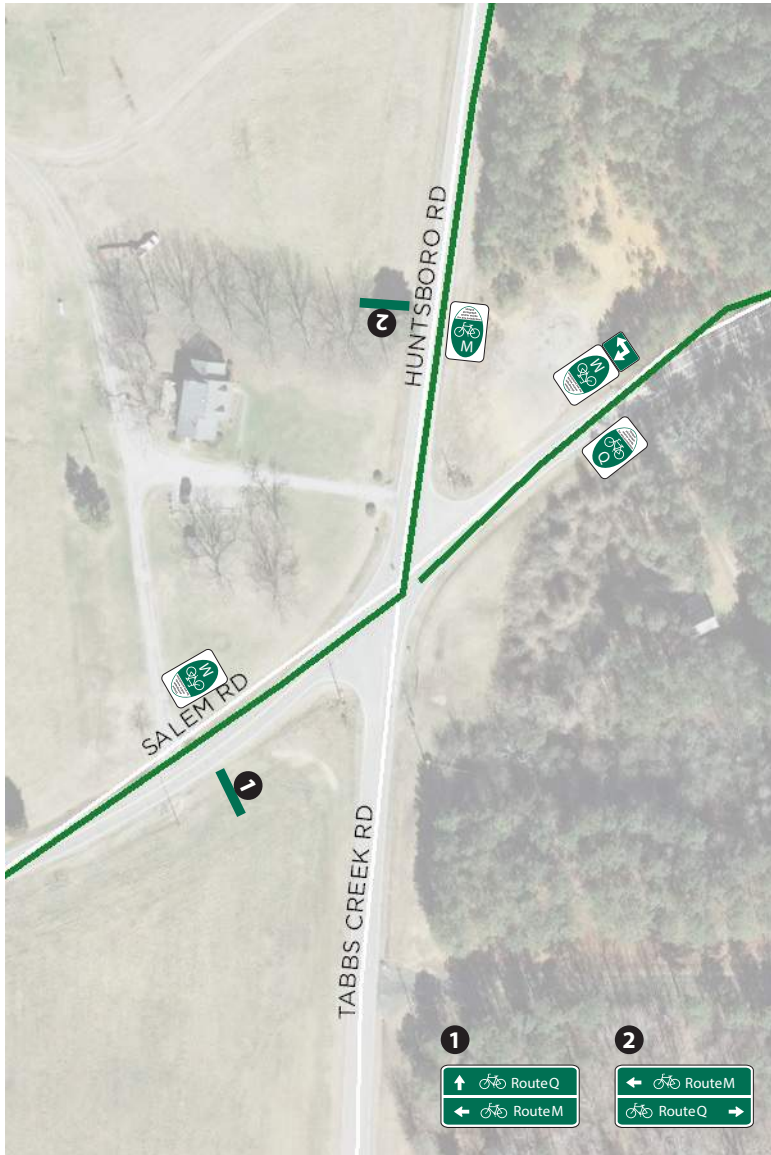




ROUTE M PLACEMENT PLAN



Map 70. Route M - Granville County



Map 71. Route M - Granville County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route

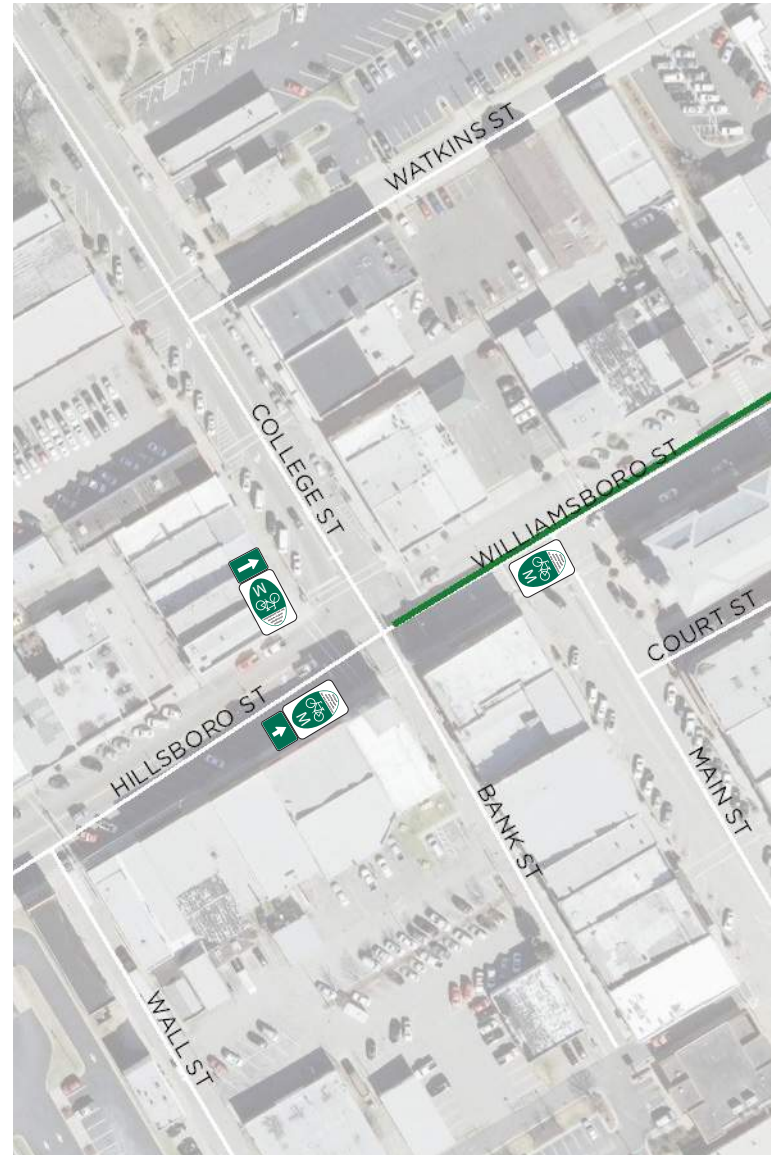




# ROUTE M PLACEMENT PLAN



Map 72. Route M - Granville County



Map 73. Route M - Granville County



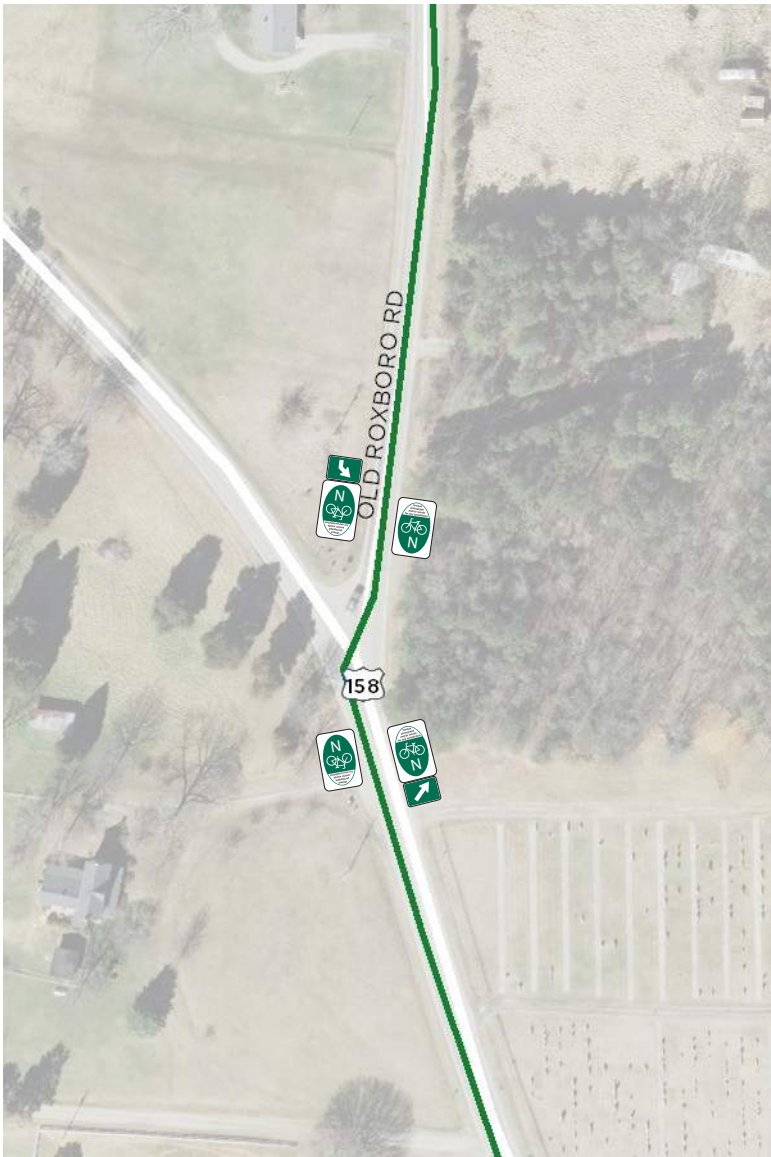
## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES



ROUTE N PLACEMENT PLAN



Map 74. Route N - Granville County



Map 75. Route N - Granville County

Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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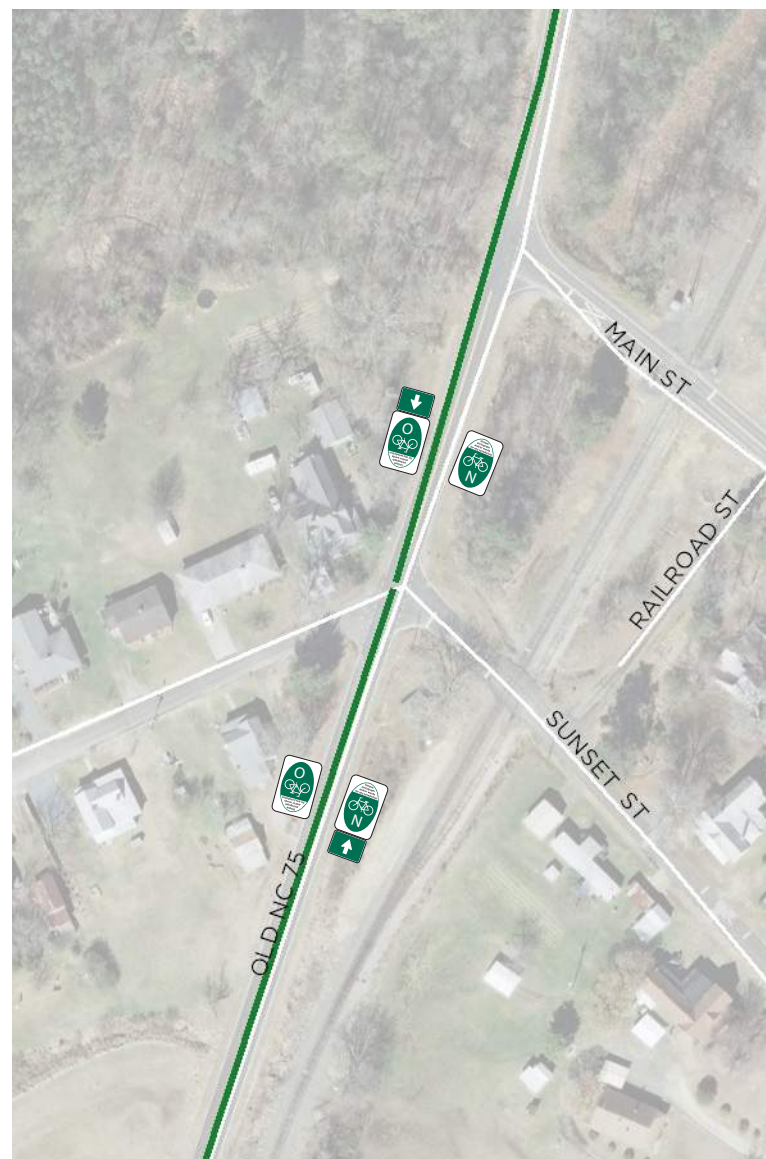




# ROUTE N PLACEMENT PLAN



Map 76. Route N - Granville County



Map 77. Route N - Granville County



## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE O PLACEMENT PLAN



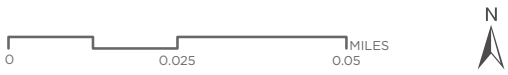
Map 78. Route O - Granville County (2 intersections)



