CAROLINA THREAD TRAIL MASTER PLAN FOR CATAWBA COUNTY COMMUNITIES

CAROLINA THREAD TRAIL

Weaving Communities Together

December 2010

The Vision

"The Carolina Thread Trail is a regional trail network that will eventually reach 15 counties and over 2 million people. Simply put, it will link people and places. It will link cities, towns, and attractions. More than a hiking trail, more than a bike path, the Carolina Thread Trail will preserve our natural areas and will be a place for exploration of nature, culture, science and history, for family adventures and celebrations of friendship. It will be for young and old, athlete and average. This is a landmark project. A legacy that will give so much, to so many, for so long."

-from the Carolina Thread Trail


CAROLINA
THREAD
TRAIL

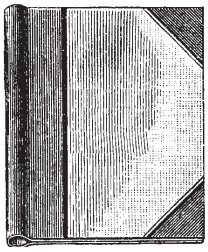


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Adoption

Each of the following jurisdictions have apoted the Plan:

Town of Catawba
adopted on November 1, 2010

City of Claremont
adopted on December 6, 2010

City of Conover
adopted on November 1, 2010

City of Hickory
accepted on December 7, 2010

Town of Long View
adopted on December 13, 2010

Town of Maiden
adopted on November 15, 2010

City of Newton
adopted on November 16, 2010

Catawba County
adopted on December 20, 2010



Acknowledgements

The following organizations signed resolutions of support at the outset of this effort to work with neighboring communities and with the Carolina Thread Trail to plan, design, and build trails that will connect our communities:

Catawba County

Town of Catawba

City of Claremont

City of Conover

City of Hickory

Town of Long View

Town of Maiden

City of Newton

Catawba Valley Outing Club

Probus of Lake Norman

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Executive Summary

This Master Plan outlines a means for long-term coordination of greenway and trail development within the county, cities and towns in Catawba County in an effort to promote the preservation and improvement of residents' quality of life. It presents a first-ever plan to coordinate all existing and proposed municipal and county trails and supplement them with additional greenway/trail segments, to create a comprehensive multi-use network connecting people, places and destinations to each other and to surrounding counties.

This Plan is the outcome of a year-long public process spearheaded by the Carolina Thread Trail initiative and supervised by a Steering Committee of representatives from municipal and county governments, interested organizations, businesses and individuals. The Carolina Thread Trail's mission is to bring resources to the 15 county region in the south-central piedmont of North Carolina and the north-central portion of South Carolina to create an interconnected trail system, with major regional trails designated as the Carolina Thread Trail.

The outcome of the planning process is a map that includes all trails recommended to local governments for inclusion in their trail and greenway plans (See page 50). Trails displayed in pink are those recommended for the Carolina Thread Trail designation and trails in green are presented for consideration by local communities wishing to further connect the people and destinations of Catawba County. This map includes approximately 126 miles of potential Carolina Thread Trail and 112 miles of secondary greenway routes. The routes featured on these maps are ¼ mile wide because actual trail alignment will depend upon existing conditions, availability of land, rights-of-way, landowner interest and future opportunities.

It is well understood that building a trail system of this scale is no small undertaking. Segments will likely appear one-by-one, and adjustments will be made to the proposed routes as circumstances change or more information becomes available. Similarly, trail development will follow through various arrangements with multiple funding partners. Nevertheless, the following actions are recommended to take this plan from concept to reality in an intentional, coordinated, fair and transparent way, consistent with the planning process to date.

Adopt the plan

Local governments adopted this plan which will serve as a guideline for developing future proposed connections; doing so does not commit them to funding plan implementations. The adoption procedures varied from community to community depending on existing plans and policies in each jurisdiction. The planning or recreation advisory board (as applicable) reviewed and recommended the plan to its governing body, which in turn considered it, made additional adjustments as needed, and officially incorporated it into its land-use plans. It is recommended that local regulations be amended to require developers to set aside land for trails whenever a development proposal overlaps with the proposed routes, as adopted.

Build public support for trail implementation

Advocacy from individuals with a personal and professional interest in these topics is essential. It is recommended that a Trail Advisory Committee be formed for these leaders to discuss and celebrate progress with public events, share resources/tools, and otherwise coordinate trail planning and development activities. Other organizations can assist in identifying viable trail

opportunities and working with willing landowners to build support and interest in trails and greenways. For example, early collaboration with the arts community, as well as county schools and colleges, will encourage more partners to become vested in local greenways and the Carolina Thread Trail project. Local public art councils should be made aware of the opportunities inherent in the community trail system and encouraged to initiate public / private partnerships for support.

Complete top priority segments

With an eye for "readiness," the Steering Committee suggests that Catawba County communities work on first completing segments of trail where there is broad support and access to land. With a caveat that more research is needed regarding feasibility, and acknowledgement that circumstances may change, the Committee suggests the following opportunities, in no particular order, for priority implementation (refer to page 59 for full route descriptions):

1. Portion of Segments A and C:
- 4.4 mile segment from the intersection of Old Lenoir Road / 321 to Ivey Arboretum.

2. Portion of Segment I:
- 2.1 miles in length along the South Fork River from the proposed blueway access at Blackburn Ridge Road to Lincoln County's jurisdictional border.

3. Portion of Segment M:
- 3.2 miles in length between Catawba County Museum of History in Newton to Southside Park

4. Portion of Segment O:
- 2.2 miles in length from Lyle Creek to Hwy 16

5. Portion of Segment O:
- 2.5 miles in length from Claremont City Hall to Bunker Hill Covered Bridge

6. Portion of Segment O:
- 2.6 miles in length from Bunker Hill Covered Bridge to Town of Catawba

7. Portion of Segment S:
- 2.6 miles in length from Murray's Mill to the Town of Catawba

8. Portion of Segment T:
- undetermined length within future Mountain Creek Park

9. Portion of Segment W:
- 4.2 miles in length from Sherrills Ford Road along Raccoon Track Drive to Duke Energy power easement.

Segments that are not listed may become priorities as the community builds support and identifies opportunities to work with landowners.

Gain support from a variety of public and private resources

Trail networks are generally financed by piecing together funding from multiple sources, creating a "funding quilt." This Plan lists local, state, federal and other funding sources, many of which local communities will use to acquire land, construct trails, and operate and maintain these facilities and amenities. The Carolina

Thread Trail organization, housed within the Catawba Lands Conservancy, can provide assistance with funding strategies, as well as potential catalytic seed funding for planning and implementation from its private capital campaign.

Evaluate land or right-of-way acquisition options

Where public land is not already available or private developers are not already building trails along the planned trail route, conversations with private landowners are recommended to assess their interest in trails through their communities. This will assist with route feasibility and alignment. It is imperative that all trail efforts need to work with willing land owners on design, construction, and maintenance to ensure a successful trail project that benefits everyone involved.

Design, construct and maintain trails

Communities should work through a public process to determine intended use of the particular segment at issue and design with attention to use, safety and affordable maintenance.