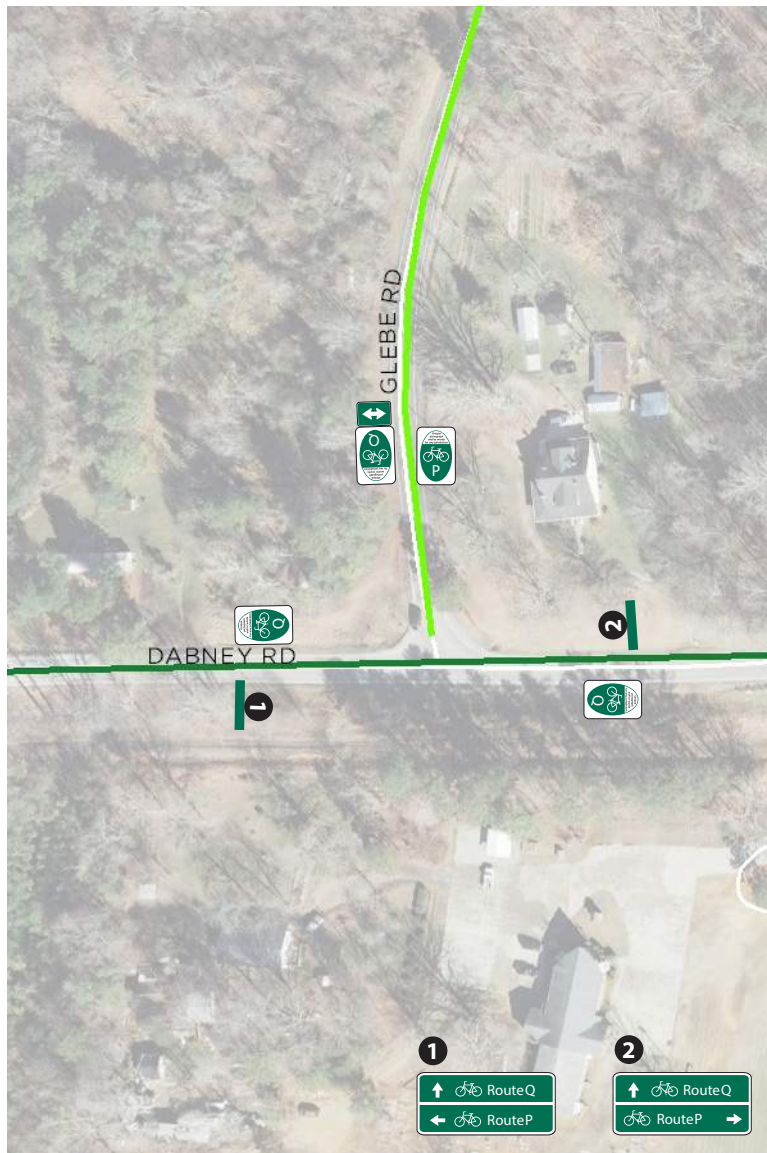
Map 79. Route O - Granville County

Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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# ROUTE P PLACEMENT PLAN



Map 80. Route P - Vance County

Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE Q PLACEMENT PLAN



Map 81. Route Q - Vance County (2 intersections)



Map 82. Route Q - Vance County

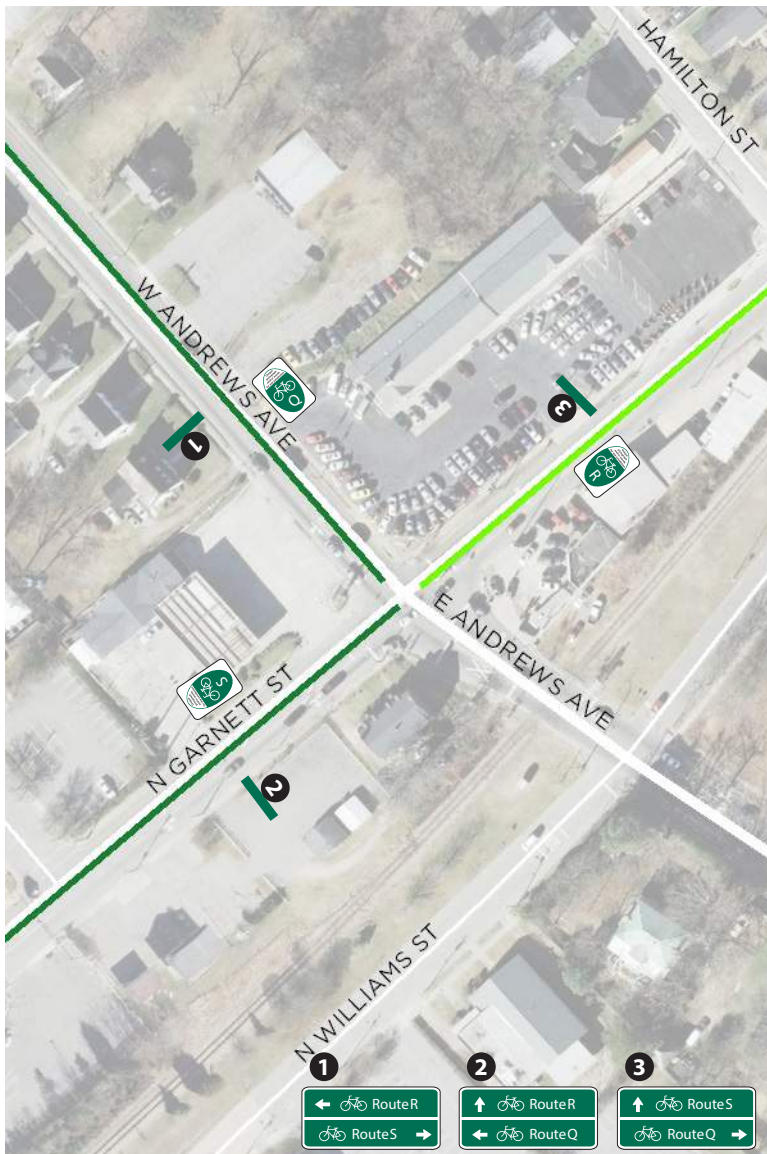
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route





# ROUTE Q PLACEMENT PLAN



Map 83. Route Q - Vance County

Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





Map 84. Route R - Vance County

Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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# ROUTE S PLACEMENT PLAN



Map 85. Route S - Vance County



Map 86. Route S - Vance County



## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE S PLACEMENT PLAN



Map 87. Route S - Vance County



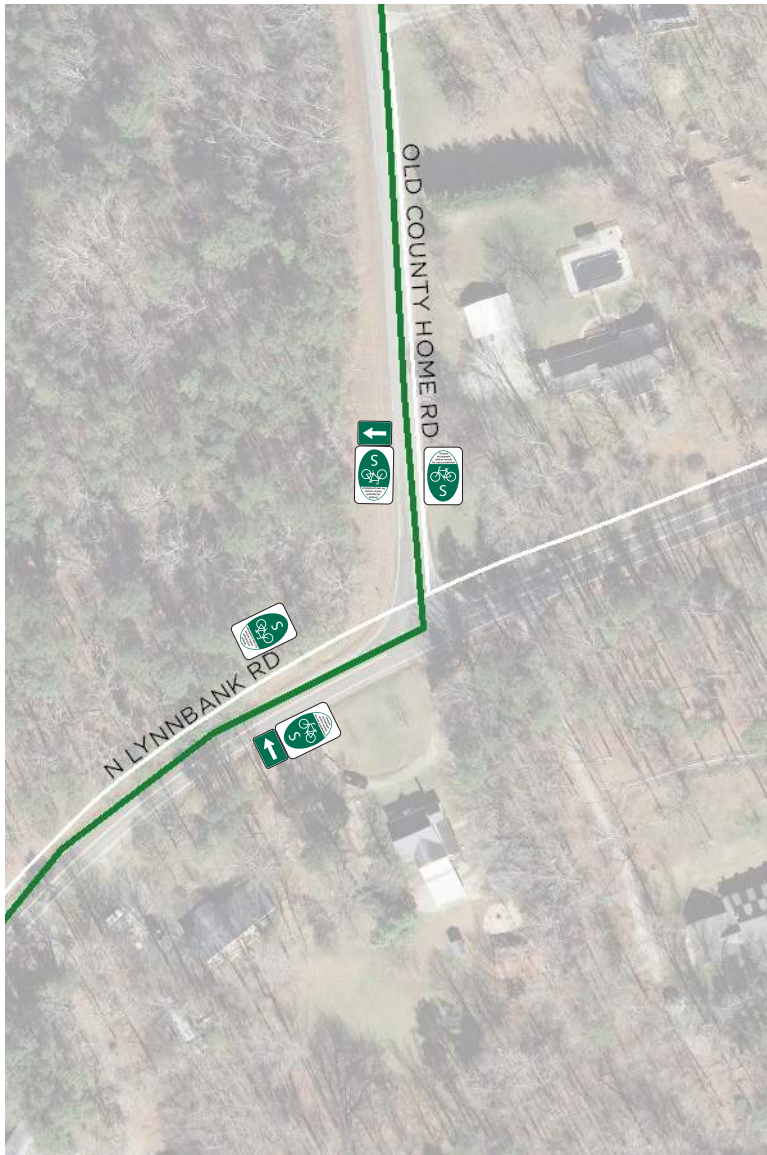
Map 88. Route S - Vance County

Kerr Tar Bicycle Routes

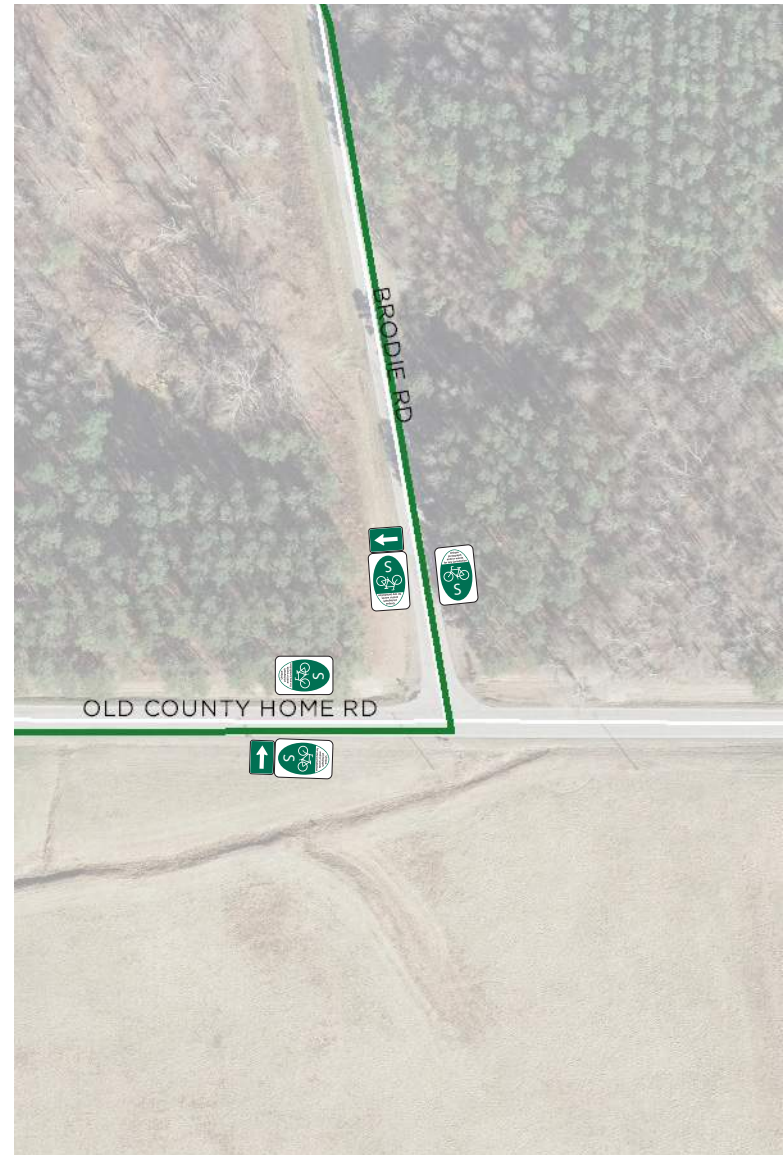
- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE S PLACEMENT PLAN



Map 89. Route S - Vance County



Map 90. Route S - Vance County



## Kerr Tar Bicycle Routes

— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE S PLACEMENT PLAN



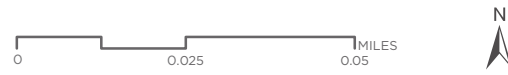
Map 91. Route S - Vance County



Map 92. Route S - Vance County (2 intersections)

Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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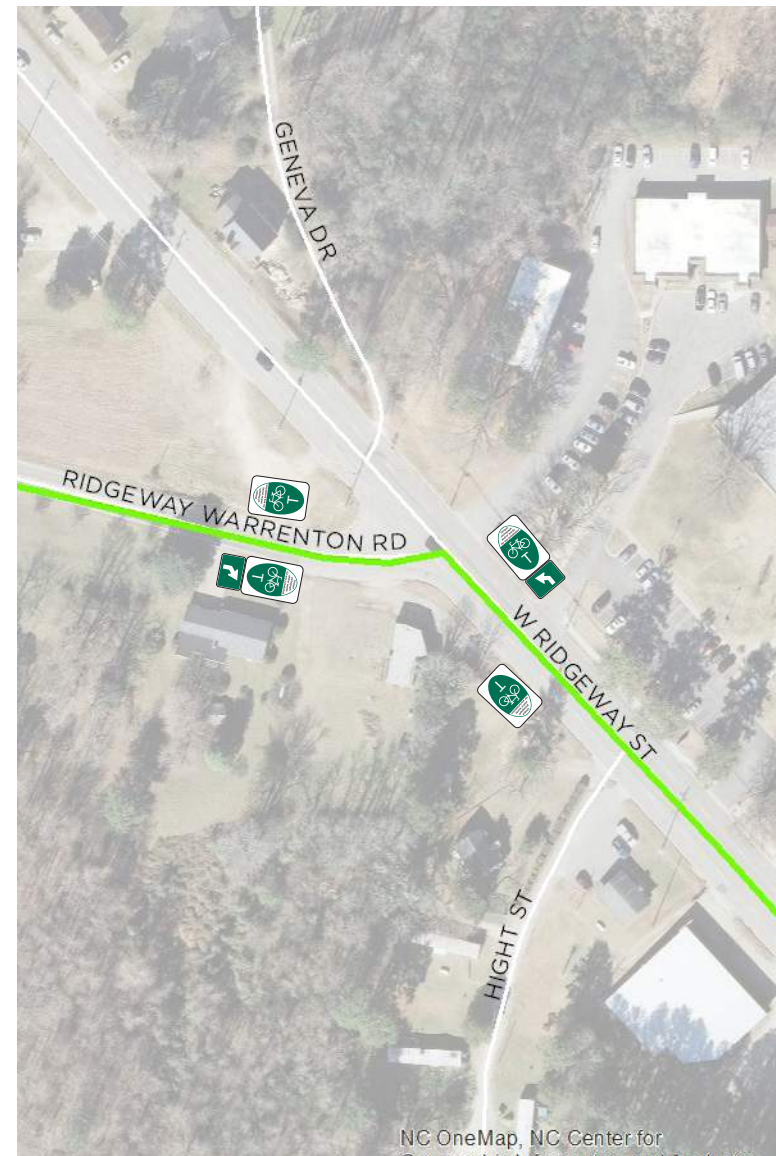




# ROUTE T PLACEMENT PLAN



Map 93. Route T - Warren County



Map 94. Route T - Warren County



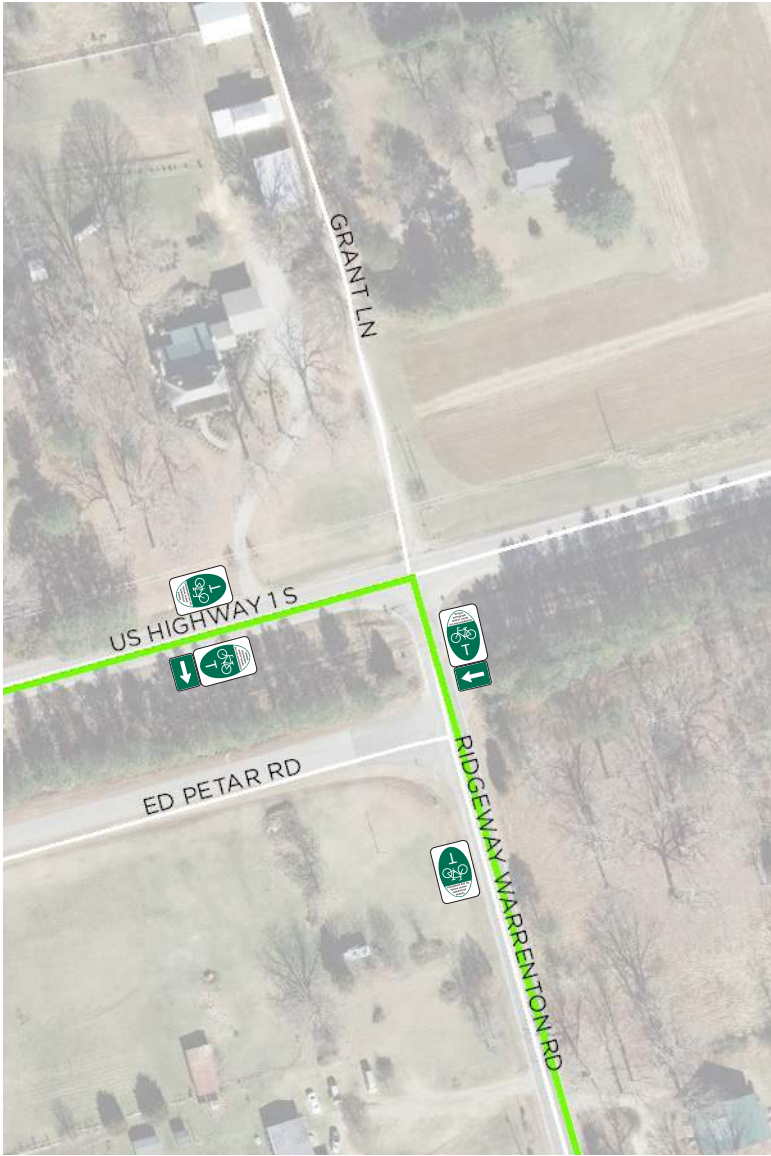
Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

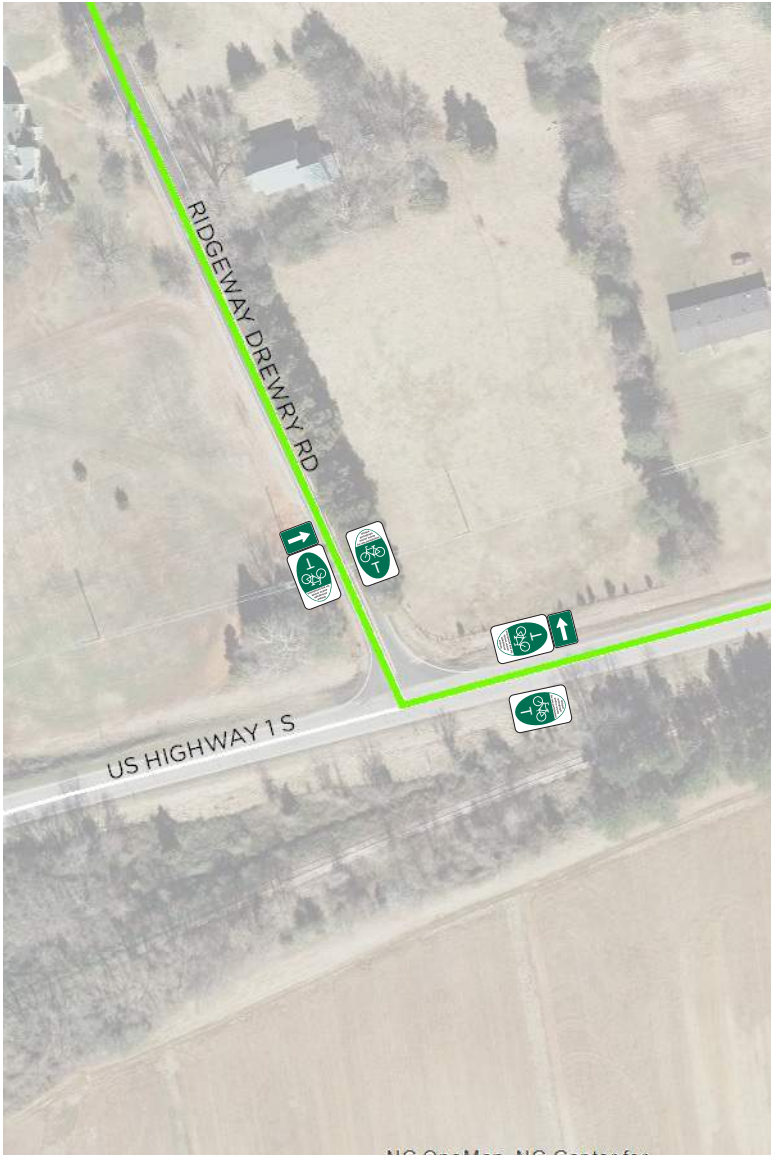
0 0.025 0.05 MILES



ROUTE T PLACEMENT PLAN



Map 95. Route T - Warren County



Map 96. Route T - Warren County

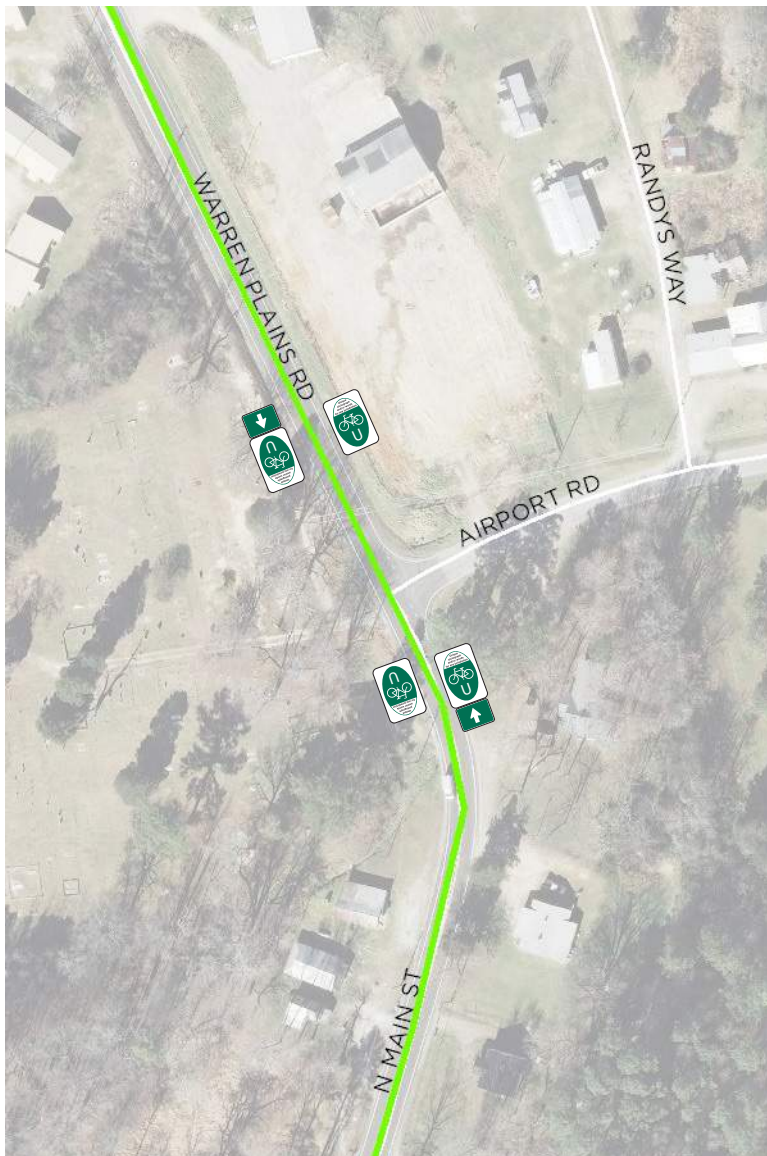
Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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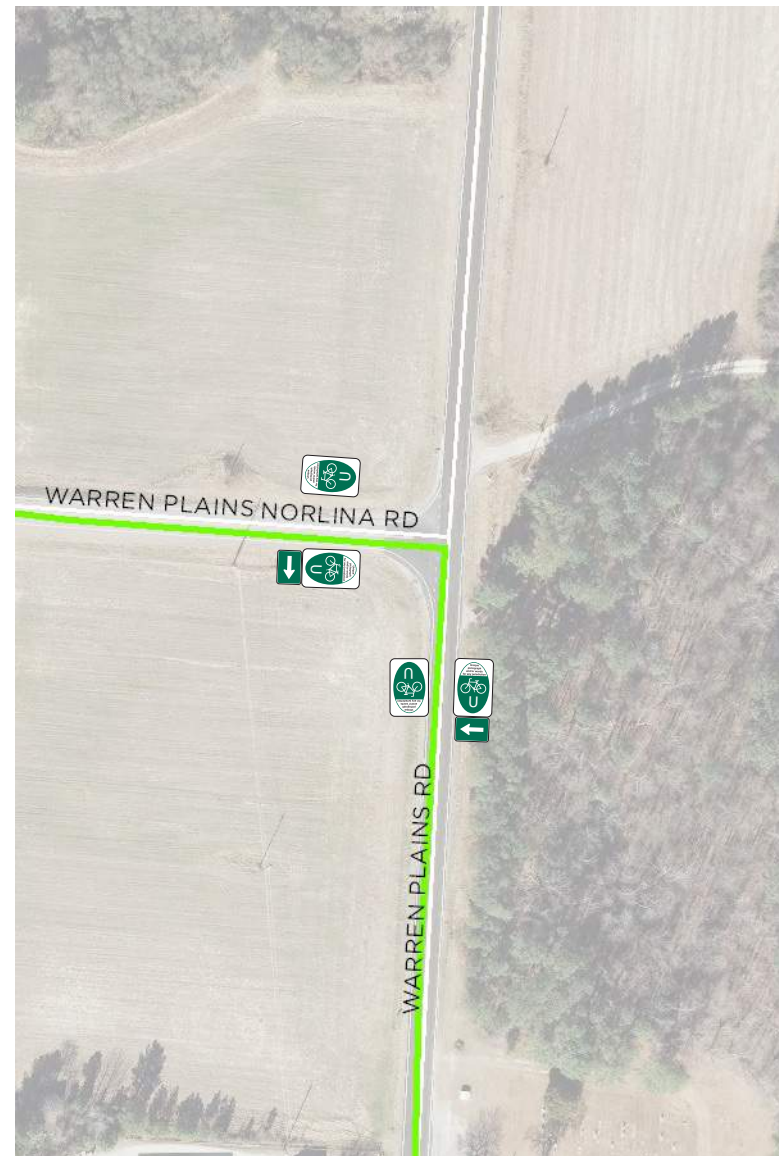