Conclusion

The University of North Carolina Charlotte Urban Institute recently found that the 15-county region surrounding Charlotte, which includes Catawba County, is losing open space at a rate of forty-one acres per day. There is not only a risk but also a reality of losing public open space and recreational opportunities. The time is now to create trails that will provide recreational, educational and economic development opportunities, promote healthy lifestyles, and increase the community's connection to the region's vital natural resources, while engaging citizens of Catawba County through public access.

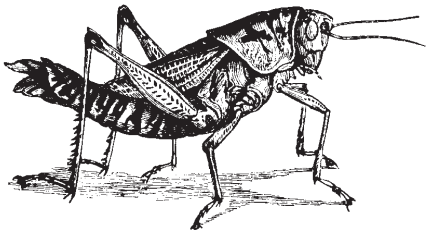


Sherrills Ford - Design input from all ages.



Hickory - Taking part in future development.

" With a key guiding principle of the Carolina Thread Trail being Community Self-Determination, the master planning process was infused with citizen input from all over the county."



CHAPTER 1 Introduction

Carolina Thread Trail

The Carolina Thread Trail ("The Thread") is a regional network of greenways, trails and conserved lands that will reach approximately 2.3 million citizens. It will link people, places, cities, towns and attractions.

The Thread will help preserve natural areas and will be a place for the exploration of nature, culture, science and history, for family adventures and celebrations of friendship. It will be for young, old, athlete and average. This is a landmark project, and creates a legacy that will give so much, to so many, for so long.

Overview

The Carolina Thread Trail Master Plan for Catawba County communities was developed through a locally driven process. The Plan is meant to serve as a guiding document for greenway and trail development within the county, cities and towns in Catawba County. Oversight was provided by a Steering Committee of municipal and county representatives, non-governmental organizations, and residents of Catawba County.

The Master Plan includes an introduction to the benefits of greenways and trails, a description of current conditions in Catawba County, a summary of the planning process undertaken, a concept map for a network of greenways and trails throughout the county, the Carolina Thread Trail (CTT) proposed route, and a description of recommended implementation steps. These latter action items provide local governments with suggestions for funding trail segments and expeditiously putting the on the ground.

The Carolina Thread Trail initiative, which has helped to spur the development of this Master Plan, is an effort to encourage 15 counties in the south-central piedmont of North Carolina and the north-central portion of South Carolina to create a large, interconnected trail system that will preserve and increase the quality of life within the local communities. This Master Plan presents a conceptual route for trails throughout the county, some of which will receive the Carolina Thread Trail designation. Lands to be incorporated may include prime farmland, wildlife habitat, environmentally fragile lands, open fields and forests.

Simply put, a greenway is a linear corridor of undeveloped land preserved for recreational use, transportation or environmental protection. A trail is a linear route on land or water with protected status and public access typically for recreation or transportation purposes. For ease, the word "trail" will be used throughout this document to encompass both types of amenities.

The reach of its connectivity is unparalleled. The Thread is based on the following guiding principles and core values: collaboration, community self-determination, connectivity, inclusivity, leverage, and respect for the land and landowners.

Collaboration and Self-Determination

Collaboration and communication among Catawba County communities is essential for meaningful connectivity. The Master Plan encourages a collaborative process through which trails are conceived and designed in cooperation with adjoining communities so that a regional asset is developed out of a series of interrelated local decisions and actions.

Connectivity & Inclusivity

Creating connections between communities and historical, cultural and recreational attractions is important. The Carolina Thread Trail seeks to create a region known for its "ribbons of green" connecting people to each other and to their heritage. Envisioning greater community interaction, the plan seeks to build bonds among diverse neighborhoods, and afford all residents greater access to natural surroundings.

Leverage

The Plan's success depends upon investment of outside capital in the region's natural resources. In addition to funding sources at the local, state and federal level, other grant sources are included in Appendix V.

Respect for the Land and Landowners

During the planning process, the Catawba County communities considered alternate trail routes; the resulting segments are broad corridors that represent multiple opportunities. For each segment, adjustments to the route can be incorporated as more landowners are engaged.

Through an inclusive, collaborative process, Catawba County and its communities decided which local trail systems to connect and be part of The Thread. However, not all local trails and greenways need to become part of the Carolina Thread Trail. Analogous to our highway systems, The Thread will develop as a "green interstate" focused on linking local trails and regionally significant attractions. Local trails will retain their own identities, whether or not they are designated as part of The Thread.



Geitner-Rotary Park, City of Hickory, NC

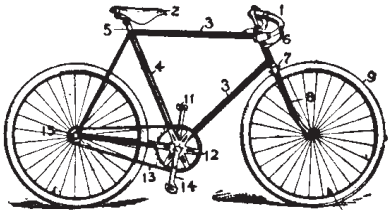
The look and feel of the Carolina Thread Trail may vary from community to community within Catawba County. It is its designation as part of the Carolina Thread Trail that will signify that a particular trail is part of this interconnected system, created by local communities working together to identify connection points and build trails that will grow together over time.



Conover- Carefully integrated plantings and path systems.



Opportunities to view the rural landscape.



Chapter 2. Greenway Benefits

There is a wealth of available information addressing the benefits of greenway systems throughout the country. The first National Biking and Walking Study, conducted by The Pedestrian and Bicycle Information Center, as sponsored by the Federal Highway Administration, identified five categories of benefits from non-motorized transportation: improved health, transportation benefits, environmental benefits, economic benefits, and improved quality of life. As an alternative to non-motorized transportation, trails provide these and other important benefits (1).

Health Benefits

Studies indicate that trails promote increased physical exercise for those who have access through their neighborhoods and communities. Trail systems are beneficial to the individual's overall sense of well being and physical condition. As reported through the Center for Disease Control and Prevention, hiking is an effective way to prevent and control weight gain. Estimated medical costs related to obesity reached a staggering $75 billion in 2003 (2). Action items from the Office of the Surgeon General include creating opportunities for physical activity in communities and at the work place (3). Walking, biking, and jogging are some of the more frequent types of exercise people engage in on trails. All of these aerobic activities increase cardiac strength and help stave off heart disease. There is an economic benefit from a healthier population too- more alert and healthy individuals are generally more productive and miss fewer work days due to illness (4).



The prevalence of childhood obesity has nearly tripled for school aged children in the past two decades. According to the Office of the Surgeon General, 13% of children aged 6 to 11 years and 14% of adolescents aged 12 to 19 years were overweight in 1999. This prevalence has nearly tripled for adolescents in the past two decades. Recommended action items to combat obesity are:

- Ensure daily, quality physical education in all school grades. Such education can develop the knowledge, attitudes, skills, behaviors, and confidence needed to be physically active for life.
- Reduce time spent watching television and in other similar sedentary behaviors.
- Build physical activity into regular routines and playtime for children and their families. Ensure that adults get at least 30 minutes of moderate physical activity on most days of the week. Children should aim for at least 60 minutes.
- Create more opportunities for physical activity at worksites. Encourage all employers to make facilities and opportunities available for physical activity for all employees.
- Make community facilities available and accessible for physical activity for all people, including the elderly.