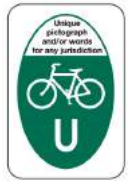
# ROUTE U PLACEMENT PLAN



Map 97. Route U - Warren County



Map 98. Route U - Warren County



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0 .025 0.05 MILES





ROUTE U PLACEMENT PLAN



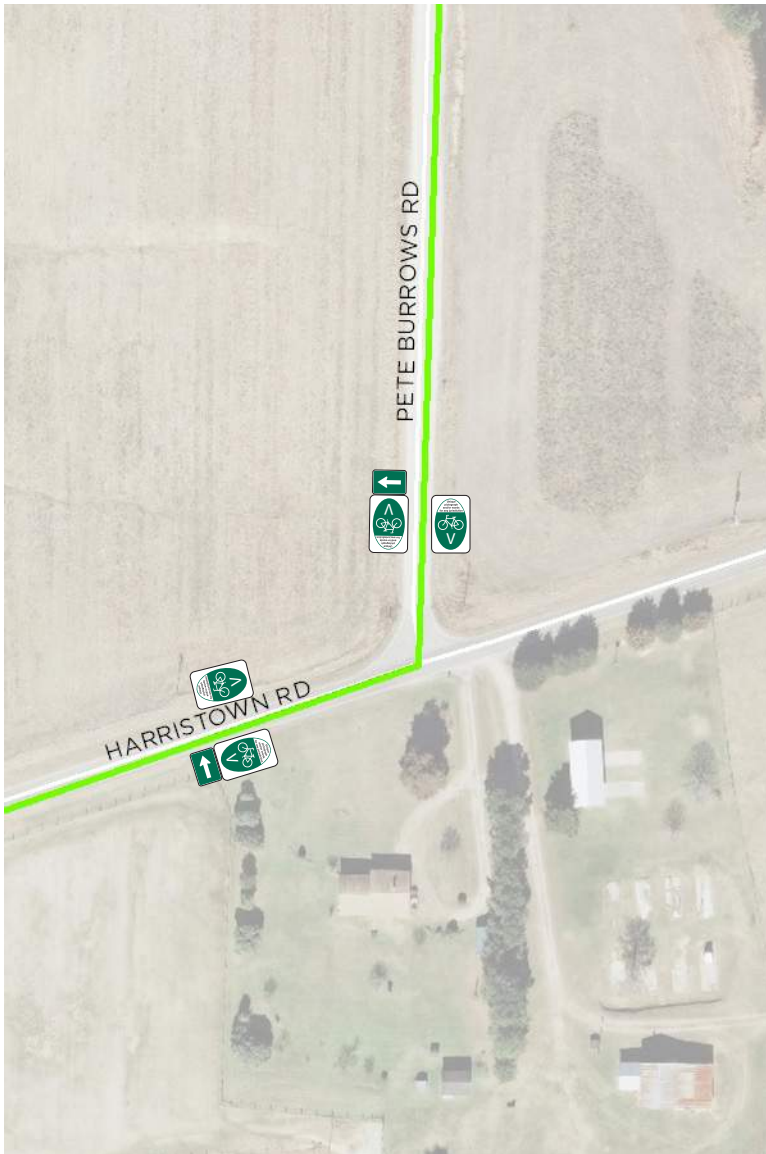
Map 99. Route U - Warren County (2 intersections)

Kerr Tar Bicycle Routes

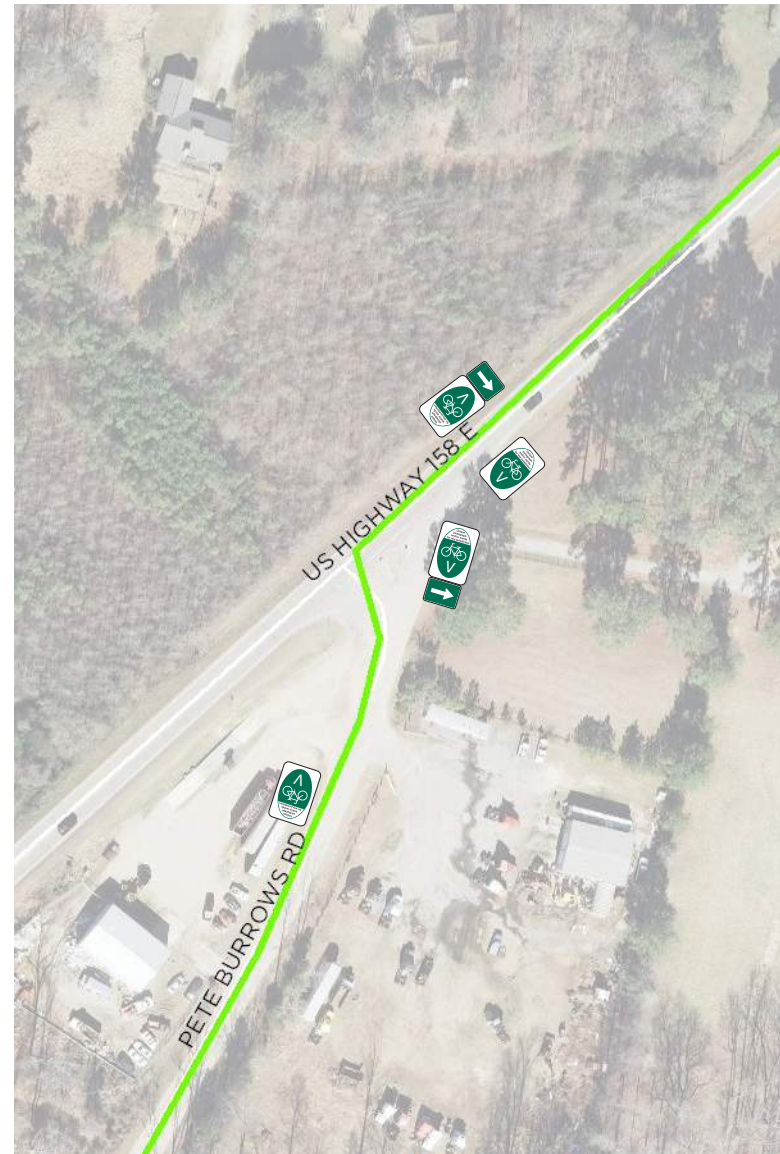
Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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# ROUTE V PLACEMENT PLAN



Map 100. Route V - Warren County



Map 101. Route V - Warren County



## Kerr Tar Bicycle Routes

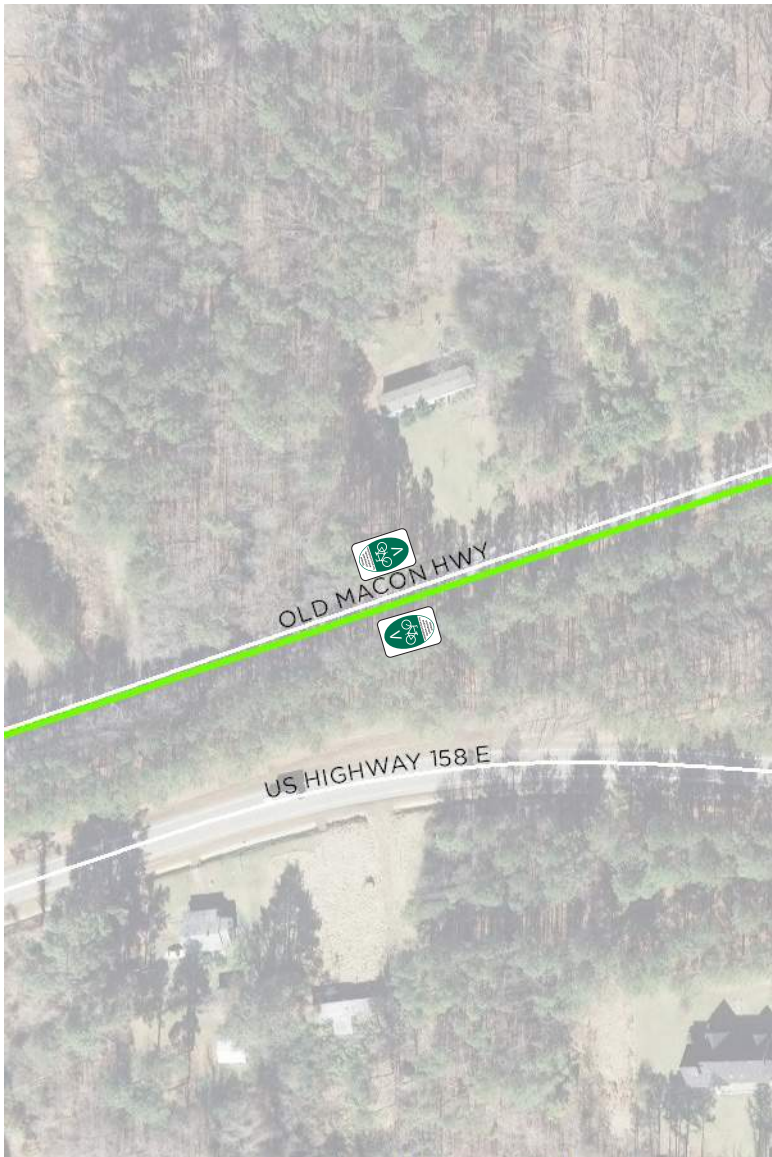
— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES

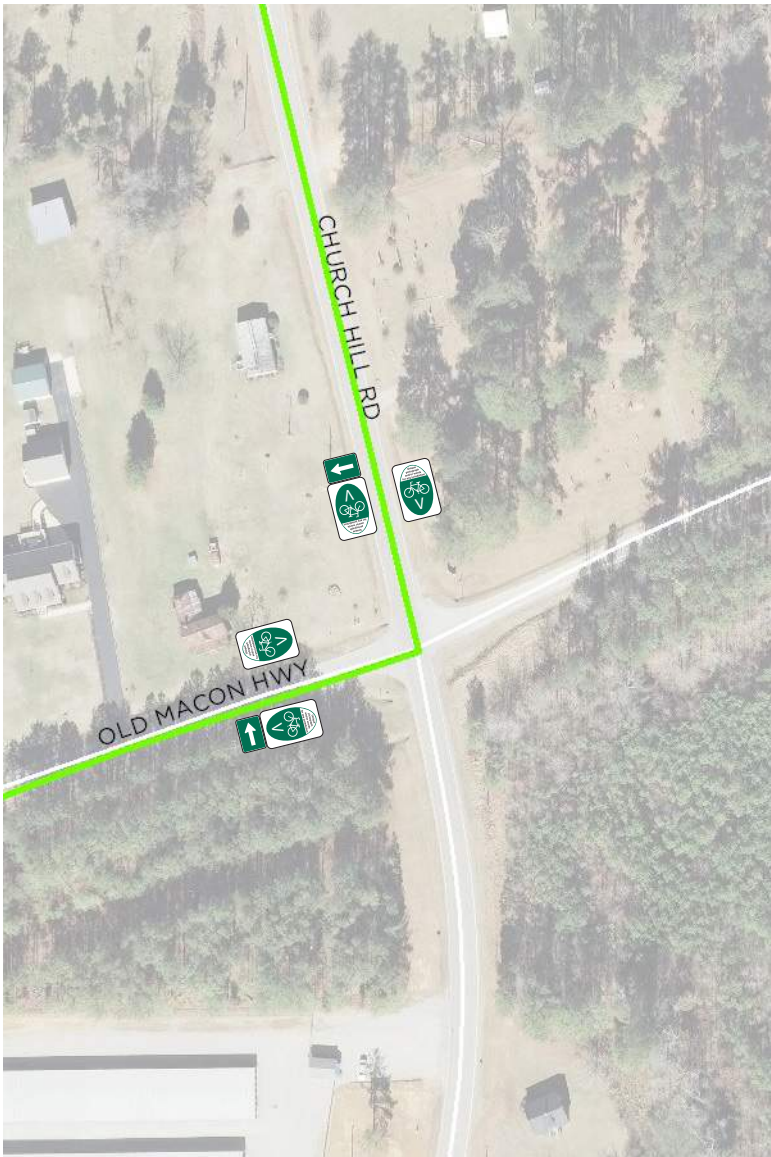




ROUTE V PLACEMENT PLAN



Map 102. Route V - Warren County



Map 103. Route V - Warren County

Kerr Tar Bicycle Routes

— Lake Route

— Lake to Lake Route

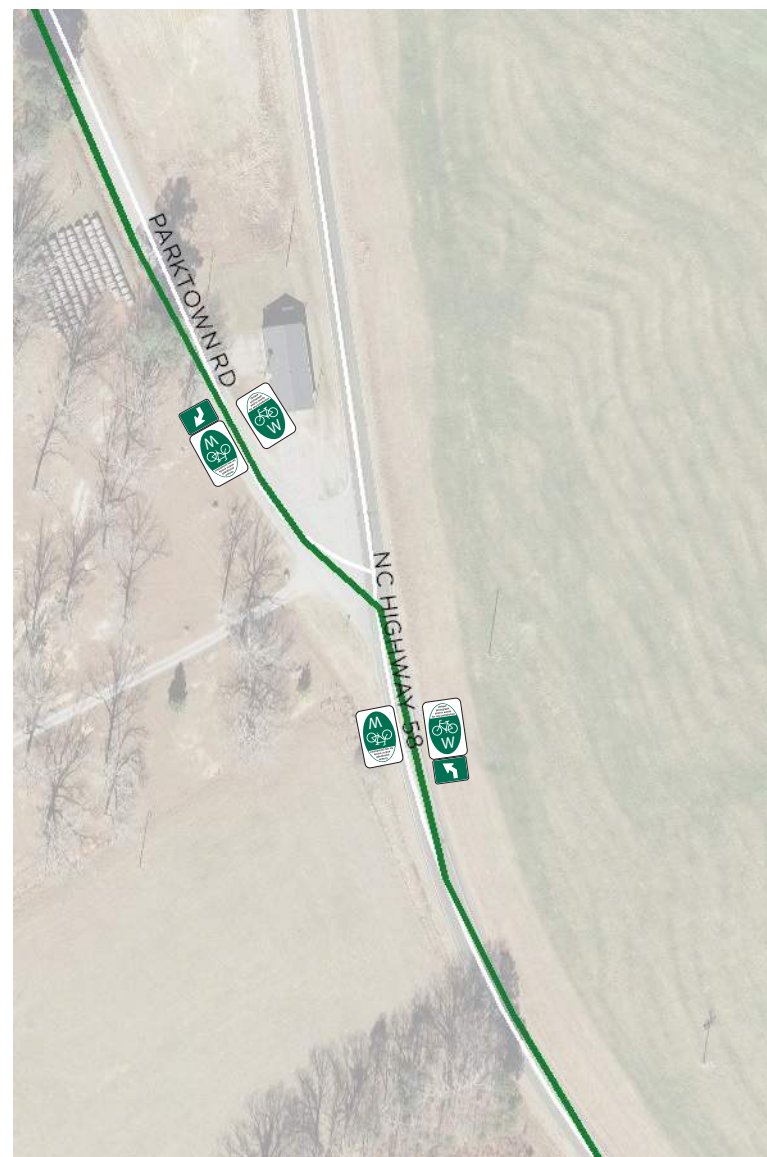
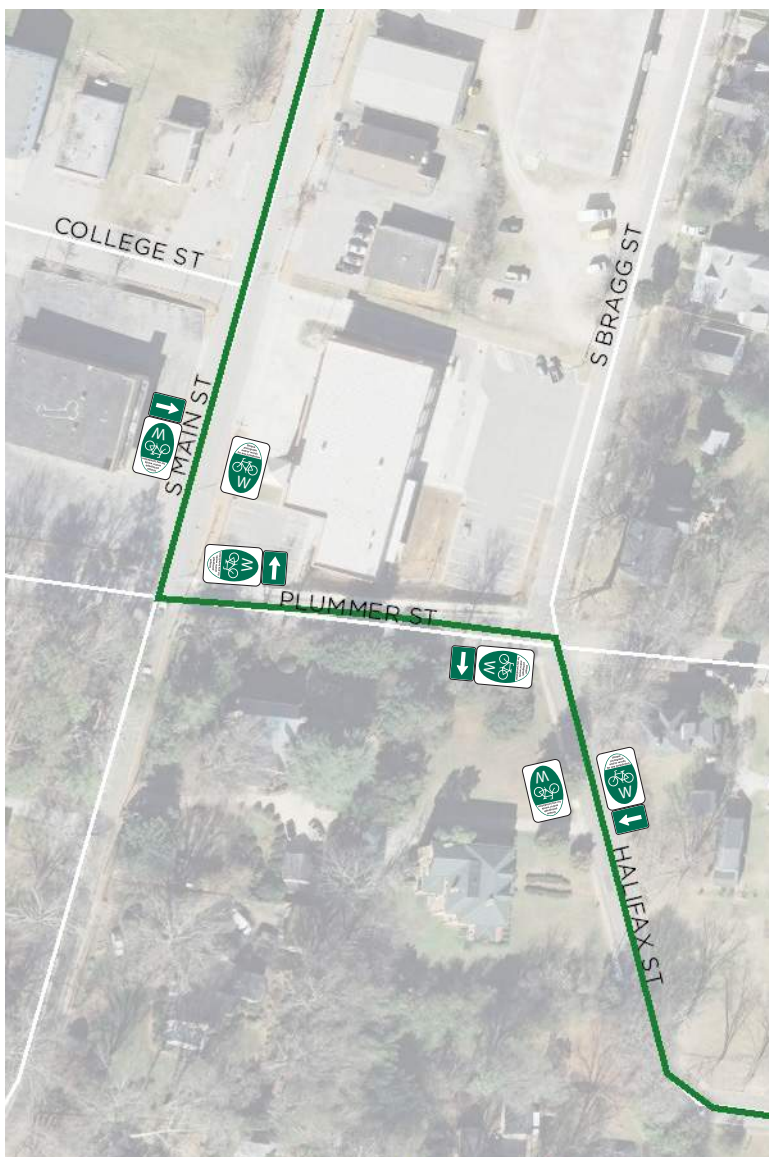
— Town to Town Route

— Town to Lake Route





# ROUTE W PLACEMENT PLAN



Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





Map 106. Route W - Franklin County

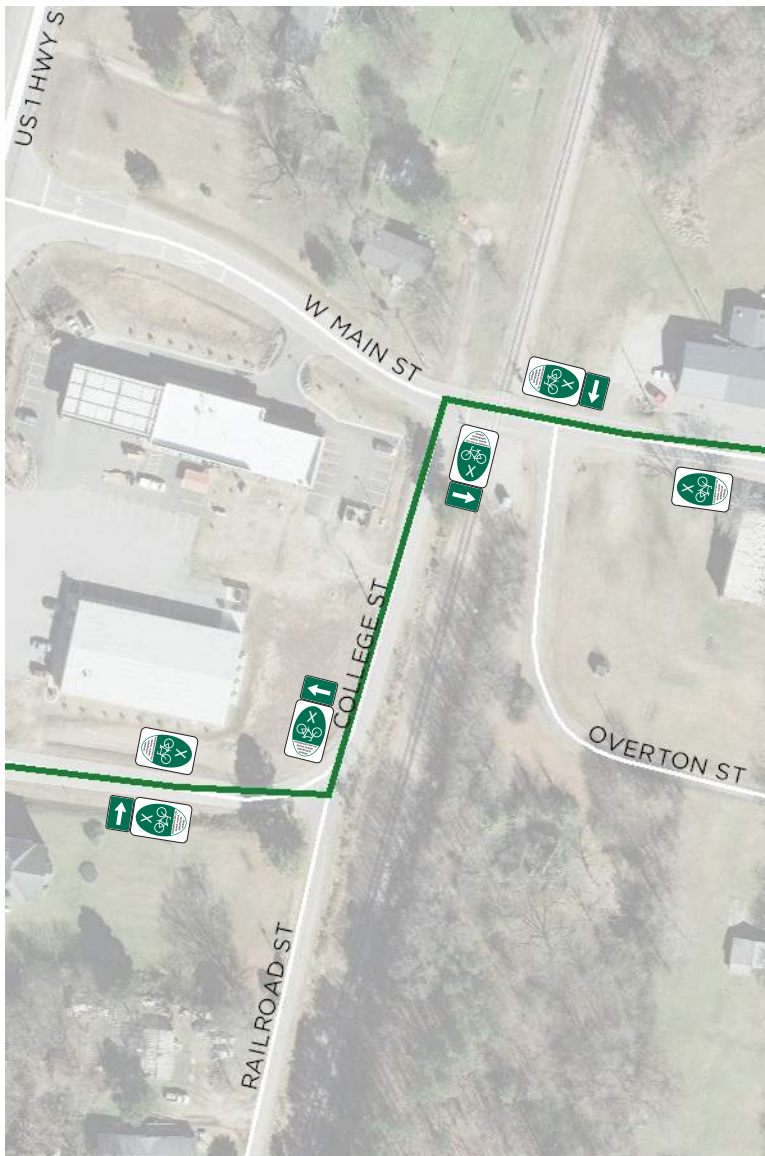
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route





# ROUTE X PLACEMENT PLAN



Map 107. Route X - Vance County (2 intersections)



Map 108. Route X - Vance County



## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





ROUTE X PLACEMENT PLAN



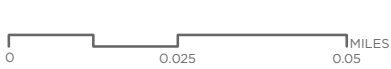
Map 109. Route X - Vance County



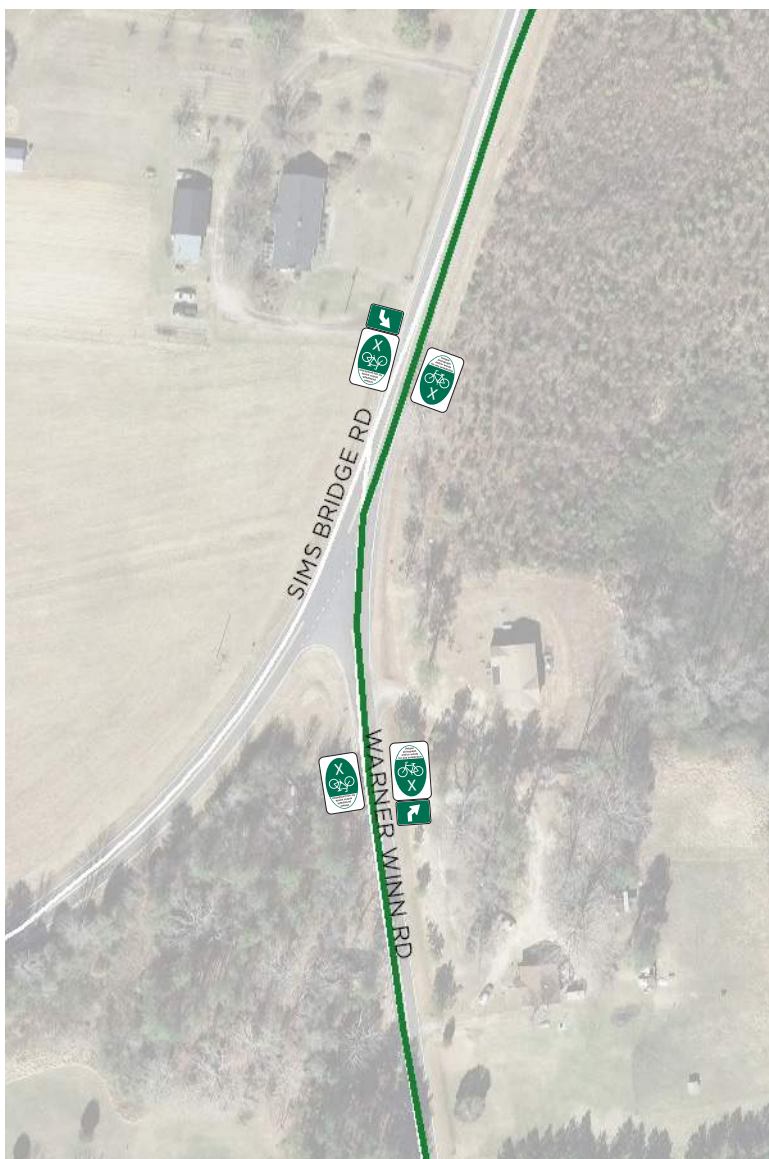
Map 110. Route X - Franklin County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE X PLACEMENT PLAN



Map 111. Route X - Franklin County



Map 112. Route X - Franklin County



## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

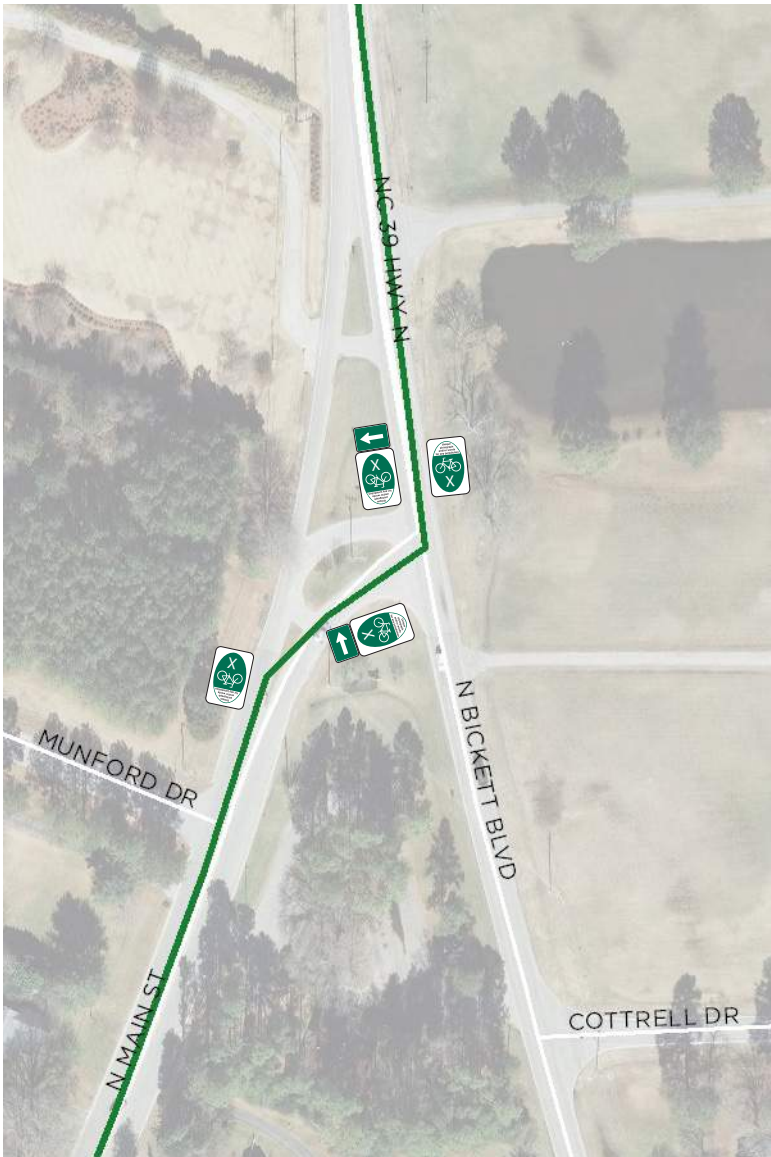
0 0.025 0.05 MILES







Map 113. Route X - Franklin County



Map 114. Route X - Franklin County

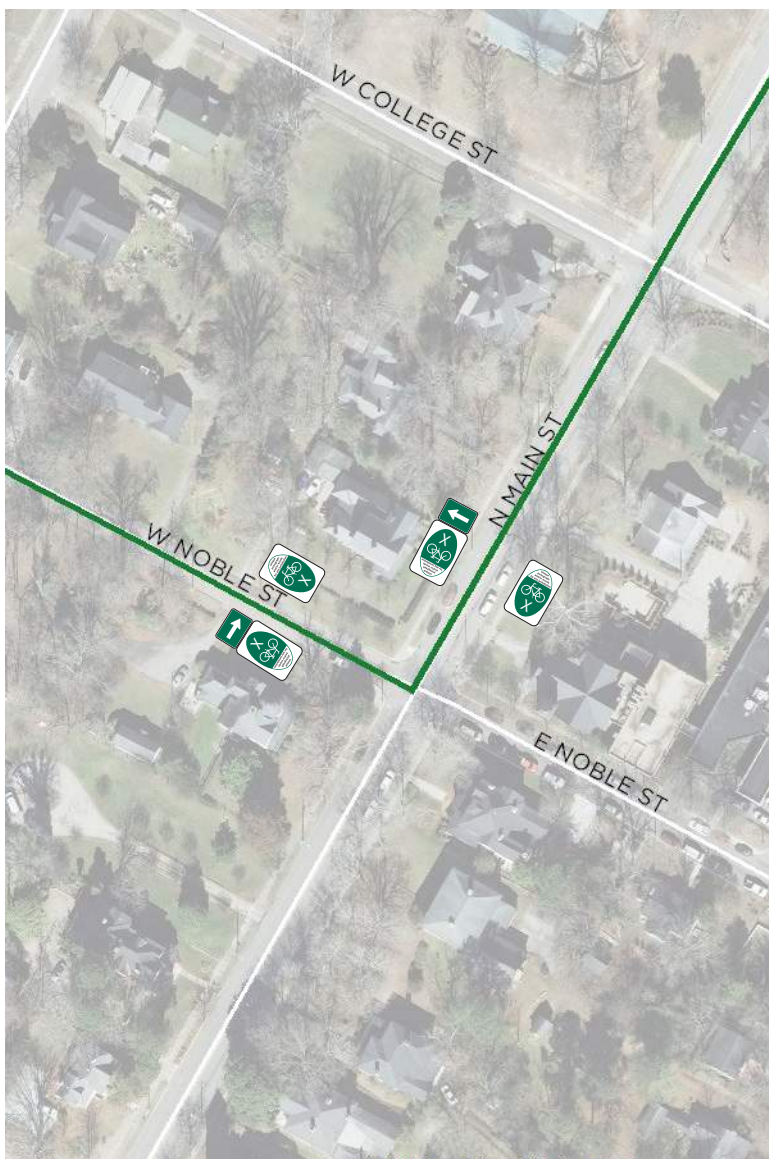
Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route





# ROUTE X PLACEMENT PLAN



Map 115. Route X - Franklin County



Map 116. Route X - Franklin County

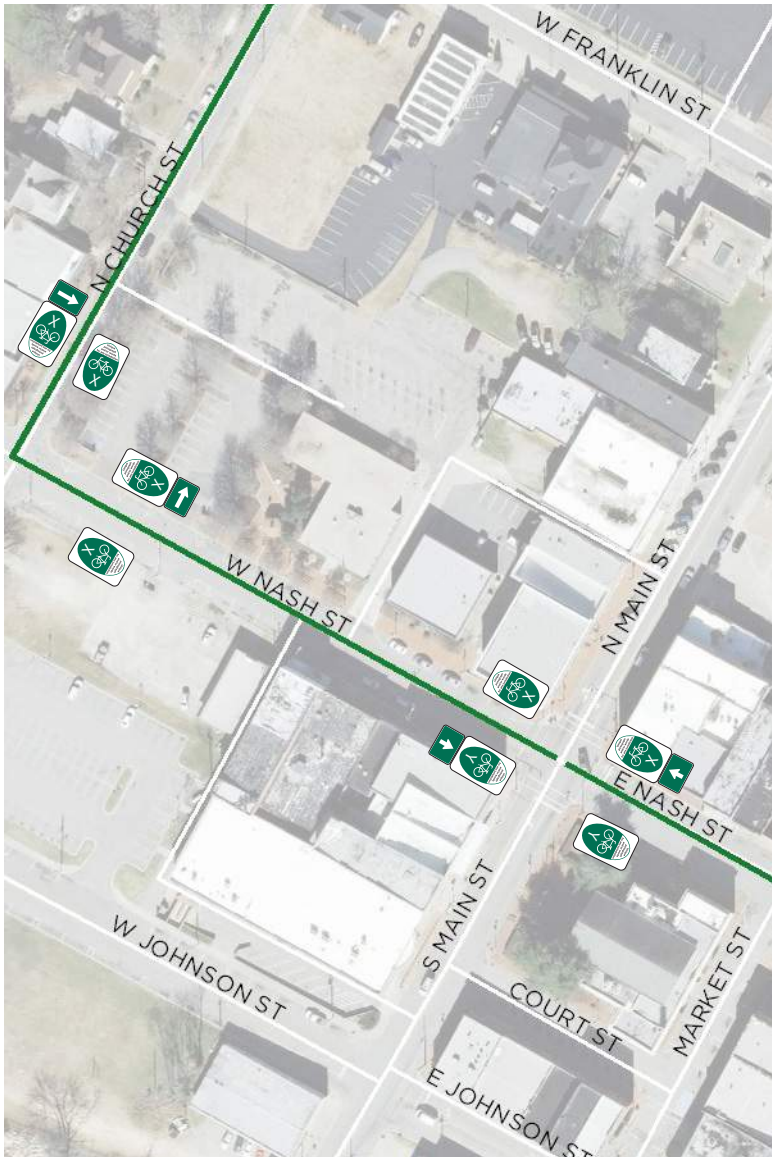


## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES





Map 117.      Route X - Franklin County (2 intersections)

Kerr Tar Bicycle Routes

Lake Route	Lake to Lake Route	Town to Town Route	Town to Lake Route
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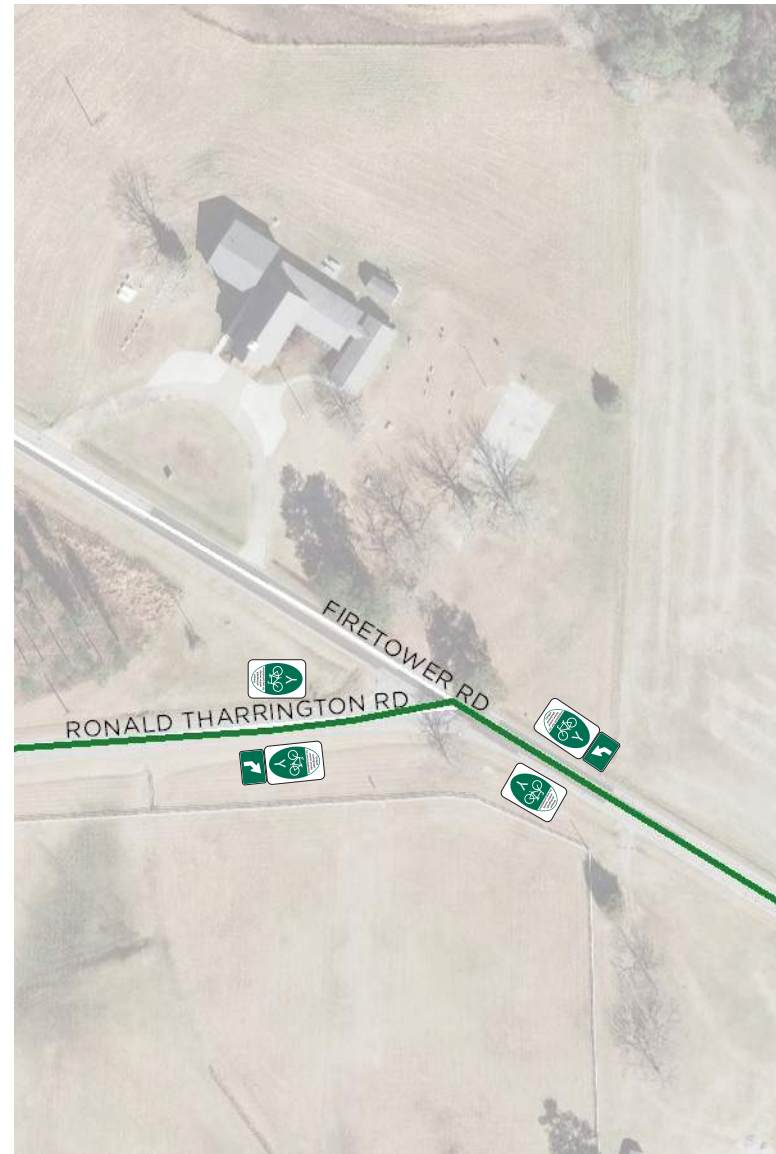