Improved Environmental Quality

More and more Americans are leaving the car at home to commute to work or to run errands. Many new building facilities cater to bike commuters as well, with increased bike parking, lockers and shower rooms. As more pedal power and less fossil fuels are consumed, air quality will improve. Automobiles generate approximately 56% of the carbon dioxide emissions each year throughout the nation (7). Carbon dioxide, unhealthy ozone levels, and PM2.5 can also impact funding for industrial recruitment. It may even deter future residents from moving into an area, causing a dip in economic prosperity.

Trail corridors and conservation easements associated with trails along riparian corridors allow for large swaths of vegetation, which helps counter high levels of air borne pollutants. The filtration process performed by these vital zones spares local wildlife as well as humans from coming into contact with many harmful substances and contaminates. Carbon dioxide, unhealthy ozone levels, and PM2.5 (fine particulates under 2.5 micrograms in diameter) can cause health problems such as lung disease, asthma, bronchitis, and even heart attacks (5). Health studies have also indicated a correlation between high fine particulate levels and premature death due to heart and lung diseases (6). Additionally trails provide alternatives to vehicular transportation which is a major contributor to the air borne pollutants.

Riparian corridor buffers, (buffers associated with an area related to the natural course of waterflow), and landscaped open space will also help mitigate the detrimental effects of harmful emissions and improve air quality especially within areas of high traffic volume. Healthy riparian vegetation is key in intercepting pollutants and sediments that could otherwise cause eutrophication in downstream waterbodies. Preserved or newly planted vegetation within open spaces will remove carbon dioxide from the atmosphere during the photosynthetic process and release oxygen back into the atmosphere. Trees in particular act as a significant carbon sink and oxygen source (7).

All of these reasons have led both national and state governments to develop educational programs, monitoring systems, and promotional programs for new forms of transportation to curb the effects that vehicular traffic has on the environment. Many of the programs developed by the Unifour (the area consisting of Alexander, Burke, Caldwell, and Catawba county) involve educating the community on the impacts of automobiles on poor air quality. These programs distribute information about air pollution and ways that employers, schools, and individuals can help make the region a healthier place. Some traffic mitigation solutions include: promoting greenways, public transportation, and carpooling, which are being sponsored by organizations like NCDOT, the Greenway Transit, and local governments (8). Specific goals of these programs include a 5% increase in sidewalks in the region by 2015, an increase in the number of bicycle and pedestrian plans designed and implemented, and

the development of new transit programs (9). With the continuing support of these initiatives, air quality in the Unifour region will continue to improve, providing a model for the rest of the nation.

Community Connections

The goal of the Thread Trail network is to connect local communities; the trails will provide linkages between significant cultural and environmental resources in the county and within a community. The Thread will provide more opportunities for interaction between neighbors, thus highlighting the area's history and cultural ties to the land. This is especially so in rural areas where there are often significant distances between neighbors.

Improved Sense of Well Being

The Thread will provide opportunities for increased recreation, outdoor activities and improved physical fitness; it also imparts a greater sense of personal well being. Engaging outdoor activities, increased access to cultural destinations, and access to Catawba's significant environmental resources will promote an improved overall sense of community and responsibility.

Economic Benefits

Each section of trail is unique, as it responds to local character, residents, natural conditions, and community culture and infrastructure. As such, a comparative analysis between trail systems is difficult; however, there is overwhelming consensus that greenway trails positively impact local economies. Benefits include increased tourism, recreational spending; robust economies and housing markets. In fact, trails become destinations in themselves. Restaurants owners and inns along greenway trails report a significant increase in business solely from trail users (11).

To illustrate this economic benefit, the Speaker of the West Virginia House of Delegates noted:

"From small businesses centered around our recreation and tourism to science and technology jobs helping to restore our environment, we are beginning to see tangible economic development as a direct result of improved stewardship of our resources"(12).

As reported in The Economic Impacts and Uses of Long-Distance Trails:

"After just one season, 61 businesses located along the 35-mile-long Missouri River State Trail reported that the trail was having a positive effect on their businesses. Eleven of the businesses reported that the Trail had strongly influenced their decision to establish their business, and 17 (28%) had increased the size of their investment since the Trail had opened"(13).

According to A Regional Economic Impact Study of the Carolina Thread Trail, March 2007:

"The construction investment of the proposed trail, as well as all other construction-related opportunities, will lead to increased economic activity, employment, and wages. Total benefits include all direct expenditures, as well as additional indirect and induced expenditures that result from them. Specifically, it was estimated that:

- The proposed trail is expected to span approximately 500 miles with an average construction cost of $200,000 per mile.

- Over the 15-year period, this investment is expected to generate over $250 million in total direct, indirect, and induced economic activity.
- Of the total economic activity generated by the investment, over $85 million represents the additional earnings of various workers.
- The construction of the trail is expected to support nearly 2800 new jobs (including jobs directly related to the construction itself)" (14).

Increase in Property Value

A significant increase in property value is also associated with trail development. Many realtors have noted that proximity to greenway trails is among the top considerations for residential real estate. As noted in *Walking the Walk*, access to pedestrian networks and walkability directly increase residential property value. A 2007 survey commissioned by the National Association of Realtors showed that 57% of Americans agreed with the statement that "businesses and homes should be built closer together, so that stores and shops are within walking distance and don't require the use of an automobile (15)."

Studies in other regions have substantiated findings noting increase in property value. For example, Seattle's Burke-Gilman Trail has increased the value of homes near the trail by 6.5 percent. In another study of two rail-trails in Minnesota, 87 percent of landowners surveyed believed the trails had no negative impact on the value of their property (16).

According to A Regional Economic Impact Study of the Carolina Thread Trail, March 2007, an estimated 305,000 housing units will be directly affected by the proposed trail. In addition, the following statistics were noted:

- The average projected benefit per house is estimated to be approximately $3,580.
- Over 50% of all homes in the affected zone are projected to appreciate by the maximum benefit of $4,500.
- The total dollar gain in property is forecast to be $1.7 billion in the affected zone.
- This represents an approximate 4% increase in the value of the entire housing stock of the affected area.
- If this gain is accurately capitalized and assessed, this should yield an aggregate incremental increase in property tax revenues of approximately $17 million per year.
- The Net Present Value of this revenue stream is approximately $261 million (using a discount rate of 5% over 30 years, which would roughly correspond to the period associated with any bond issue to finance the proposed improvements).

Community Support

As previously described, a major characteristic of the Carolina Thread Trail is collaboration and self-determination. Support from the community is critical to the success of this Master Plan. Sixty percent of survey respondents support trail development with more than 70 percent of those strongly supporting greenway trails. Refer to Appendix III for complete survey results. As the Plan moves beyond the master planning phase, it is recommended that members of the Steering Committee remain engaged and continue to provide assistance with Thread Trail implementation. The Committee's role should evolve from providing guidance to plan development to assisting with outreach efforts and engaging the citizens of Catawba County.