# ROUTE Y PLACEMENT PLAN



Map 118. Route Y - Franklin County



Map 119. Route Y - Franklin County



## Kerr Tar Bicycle Routes

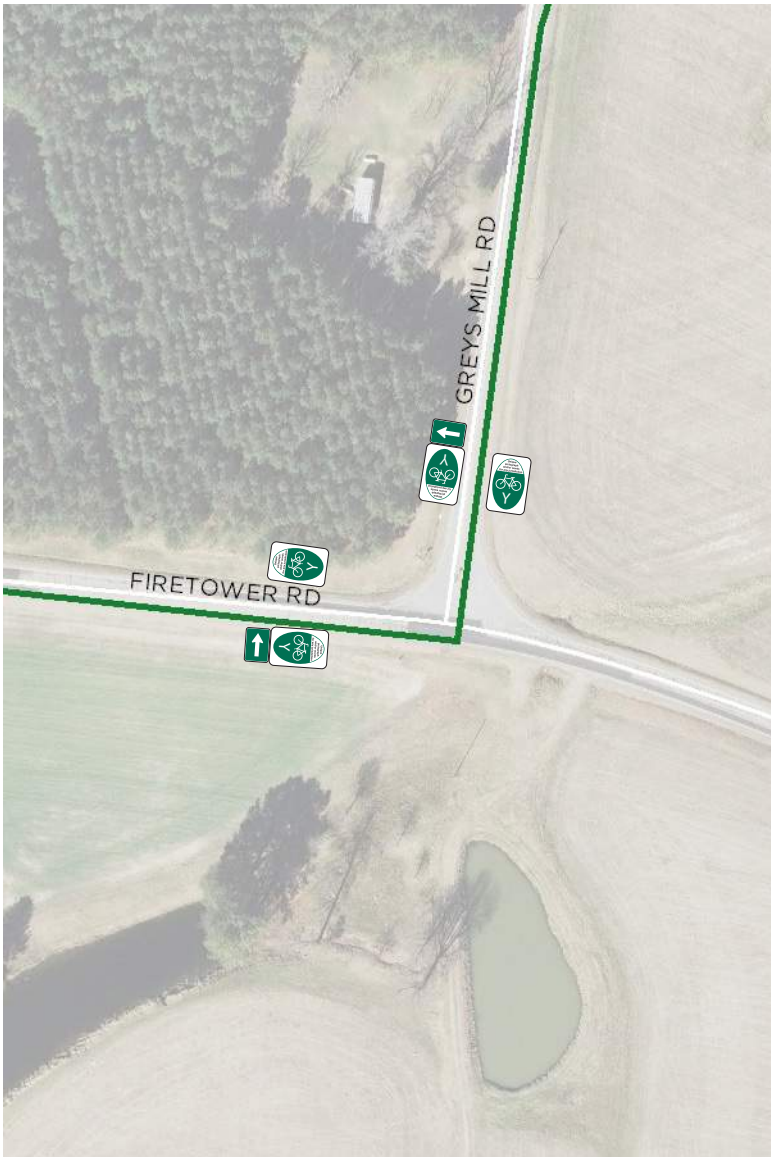
— Lake Route    
 — Lake to Lake Route    
 — Town to Town Route    
 — Town to Lake Route

0 0.025 0.05 MILES

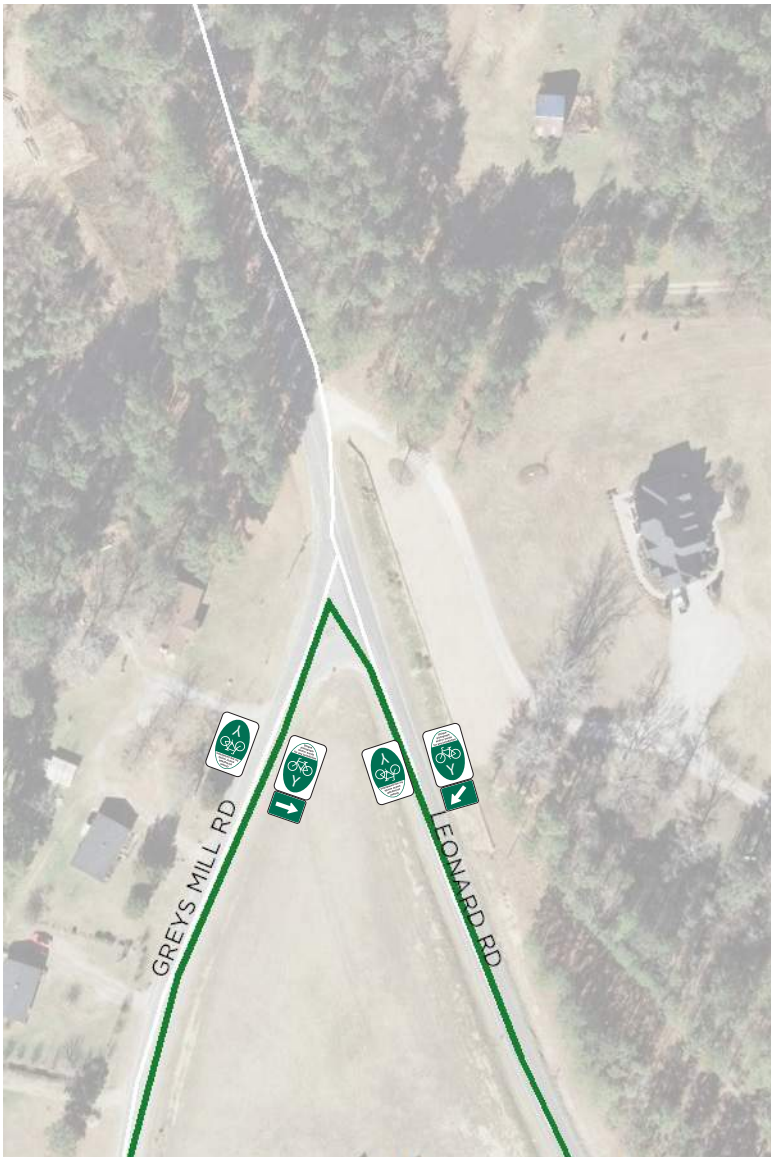




ROUTE Y PLACEMENT PLAN



Map 120. Route Y - Franklin County



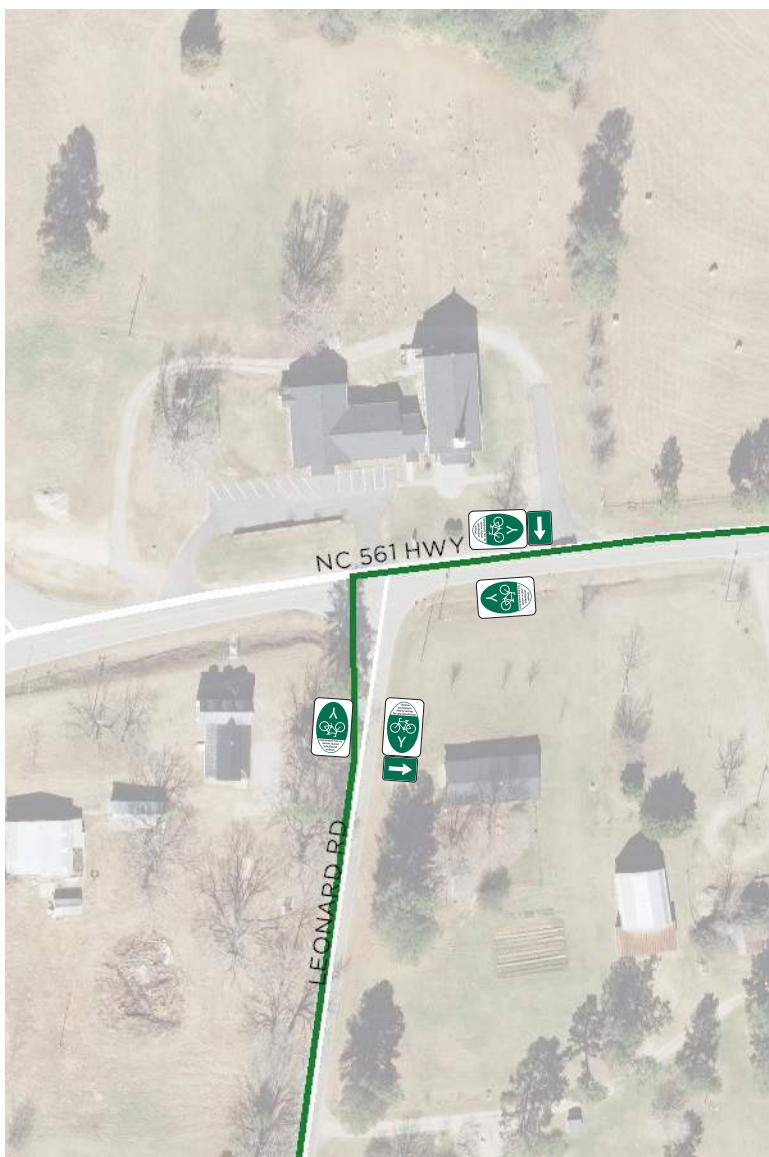
Map 121. Route Y - Franklin County

Kerr Tar Bicycle Routes

- Lake Route
- Lake to Lake Route
- Town to Town Route
- Town to Lake Route



# ROUTE Y PLACEMENT PLAN



Map 122. Route Y - Franklin County

Orthoimagery is from NCOneMap, NC Center for Geographic Information and Analysis

## Kerr Tar Bicycle Routes

— Lake Route   
 — Lake to Lake Route   
 — Town to Town Route   
 — Town to Lake Route

0 0.025 0.05 MILES



## APPENDIX E: ROUTE CATEGORIZATION EVALUATION & PRIORITIZATION

### *ROUTE PRIORITIZATION*

As outlined in Section 3 Methodology of the NCLD Bike Plan, following the identification of many potential routes, a criteria was set to enable evaluating and ranking of the routes identified. The route criteria was established to help staff evaluate and rank routes for funding prioritization and for additional planning. This enabled staff to determine what routes would be considered with a higher priority. After researching similar ranking and criteria for bike plans, staff developed draft route criteria that was reviewed by the steering committee.

To help us evaluate and rank routes for funding prioritization and for additional planning, the NCLD Steering Committee has discussed and is recommending the route selection and scoring criteria as outlined in Section 3 Methodology. Minimum and maximum values were assigned to these criteria and then applied to each proposed route within that range. The following tables show a breakdown of the scoring method along with a final score based on the scoring criteria. The tables also include data that was collected during field route reconnaissance.