The following article is an excerpt from an opinion submitted by Mark Hawkins, Family Physician, Claremont NC.

"I am a family physician and I support anything that may lead a community to exercise more, control their weight and hopefully be healthier. Also, healthier people are simply CHEAPER and LESS EXPENSIVE than unhealthy people. The burden on Government Tax dollars and overhead of all forms of businesses small and large is rapidly growing."

"I have a lot of patients that use biking as a source of exercise. Have long, smooth, open trails for your average person to bike on long distances to be healthier is very important."

"The Thread trail is a way to hopefully get the people in this area healthier."

Email submitted by: Mark Hawkins/Family Physician/ Claremont NC

Farmer Says Thread Trail is an Asset to Farming, Exercising

By Jordan-Ashley Baker O-N-E Staff Writer
CLAREMONT, NC
Excerpt printed with permission from O-N-E:

Stanly Stewart did his homework on the Carolina Thread Trail. He has a pad of yellow paper covered in hand-written notes about why the trail is an asset to Catawba County and the surrounding area. He spent hours researching, and he can cite statistics detailing the trail's benefits. After his research, Stewart came to a conclusion: The Carolina Thread Trail is a great idea.

"I can't see anything but positives from (the trail)," Stewart said.

If adopted, the trail system allows Stewart to continue doing two of the things he enjoys the most: farming and running.

"Obesity is an epidemic," Stewart said.

"I'd love to go out and see people running."

The trail also benefits another important part of Stewart's life: farming. The Carolina Thread Trail received negative attention from local farmers because some farmers are concerned about the thread trail and the problems it could potentially cause. The trails, however, are not a threat to farmers, Stewart said.

"The major threat to farming is unbridled development," he said.

The Carolina Thread Trail controls development. Stewart doesn't like to think about farming land sold to major development centers. Selling land for development doesn't preserve the land or keep it safe for future generations, like the Carolina Thread Trail does, he said. He encourages other landowners to ask themselves what legacy they want to leave for future generations.

"What do you want to be remembered for?" he said.

Allowing land to be part of the thread trail ensures open land and green space for years to come.

"I just think it would be a great legacy for a landowner," he said.

"I would much rather be known as someone who wanted to help."

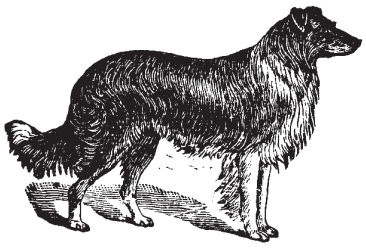
"The trails could bring public awareness to farming and help people understand how farming works," he said. "I think this thing can't be anything but good for farming."



Murray's Mill Harvest Folk Festival



Murray's Mill Water Wheel



Chapter 3 Existing Conditions

History and Place

Catawba County, which takes its name from the Catawba Tribe of Native Americans who occupied the area when the first settlers migrated, was founded in 1842 by mostly German and Scottish settlers. An ideal location for early settlers, Catawba County it is located within the upper piedmont and foothills of North Carolina and has an abundance of rivers, creeks and streams coupled with gently rolling topography. Farming, self-sufficiency and adherence to religious values provided the structure around which their lives were built. In recognition of this history, the county seal is graced with four emblems reflecting this early pioneer spirit and the values which continue to describe the citizens of the County - a cross for religion, a cow for farming and dairy, a wheel for industry and a torch to symbolize education.

The total area of the County is approximately 405 square miles. It is situated south of the Catawba River and west of the Lake Norman Impoundment, which is the largest reservoir in the state of North Carolina. Along with many other creeks and rivers, including the South Fork, Jacob Fork, and Henry Fork, which host a robust riparian ecosystem, the county is enhanced by scenic natural areas such as Bakers Mountain which claims the County's highest point of elevation at 1,780 ft above sea level.

Catawba County is comprised of eight townships; Bandy's, Caldwell, Catawba, Cline's, Hickory, Jacob Fork, Newton, and Mountain Creek in which are the municipalities of Brookford, Catawba, Claremont, Conover, Hickory, Long View, Maiden and Newton which hosts the County seat. There are five counties adjacent to Catawba County. They are Alexander, Burke, Caldwell, Iredell, and Lincoln.

Population

Catawba County's population has grown 12.3 percent from the year 2000 to 2009. This is approximately 4 percent behind the state's average population increase. According to U.S. Census data, the population of the county in 2000 was 141,685 and was estimated to increase to 159,125 in 2009 with approximately 25 percent of the county's population under the age of 18. Assuming population

Table 1:

A Demographic View of Catawba County and the Unifour Metropolitan Area (2009)

	North Carolina	Alexander	Burke	Caldwell	Catawba
Population	9,380,884	36,777	89,548	79,914	159,125
Population Growth Since 2000	16.6%	9.4%	.4%	3.3%	12.3%
Hispanic/Latino	7.7%	3.5%	5.6%	4.4%	9.4%
White	73.7%	91.3%	88.2%	92.9%	87.1%
Black or African American	21.6%	6.2%	6.5%	5.4%	8.5%

Source: US Census Bureau, 2009 American Community Survey

increase continues at its current trend, and cities and towns continue to expand through annexation, the trail will provide a critical counter-balance through preservation of open space, riparian corridors and connectivity to regional resources and destinations.

Economy

Catawba County's economic roots, like other counties in the region, are primarily agrarian. The focus was on subsistence farming, the practice of only growing what the land and farming practices could sustain. This system remained in place as late as the early 1900's when more commercialized establishments began to appear. Over time, this gave way to manufacturing including textiles, hosiery, and furniture production. Within the past two decades, the County has witnessed yet another shift in industry from textiles and home goods to the production of data communication components and electronic equipment. The flagship of this shift is represented by the current construction of an data center which will house manufacturing for computer components. Despite the overall change in its manufactured goods, the largest growth in Catawba County's economy has been in the

Table 2:
Population Change in Catawba County's Municipalities

	2000	2009	Percent /Change
Catawba County	141,682	159,125	12.3%
Brookford	434	431	-0.7%
Catawba	698	827	18.5%
Claremont	1,060	1,153	11.1%
Conover	6,604	7,428	12.5%
Hickory(Part)	37,222	41,469	11.4%
Long View(Part)	4,722	4,978	5.4%
Maiden(Part)	3,282	3,495	6.5%
Newton	12,560	13,578	8.1%

Source: City-Data.com



Sherrills Ford/ Terrell




Bunker Hill Covered Bridge

public service sector and includes healthcare, auto repair, hotels, and legal services. Additionally, by marketing itself as a center for retirement and passive recreation, Catawba County expects to expand retail and commercial businesses to support its growing population. (Foresight)

In an effort to diversify its economy, the county is actively seeking to bring in biomedical, pharmaceutical, and technical industry while encouraging sectors in retirement and retail development.

Table 3:

An Economic View of Catawba County and the Unifour Metropolitan Area (2008)

	Persons Below Poverty Percent	Median Household Income	Unemployment Rate
Alexander	12.7%	44,460	9.7%
Burke	15.5%	37,225	11.1%
Caldwell	15.4%	40,966	10.1%
Catawba	13.8%	43,737	9.9%

Source: US Census Bureau, 2009 American Community Survey

Recreational Infrastructure

The park infrastructure in Catawba County is highly developed with most parks situated in the population centers of Hickory, Claremont, Conover, Catawba, Newton and Maiden. There are also three County parks: Riverbend, Bakers Mountain, and St. Stephens, with a fourth, Mountain Creek, being planned. Additionally, there are several Booster parks sponsored by the Optimist Club. Existing greenway trails are located in Hickory, Newton, and Conover, with more planned or currently under construction such as an extension of the Newton Heritage Greenway.

Municipal Plans

Not all municipalities have adopted planning documents for park and/or greenway development. Listed below are planning documents or proposals which could influence Thread Trail development.



Claremont City Park



Jacob's Fork Walking Tour

Conover

The Conover Parks Master Plan developed in 2008 by Conover planning staff includes the following recommendations for consideration. Additionally it encourages participation in the Carolina Thread Trail Initiative.

- Greenways and pedestrian paths should be proposed in appropriate areas throughout the City in accordance with the 2008 Pedestrian Plan.
- When the development of any portion of land along the greenway plan occurs, the developer of that project is responsible for dedicating a public access easement and construction of that portion.
- It is recommended Conover revise its language to allow passive recreation within its easements. (Currently it's prohibited).

As per the 2008 Conover Pedestrian Transportation Plan, the proposed Thread Trail route follows the proposed Lyle Creek Greenway. The proposed Lyle Creek Greenway would stretch from County Home Road to Highway 16 North. The proposed trail would be within the Lyle Creek floodway and constructed along an existing City of Conover sewer outfall line. The proposed Greenway would provide a recreation opportunity for an underserved portion of Conover in the NW quadrant of the City which holds over 30% of the population.

Additional documents for reference include:

- 1998 Highway 16 Master Plan
- 2003 Land Development Plan

Hickory

Three documents produced for Hickory contain information pertinent to the trails development. This includes The Parks and Recreation Master Plan produced by Gardner Gidley and Associates in February of 1997, the Sidewalk, Bikeway, Greenway, and Trail Master Plan, produced in 2000 and updated in 2005 and The Parks and Recreation Needs Assessment produced by Site Solutions in May of 2010.

The 1997 Park and Recreation Master Plan, although the oldest of the three plans, provides an inventory of Hickory's recreation infrastructure. It is of interest to note a 1989 "Outdoor Recreation Participation Survey" conducted by the State of North Carolina which provides insight into outdoor recreation activities by North Carolinians. The five most popular outdoor recreation activities in North Carolina are: walking for pleasure; driving for pleasure; viewing scenery; beach activities; and visiting historical sites.

The 2005 Sidewalk, Bikeway, Greenway, and Trail Master Plan was developed as an update to the 1997 Hickory Sidewalk and Bikeway Master Plan. The planning process included involvement from the Sidewalk, Bikeway,



Hickory park along proposed route

Greenway, and Trail Task Force made up of members from Hickory City Council, the Planning and Parks and Recreation Commissions, and City staff. The Master Plan identified and provided design guidelines for 137 miles of sidewalks, 132 miles of bikeway, and 8.8 miles of greenway. Suggested Greenway corridors from the Master Plan which the Thread Trail may follow or intersect includes:

- Henry Fork River Greenways- Several loops and trail segments are proposed originating from Henry Fork River Regional Park including the proposed Geitner Creek Greenway
- Lyle Creek Greenway- Originating at St. Stephens Elementary School and continuing to the eastern most ETJ
- Jaycee Park Greenway Loop- Originating at intersection of 15 Avenue NW and Old Lenoir Road to connect Jaycee Park and the existing Greenway.
- There will be points of intersection with other proposed greenway sections including the SALT Block / Lenoir Rhyne University Urban Connector and the Lenoir Rhyne University / Stanford Park Greenway Connector
- The 2010 Parks and Recreation Needs Assessment provides up to date inventory and analysis of Hickory's recreational infrastructure. Included in the plan document are existing conditions maps illustrating greenway trails, civic gardens and other recreational facilities. It is noted the development of a city-wide greenway, along with a city-wide bike plan would provide an important amenity that would benefit residents and also have a significant economic impact on a community.

Newton

The Heritage Greenway Trail is a phased trail network around Newton which will also connect Newton's downtown square. Recently completed, Phase I is a ¾ mile in length, 10' wide compacted stone dust surface, and is restricted to pedestrian use.

Community Plans

Duke Energy Comprehensive Relicensing Agreement

As part of its relicensing through the Federal Energy Regulatory Commission (FERC), Duke Energy will construct several recreational amenities throughout the County through the Duke Energy Comprehensive Relicensing Agreement. Those improvements which relate to the Carolina Thread Trail routes are:

Long Shoals Access Area: Duke Energy will provide and manage canoe/kayak access with gravel parking at this currently undeveloped access area.

Catawba River Trail: Duke Energy has committed funds in the final comprehensive relicensing agreement for a 1.5 mile greenway extending east from Riverbend Park, along the Catawba River. Additional funding will be needed to construct the trail. It will be important for Catawba County to obtain easements and/or acquire property as viable opportunities become available.

Hunsucker Park: On the south side of Lyle Creek, Duke Energy will develop picnic facilities, 0.5 miles of trail, a trailered boat access, and paved or gravel parking. Duke Energy will also develop an entrance road from Hunsucker Park to the boat access site, provided the Town acquires the necessary easement across private property.

Mountain Creek Park: Duke Energy will support acquisition of up to 600 acres of property by Catawba County for public recreation and/or compatible permanent conservation at the mouth of Mountain Creek. Facility development may include a canoe/kayak launch, 20+ miles of proposed trail, bank fishing, campgrounds, swimming, and other water-based recreation facilities to be developed and managed by Catawba County.

Island Point Access Area: Duke Energy formed a small workgroup of parties that represented the public interest in this area which participated in developing a site plan for the future Island Point Access Area. The plan includes a multi-use recreation area with trails, bank and/or pier fishing, picnic facilities, swimming, camping, boating access facilities, and restrooms.