# NCLD ROUTE CATEGORIZATION EVALUATION & PRIORITIZATION

General Route Information						Route Prioritization Scoring								
Route Type	Route Identification	Route Name	Route Length (in miles)	Start Point	End Point	Safety				Scenic Quality		Amenities	Economic Development Potential	Priority Score
						Traffic Volume (0-10)	Speed (0-10)	Shoulder (0-10)	ROW (0-10)	Historical (0-15)	Natural (0-15)	(0-15)	(0-15)	(0-100)
Lake Route	A	Hyc0 Lake	28.2	Hyc0 Lake Public Area & Campsites	Hyc0 Lake Public Area & Campsites	Low-Medium	45-55 mph	low to none paved, mostly grass	60' where data available	Waverly Plantation, House on Wagstaff Farm	Route along lake and rural countryside	Park with parking and restroom facilities, gas stations, historical sites	Close proximity to Roxboro	Range from 0-100
						8	5	5	8	13	13	10	10	72
Lake Route	B	Mayo Lake	19.6	Mayo Park off Neal's Store Road	Mayo Park off Neal's Store Road	Medium	45-55 mph	low to none paved, mostly grass	60-100' where data available	Holloway-Jones-Day House, Merritt-Winstead House	Route along lake and rural countryside	Park with parking and restroom facilities, gas stations, historical sites	Close proximity to Roxboro	Range from 0-100
						7	5	5	8	13	12	10	10	70
Lake Route	C	Kerr Lake	100.5	Nutbush Bridge Kerr Lake State Recreation Area off of Jack Wade Farm Road	Nutbush Bridge Kerr Lake State Recreation Area off of Jack Wade Farm Road	Low-Medium	45-55 mph	low to none paved, mostly grass	60-100' where data available	Lewis Wimbish Plantation, Red Hill, Machpelah, St. John's Episcopal Church, and LaGrange	Route along lake and rural countryside	Park with parking and restroom facilities, gas stations, historical sites	Close proximity to Middleburg, Henderson & Stovall	Range from 0-100
			*57.5 miles (NC) 43 miles (VA)			8	4	5	8	14	14	13	12	78
Lake Route	D	Lake Gaston	53.1	Lake Gaston Day Use Area located on the north end of Jack Brown Road, Littleton	Lake Gaston Day Use Area located on the north end of Jack Brown Road, Littleton	Low	45-55 mph	low to none paved, mostly grass	0-100' where data available	Buck Spring Plantation, Hebron Methodist Church, Warren County Training School	Route along lake and rural countryside	LaKe Gaston Day Use Area with bathrooms and picnic areas, parking at LG Trailrace Fishing Area, gas stations, historical sites	Proximity to Macon, Warrenton, and Norlina	Range from 0-100
						9	4	5	8	14	14	12	12	78
Lake to Lake Route	E	Hyc0-Mayo Connector	7.3	Intersection of Mc Gehees Mill Rd and Edwin Robertson Rd	Intersection of Shiloh Church Rd and Boston Rd	Low	45-55 mph	low to none paved, mostly grass	0-100' where data available	Holloway-Jones-Day House	Route along rural countryside	No amenities along this route	Proximity to Roxboro	Range from 0-100
						9	4	5	8	7	9	0	7	49
Lake to Lake Route	F	Mayo-Kerr Connector	16.7	Intersection of Virgilina Rd and High Plains Rd	Intersection of Grassy Creek Road and Herbert Faucette Road	Low	55 mph	low to none paved, mostly grass	0- 60' where data available	Sycamore Valley, Edgewood	Route along rural countryside	Gas station along Virgilina Rd.	Between Roxboro and Stovall	Range from 0-100
						10	4	5	5	9	9	7	5	54
Lake to Lake Route	G	Kerr-Kerr Connector	7	Intersection of Buckhorn Rd and McDuffie Rd	Intersection of Tungsten Mine Rd and NC 39	Low	35-55mph	low to none paved, mostly grass	0' or unavailable	Abrams Plains	Route along rural countryside	No amenities along this route	Proximity to Stovall	Range from 0-100
						9	5	5	1	7	9	0	7	43
Lake to Lake Route	H	Kerr-Gaston Connector	9.4	Buggs Island Rd at the NC/VA Border	Intersection of Michael's Quarry Rd and US-401	Low	55 mph	low to none paved, mostly grass	0- 60' where data available	None	Route along rural countryside	Gas station? At Beaver Dam Rd and One Rd intersection.	Proximity to Norlina	Range from 0-100
						9	4	5	5	0	8	7	7	45
Town to Lake Route	I	Roxboro-Hyc0 Connector	6.2	Intersection of Concord-Ceffo Rd and Morton-Pulliam Rd	Intersection of Chub Lake St and Madison Blvd	Low-Medium	35-55mph	low to none paved, mostly grass	0- 60' where data available	None	Mostly Residential	None	Close proximity to Roxboro	Range from 0-100
						7	5	5	5	0	2	0	8	32
Town to Lake Route	J	Roxboro-Mayo Connector	5.3	Intersection of Boston Rd and Mill Creek Rd	Intersection of Halifax Rd and Mountain Rd	Low-Medium	45-55 mph	low to none paved, mostly grass	0- 100' where data available	Person County Courthouse, Roxboro Cotton Mill	Mostly Residential	Gas station along Boston Rd	Close proximity to Roxboro	Range from 0-100
						7	5	5	4	9	2	7	8	47

# NCLD ROUTE CATEGORIZATION EVALUATION & PRIORITIZATION (CONTINUED)

General Route Information						Route Prioritization Scoring								
Route Type	Route Identification	Route Name	Route Length (in miles)	Start Point	End Point	Safety				Scenic Quality		Amenities	Economic Development Potential	Priority Score
						Traffic Volume (0-10)	Speed (0-10)	Shoulder (0-10)	ROW (0-10)	Historical (0-15)	Natural (0-15)	(0-15)	(0-15)	(0-100)
Town to Town Route	K	Roxboro-Stovall Connector	29	Intersection of Chub Lake St and Court St	Intersection of Little Mountain Creek Rd and Grassy Creek Rd	Low-Medium	45-55 mph	low to none paved, mostly grass	0- 100' where data available	Oliver-Morton Farm	Rural Residential and city residential	Restaurants and shops, Gas stations	Close proximity to Roxboro and Stem	Range from 0-100
						7	5	5	5	7	5	9	9	52
Town to Lake Route	L	Stovall-Kerr Connector	5.1	Intersection of Cedar Ln and US-15	Intersection of Grasy Creek Rd and Herbert Faucete Rd	Low	55 mph	low paved shoulder, extends past white line	0- 60' where data available	Maurice Hart House	Route along rural countryside and residential	Gas station	Proximity to Stovall	Range from 0-100
						9	4	7	5	7	7	7	7	53
Town to Town Route	M	Oxford-Stovall Connector	12.4	Intersection of Main St and US 15	Intersection of E Spring St and Belle St	Low	35-55mph	low to none paved, mostly grass	0', 60',110', where data available	Joseph B. LittlejohnHouse, Granville County Courthouse, Oxford Historic District	Rural Residential and city residential	Gas station at Stovall	Proximity to Stovall and Oxford	Range from 0-100
						9	5	5	8	11	6	7	8	59
Town to Town Route	N	Stem Connector	6	Intersection of Old Rte 75 and Main St	Intersection of Old Roxboro Rd and Goshen Rd	Low-Medium	35-55mph	low to none paved, mostly grass	0'-80', where data available	None	Rural Residential and city residential	Gas station at 158 and Culbreth Rd	Proximity to Stem	Range from 0-100
						8	5	5	6	0	6	7	7	44
Town to Town Route	O	Stem-Butner Connector	3.8	Intersection of Central Ave and East E St	Intersection of Old Rte 75 and Main St	Medium	35-55mph	some paved shoulders, extends past white line	0' where data available	None	Rural city Residential	None along route, but many options once in Butner	Proximity to Stem and Butner	Range from 0-100
						7	5	7	0	0	6	1	8	34
Town to Lake Route	P	Oxford-Kerr Connector	5.1	Intersection of Dabney Rd and Glebe Rd	Intersectionof Glebe Rd and Nutbush Rd	Low	55 mph	low to none paved, mostly grass	0'-60' where data available	None	Route along rural countryside and residential	None	Connection route	Range from 0-100
						10	4	5	5	0	7	0	5	36
Town to Town Route	Q	Oxford-Henderson Connector	13.5	Intersection of W Andrews Ave and N Garnett St	Intersection of E Spring St and Main St	Medium-High	35-55mph	low to none paved, mostly grass	0', 60', 80' where data available	None along route, but some near by	Rural city Residential	Restaurants and Shops, Gas stations off of W Andrews Ave	Proximity to Henderson and Oxford	Range from 0-100
						6	5	5	7	0	6	9	9	47
Town to Lake Route	R	Henderson-Middleburg-Kerr Connector	6.8	Intersection of N Lee Ave and Broad St	Intersection of N Garnett St and E Andrews Ave	Medium-High	35-55mph	low to none paved, mostly grass	0', 60', 80', 100' where data available	None along route, but some near by	Rural city Residential	Restaurants and shops, gas station on US-1/158 near I-85	Proximity to Middleburg and Henderson	Range from 0-100
						6	5	5	8	0	6	9	9	48
Town to Town Route	S	Henderson-Kittrell Connector	11	Intersection of E Andrews Ave and N Garnett Street	Intersection of Kittrell College Rd and US-1	Low-High	20-55mph	low to none paved, mostly grass	0' where data available	Thomas Capehart House	Rural city Residential	Gas Stations	Proximity to Henderson and Kittrell	Range from 0-100
						7	6	5	0	7	6	8	9	48
Town to Lake Route	T	Warrenton-Kerr Connector	10.7	Intersection of N Main St and W Ridgeway St	Intersection of Manson Drewery and Jacksontown Rd	Low-Medium	35-55mph	low to none paved, mostly grass	0', 60', 100' where data available	Chapel of the Good Shepherd,	Rural Residential and city residential	Schools, restaurants	Proximity to Warrenton	Range from 0-100
						8	5	5	7	7	6	8	7	53
Town to Lake Route	U	Warrenton-Norlina-Gaston Connector	8.9	Intersection of N Main St and W Ridgeway St	Intersection of US-1 and Wise-Five Forks Rd	Medium	35-55mph	low to none paved, mostly grass	0', 60', 100' where data available	None	rural residential and city residential, some commercial	Restaurants	Proximity to Warrenton and Norlina	Range from 0-100
						7	5	5	7	0	4	7	9	44
Town to Lake Route	V	Warrenton-Macon-Gaston Connector	10.7	Intersection of W Macon St and Main St	Intersection of Church Hill Rd and Fleming Mill Rd	Low-Medium	35-55mph	low to none paved, mostly grass	0', 60', 100' where data available	None	Rural city Residential	Restaurant	Proximity to Macon, and Warrenton	Range from 0-100
						7	5	5	7	0	6	5	9	44
Town to Town Route	W	Warrenton-Centerville Connector	17.5	Intersection of W Macon St and S Main St	Intersection of NC-58 and 561	Low	45-55 mph	some paved shoulders, extends past white line	0- 60' where data available	Warrenton Historic District, Mansfield Thorton House, Shady Oaks, Solomon and Kate Williams Jr. House, Buxton Place	Rural countryside and rural residential	Restaurant	Proximity to Centerville and Warrenton	Range from 0-100
						8	4	7	5	15	7	5	8	59

## NCLD ROUTE CATEGORIZATION EVALUATION & PRIORITIZATION (CONTINUED)

General Route Information						Route Prioritization Scoring								
Route Type	Route Identification	Route Name	Route Length (in miles)	Start Point	End Point	Safety				Scenic Quality		Amenities	Economic Development Potential	Priority Score
						Traffic Volume (0-10)	Speed (0-10)	Shoulder (0-10)	ROW (0-10)	Historical (0-15)	Natural (0-15)	(0-15)	(0-15)	(0-100)
Town to Town Route	X	Kittrell-Louisburg Connector	16.1	Intersection of Kittrell College St and US-1	Intersection of E Johnson St and S Main St	Low-Medium	35-55mph	low to none paved, mostly grass	0', 60', 80' where data available	None	Rural countryside and rural residential	Gas Stations (3)	Proximity to Kittrell and Louisburg	Range from 0-100
						7	5	5	7	0	7	8	8	47
Town to Town Route	Y	Centerville-Louisburg Connector	15.1	Intersection of E Johnson St and S Main St	Intersection of NC-58 and NC-561	Low-Medium	35-55mph	low to none paved, mostly grass	0', 60', 100' where data available	None	Rural countryside and rural residential	River Bend Park, shops, Gas station	Proximity to Louisburg and Centerville	Range from 0-100
						7	5	5	7	0	7	8	8	47
		Total Miles:	425											
						*Source: AADT 2012 from NCDOT's State Road System ArcGIS layer.	*Source: NCDOT's State Road System ArcGIS layer.	*Source: Google Maps	*Source: NCDOT's State Road System ArcGIS layer.	*Source: National Register of Historic Places Listing.	*Source: Google Maps	*Source: Google Maps		
Notes: There were no bike related crashes along the routes so this information was not included under the safety prioritization Traffic Volume was divided into three ranges: Low- under 2,000 AADT Medium- 2,000-10,000 AADT High- 10,000 and over AADT														

### \*NOTE:

Right of Way: The traffic volume of each route which range anywhere between low to high volume. Route J starts at the intersection of Boston Rd/Mill Creek Rd and ends at the intersection of Halifax Rd and Mountain Rd, has a traffic volume stated from low to medium, as well as Route K. Route D, is a lake route that has low traffic volume. This would result to why Route D has a higher Right of Way score then the other two routes. The lower the traffic volume, the safety rate for bicyclist's Right of Way will more than likely be higher.

The scores concerning the speed limit, are different because of the significance of the traffic volume, speed limit and the road length. This will contribute to the safety of any future bicyclist or bicycle routes. If the existing roads with low-medium traffic volume have shorter lengths with high speeds then the overall safety of the bicyclist will be in jeopardy.



A dark teal silhouette of a person riding a bicycle, positioned in the bottom left corner of the page. The cyclist is in a forward-leaning, aerodynamic position.

# **NC LAKES DISTRICT REGIONAL BIKE PLAN**

*PREPARED BY THE KERR-TAR REGIONAL COUNCIL OF GOVERNMENTS | 2016*