Lake Norman Regional Bicycle Plan

The recently approved Lake Norman Regional Bicycle Plan, (LNRBP), completed by the Centralina Council of Governments with participation by Catawba County, designates a bicycle route around Lake Norman. The Plan recommends a network of trails connecting neighboring communities, destinations, and the various local bicycle facilities within the surrounding four-county region (Catawba, Lincoln, Mecklenburg, and Iredell). Catawba's Carolina Thread Trail route follows the bike plan along Slanting Bridge Road, Sherrills Ford Road, Raccoon Track Drive, and Kale Road. Two common connection points to neighboring counties within the LNRBP are used by The Thread as well. This includes the Slanting Bridge Road connection to Lincoln County and the connection into Iredell County via Hudson Chapel Road. -http://www.lakenormanrpo.org

Greater Hickory Recreation / Tourism Plan

The Greater Hickory Recreation/Tourism Plan was prepared in 2006 by Woolpert Incoporated for the Western Piedmont Council of Governments and the Unifour Recreation and Open Space Task Force.

The stated purpose of this Plan is to reposition the region's economy by leveraging the natural, cultural, and recreational resources for sustainable economic growth and prosperity". Among one of the strategies included to leverage these resources is the establishment of a connected greenway system throughout the region. Specifically, the corridors identified in the Plan are the Lyle Creek Greenway and a link between Newton and Maiden. Another strategy includes planned greenway and blueway corridors for development on the Catawba, Henry Fork and Jacob Fork Rivers.

Foresight 2004 Final Report

The Foresight Report indicates the County's desire to establish the region as the 'hub' of the Piedmont through economic growth, environmental and cultural amenities, and quality of life. Below is an excerpt of goals relevant to the Thread Trail.

Economic Development Goals
ED1. Establish Hickory and Catawba County as the "Hub of the Piedmont." The County should become a base of activity and events year-round.

ED2. Package natural resources and facilities for tourism. These would include, but would not be limited to, hiking, boating, golf, outdoor adventure parks, a sports arena and auto racing. This goal suggests marketing the area

as a destination for tourists by developing "packages" for the area's heritage, natural resources, meeting and sports facilities, and its regional proximity to Charlotte, the mountains and the Piedmont Triad.

ED3. Build retirement communities through tourism, real estate and other allied industries. This goal suggests strategies to market retirement communities and related services.

Water Quality and Recreation

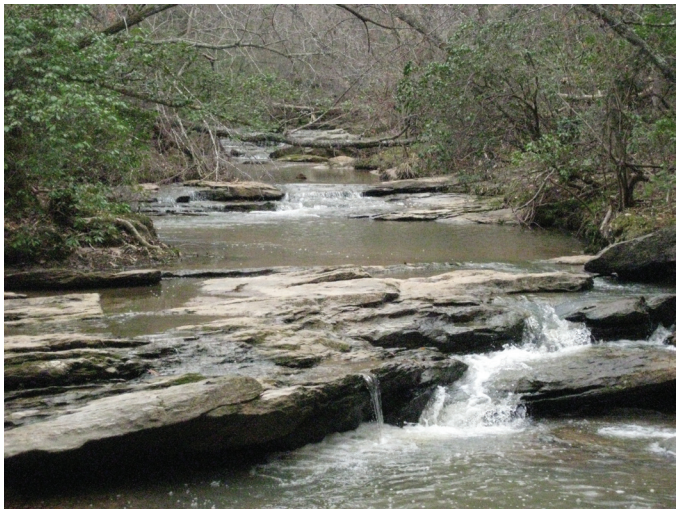
- Protect Catawba County waters from sedimentation.
- Preserve and market the County's natural and recreational resources. Two key goals as they pertain to the Carolina Thread Trail are:
- Develop the proposed Greenway connecting Bakers Mountain Park and Henry Fork River Regional Recreation Park (Mountain View SAP).
- Develop the Greenway connecting Bunker Hill Covered Bridge and Catawba River. (Catawba SAP).

Catawba County Parks Comprehensive Master Plan

Catawba County's Parks Master Plan prepared by McGill Associates was adopted in 2007 by the Catawba County Board of Commissioners. The plan was produced in conjunction with the County's Parks and Planning Staff and also a Focus Group. The Focus Group was comprised of community representatives from each of the Small Area Plans. Additional community input was garnered through a County wide survey. As noted in the document, the County currently has no established greenways. The County Parks Master Plan recommends five greenway corridors in Catawba County: Lyle Creek, Jacob Fork, Henry Fork, Riverbend/Lookout Shoals, and the future Carolina Thread Trail. Mapping of each of the recommended greenway corridors is included in the document.

County Small Area Plans

Catawba County's Small Area Plans (SAP) were produced as recommended by the 1999 Strategic Growth Plan. Each SAP provides a conceptual sketch to guide land use, zoning, and improvements for community and public facilities. Through public input each community expressed desire to preserve open space and generally provide an increase in recreation opportunities. It is documented in many SAPs that each communities lament the loss of pasture to residential dwelling units. Also expressed is the strong desire to preserve significant views and existing natural areas. Many guiding principles suggest that transportation improvements be made to accommodate cyclists. Several residential principles suggest developers incorporate pedestrian circulation systems such as sidewalk connections when new developments are constructed.



Tributary of the Jacob Fork River
Image courtesy of John Kinley

These principles have been incorporated into the County's Unified Development Ordinance.

Balls Creek SAP

The Balls Creek area is distinguished by its large amount of rural open space, and its impressive view to Anderson Mountain in the southeast. With population growth on the rise, the area has dealt with limitations on development expansion due to watershed concerns; residential development has been restricted in watershed areas. Although there are currently no parks or greenways, there are many natural features to be treasured such as Murrays Mill Pond, Balls Creek, Maiden Creek, the Maiden Reservoir, and Anderson Mountain. The Plan also suggests the exploration of possible local scenic highway designations for Murray's Mill Road, Buffalo Shoals Road, and East Maiden Road.

Catawba SAP

Located south of Interstate 40, the Catawba SAP encompasses 7,352 acres. The Catawba County Historical Association owns and operates Connor's Park located along Highway 70. The Park includes a trail and one of the last covered bridges in North Carolina, Bunker Hill Covered Bridge. The Plan recommends a greenway from Bunker Hill Covered Bridge along Lyle Creek to the Town of Catawba's Hunsucker Park. This greenway would continue through the Town to the Catawba River.

Mountain View SAP

Bakers Mountain, the highest point in Catawba County, lies in the western portion of the Mountain View study area. Currently, a 196-acre passive recreation county park lies on the mountain's northeast side. The Mountain View area serves as a popular spot for bicyclists, and provides an opportunity to develop an off-road system of bicycle trails to connect with a suggested greenway system. The Plan discusses an ideal route for a greenway system along the Henry and Jacob Forks Rivers. Duke Energy's powerline corridor could provide a means to connect rights-of-way to residential and commercial areas.

Plateau SAP

Located in the southwest portion of Catawba County, the Plateau SAP contains several sites on the National Register of Historic Places, as well as Hart Square, a recreated town, based on life in 1840's North Carolina. The town contains sixty-one original log cabins and is open to the public for one day every October. In addition to these historic places, the Plateau area is also home to a pottery community dedicated to the traditions of Catawba County pottery production. There is an opportunity to introduce a "Pottery Trail" which would extend down Plateau Road from the intersection of Propst Crossroads to Burt's Road, into Lincoln County where it becomes Zur Leonard Road, to Cat Square Road, and north on NC Highway 10, back to Propst crossroads. An inventory of natural areas taken in April 2002 describes the narrow riparian corridor along the Jacob Fork River as the least disturbed river corridor in Catawba County. The Plan recommends the implementation of vegetated buffers along this corridor, the use of conservation easements where applicable, and the possibility of a formal public canoe access. Another opportunity for the promotion of green space lies in the southern end of the County's Eco-Complex. The Plan recommends an exploration of possible recreational opportunities to be constructed on the site. Like the Mountain View SAP, the Plateau region contains many people interested in bicycling. NCDOT has funded a

bicycle route map and signing project which has been underway for several years; however, this project has not had a final map produced.

Sherrills Ford SAP

Not only is the Sherrills Ford SAP the largest area within the study, it has also seen one of the largest growth rates in the County since 1990, due to its vast cultural and natural resources. This growth has mainly to do with the area's largest natural resource: Lake Norman. The area is large and has higher concentrations of residents than other SAPs; however, there are currently no public parks or greenways located in the Sherrills Ford area. This will soon change with the development of Mountain Creek Park, a 589 acre county educational and recreation amenity planned with financial support from the Duke Relicensing Agreement, and a Clean Water grant. Another opportunity for park development lies along the lakefront. The Plan recommends the design and construction of a series of pedestrian and bicycle systems that link together existing and future neighborhoods. The designation of a "village center" at Sherrills Ford Road/Hwy. 150 intersection consisting of approximately 750 acres would also provide a destination for outside residents coming to utilize the lakefront land.

St. Stephens/Oxford SAP

Though rooted in a rural farming mentality, the St. Stephens/Oxford Area has evolved into a suburban area. The area is home to scenic landscapes of rolling hills, streams and the Catawba River, as well as the Rock Barn, an 1822 barn which was owned by a founder of Catawba County and is on the National Register of Historic Places. County owned and operated Riverbend Park is also located in this SAP district. Running along NC Highway 16 and adjacent to Catawba River, the Park is 450 acres of public space. It offers a variety of passive recreational opportunities including walking, hiking, biking, and equestrian trails, as well as picnic areas and an observation deck overlooking the river. Trail links between this park and the Oxford access of Lake Hickory would promote the use of both areas.

Startown SAP

Bisected by the new US Highway 321, the Startown SAP has easy connections to both Charlotte and the rest of Catawba County. Currently, there are no public parks or greenways. The study area has three major rivers running through it: the Henry Fork, Jacob Fork, and the South Fork of the Catawba River. These natural resources provide an opportunity for the development of riverfront parks and greenways which will not only allow for active and passive recreation, but will also serve a conservation purpose. In addition to these possible projects, the City of Newton has opened a 100 acre park at its water intake along NC Highway 10, just west of US Highway 321. The park when completed will include softball and soccer fields, hiking and mountain bike trails, a canoe launch, and picnic areas. The SAP committee encourages the County to explore cooperative ways to partner with Newton in developing the Jacob Fork Park. They also suggest working with the landowners and local conservancies to establish passive recreational uses and/or boating options on the South Fork, Henry Fork and Jacob Fork Rivers.



Chapter 4. Proposed Trail Networks

Process

The foundation of The Catawba County Carolina Thread Trail Master Plan was a strong and active effort put forth by the Steering Committee. The committee's broad representation from municipalities, natural and cultural resources, farm and business interests, Duke Energy and the State led to well-informed guidance and leadership throughout the life of the project. The committee met roughly once a month November 2009 through September 2010 while the plan was being developed.

To facilitate discussion outside meetings, a web site was developed for the project. This site hosted information about public meetings, Carolina Thread Trail talking points and frequently asked questions, survey links and results, maps, and planning documents. Most importantly the site hosted open discussions among the Steering Committee. These discussions included topics like Duke Energy's policy on trails within their easements, to local media coverage, feedback on draft routes and raising awareness of public meetings.

Early in the plan, the consultant conducted several target planning exercises with the Steering Committee to expose key issues that would influence the shape of the final plan. Additionally, these exercises were also used to identify user types and destinations around the county that should be considered when designating the Carolina Thread Trail routes. Results of the Issues, Users and Destination exercise are summarized below. While these lists were reviewed and refined by the Steering Committee and the public over the course of the project, they served as a starting point.



Maps marked up during the Public Forums

Priority Destinations

Cultural and Recreational Sites

- Bunker Hill Covered Bridge
- Murray's Mill
- SALT Block
- Catawba County Museum of History
- St. Paul's Church and Cemetery
- Ivey Arboretum
- Future Conover Station-former Broyhill Factory
- Existing Greenways including (Conover Gateway Greenway, Hickory Greenway, Newton Heritage Trail Greenway)
- Existing Parks

Town Centers and Downtown Areas

- Hickory
- Newton
- Conover

- Catawba
- Claremont
- Maiden
- Sherrills Ford

Colleges and Universities

- Lenoir-Rhyne University
- Catawba Valley Community College
- Appalachian State University Extension

Historic Districts

- Murray's Mill Historic District
- Terrell Historic District
- Town of Catawba Historic District
- Claremont Historic District – Hickory
- North Main Ave Historic District - Newton

Community Involvement

Outreach for the Carolina Thread Trail Master Plan in Catawba County utilized several public involvement tools throughout the process, including public workshops, utilizing the Carolina Thread Trail video, interactive mapping exercises and online surveys.



Steering Committee Meeting

Public Forums

The first round of public meetings was held in January of 2010 in Sherrills Ford, Newton and Hickory. Thirty eight citizens attended the meeting at Sherrills Ford Elementary, 34 attended at the restored Newton Train Depot and 24 residents joined at the Highland Recreation Center in Hickory.

The format of these meetings included showing the Carolina Thread Trail video to introduce the community to the project as a whole from a regional perspective. Following questions and answers about the project, the consultant facilitated an interactive mapping exercise. Participants were asked to draw on maps of the county to show where they felt the trail should go and what destinations it should connect. These maps were later digitized and incorporated into the project mapping. As the maps were digitally "stacked," patterns and concentrations of routes emerged. This mapping was crucial in the development of the overall draft routes.

The final element of the first round of public meetings was a comment form. These forms could be filled out during the public meeting or completed online. The Survey Feedback section provides more information about the survey.

Based on Steering Committee guidance, a fourth community workshop was added to the second round of public meetings. It was felt that the plan would benefit from including a meeting in the western region of the county. In June 2010, public meetings were held in Sherrills Ford (23 attendees), Newton (13 attendees), Hickory (7 attendees) and the new location, Mountain

View (8 attendees). The purpose of these meetings was to present the draft routes and solicit feedback. While attendance was lower than the first round of meetings, substantive comments were collected. In general, the communities were supportive of the project. However, there were specific property owners that expressed their concerns about the route potentially crossing their land. Routes have been modified in cases where property owners were adamantly opposed to the trail.

Survey Feedback

Each of the two rounds of public meetings was accompanied by a survey that was available to be filled out at the meeting or online. The goals of the first survey were to establish a detailed understanding of any issues the community had with the Carolina Thread Trail concept, prioritize destinations to be connected by the trail, identify the most likely user types and solicit feedback on draft routes. Results and additional analysis of each survey is provided within Appendix III.

The first survey had 284 respondents. It was designed to ascertain attitudes toward greenway trails, offer opportunity for feedback on any potentially perceived negative views toward greenways and also to prioritize the list of destinations developed by the Steering Committee.

The second survey had 74 citizens respond. The survey asked the community to evaluate each draft route and provide responses based upon the perceived necessity for each of the proposed routes. Additionally each respondent was asked to respond to trail surface questions.

Project Timeline

November 2009-

A Project Kickoff Meeting was held at the Catawba County Agricultural Resources Center in Newton to introduce the project to the Steering Committee and discuss goals and expectations. An overview of the Carolina Thread Trail was presented along with a planning workshop. Part One of the planning workshop was conducted to engage the committee. Issues, destinations, and users were identified. Objectives included discussion of greenway preconceptions and myths, identification of greenway impacts, and identification of critical landmarks and destinations within the county.

December 2009-

A follow up Steering Committee Meeting was held to continue the planning exercise. This critical component of the planning process resulted in a map depicting points of interest including parks, cultural landmarks, town centers, places of learning, etc. The map was then used at the public forums and county residents helped to make the connections between destination points. A public outreach plan was developed as to how the Steering Committee could spread the word about the Carolina Thread Trail. Target Destinations were ranked and a Google Group list was presented to facilitate an online discussion and survey.

January 2010-

The consultants hosted an interjurisdictional meeting to discuss connectivity to each surrounding county: Alexander, Burke, Caldwell, Iredell, and Lincoln. Lincoln County had concluded its Master Planning Process. Connection points were established between each county

with several designated bridge crossings over the Catawba River. The first round of public forums were held in Newton, Sherrills Ford, and Hickory in late January.

February 2010-
The Steering Committee, at its monthly meeting, decided to continue to pursue the Newton to Maiden rail corridor. Mapping revisions were made as the committee evaluated routes developed during the public forums. The proposed total mileage of trails developed from the Public Forum exceeded the suggested 100 mile limit expressed by the Carolina Thread Trail. Options to reduce mileage were considered by the Committee.

March 2010-
The consultants led several site walks throughout the County to evaluate proposed Thread Trail routes including the Jacob Fork corridor, the Town of Catawba at Hunsucker Park, and Lyle Creek in Claremont and Hickory. An alternater to the Newton-Maiden rail corridor was developed to include Southside Park.

April 2010-
The Steering Committees continued the process of refining the map with emphasis on regional destinations.

May 2010-
The Steering Committees continued the process of refining the map with emphasis on regional destinations. Preparations were made for the upcoming Open houses. The draft plan map was approved for presentation to the public.

June 2010-
A second series of open houses were conducted to present the conceptual Thread Trail Routes to the public. A final interjurisdictional meeting was held to confirm cross-county connection points. Several points were modified to better align with desired cross county connection locations.

July 2010-
The Steering Committee met to review the Open house input. Preparation of the draft document continued.

August 2010-
Preparation of the draft document continued. Provided review and comments on priority.

September 2010-
A final presentation was made to the Steering Committee which reviewed the planning process, and final maps. The map was endorsed by the Committee. It was agreed to include all suggested priority routes in the document. The Committee discussed transitioning into an advisory role assisting with trail implementation.

November-December 2010-
Presentations were made to each juridisction during a two month period culminating in a final presentation to the Catawba County Board of Commissioners. The map and plan were adopted by the Town of Catawba, the City of Claremont, the City of Conover, the City of Hickory, the Town of Long View, the Town of Maiden, the City of Newton, and lastly on December 20th by the County Board of Commissioners.

Master Plan Trail Routes:

After months of the planning process, the Steering Committee prepared its recommended Carolina Thread trail routes, which are shown on page 50. The Plan depicts

pink and green routes as recommended by the County. Pink lines illustrate the recommended Carolina Thread Trail route, whereas the green lines represent secondary and/or alternate greenway routes which either express the County's desire for greater connectivity within the County or are suggestions of an alternate to The Thread route. This document discusses each of the primary 'pink' Carolina Thread Trail routes in greater detail.

Carolina Thread Trail routes are shown as a ¼ mile wide corridor. This is in recognition that each municipality and jurisdiction will further refine the exact route of each trail segment during subsequent phases of work.
Following The Thread's key principle of self-determination, the process began with a planning session to solicit key qualities of Catawba County. Out of this process a list of cultural and environmental assets for the County was developed which through refinement during public process, became the destination list. This list served as a constellation of points on a map in which the public was asked during the public forums to help draw the route to connect the key points of interest.

Also during the planning exercises, the Steering Committee discussed perceived notions about greenway systems. What are the concerns in regards to greenways and how might these concerns be addressed? Property rights, respect of land owners, and safety all ranked as primary concerns during Steering Committee meetings. A presentation was made to the Farm Bureau representatives and other citizens to openly address these concerns and misconceptions.

Description of Trail Routes:

The recommended Carolina Thread Trail Route is approximately 126 miles. Within the proposed routes, approximately 56,000 people, which is over 1/3 of the county's population, are within a ½ mile of the proposed trail. Many of the County's cultural amenities are within a ¼ mile distance, including 90% of town centers, 100% of historic districts, one-half of the County's colleges and universities, and three-quarters of identified agricultural tourism sites. Of the nearly 126 miles of proposed Carolina Thread Trail, 44.6% follows riparian corridors, 20.8% along sidewalks, 23.6% along road rights of way, 5.2% within utility easements where feasible, and 2.6% follow existing greenway trails. The remaining 3% follows other miscellaneous corridors. It is understood that the utility rights-of-way are easements and are owned by the underlying property owners.

Beginning on page 30 is a description of each trail segment which relates to the segments on the enlarged maps. Each segment description provides trail profile information including its segment length, proximity to priority destinations and potential population benefit.

Catawba County - Carolina Thread Trail

Route Analysis

	Route Metrics	Percentage of Total
Total Length (mi)	125.9	
Existing Greenways (mi)	3.3	2.6%
Newly Proposed Greenway (mi)	122.6	97.4%
New Trail Stream/River Corridor (mi)	56.1	44.6%
New Trail Sidewalks (mi)	26.2	20.8%
New Trail via Road ROW (mi)	29.7	23.6%
New Trial via Rail Corridor (mi)	0.0	0.0%
New Trail via Utility ROW, where feasible	6.5	5.2%
Other (mi)	4.1	3.3%
Priority Destinations		**Percent Served**
Cultural and Recreational Sites within walking distance*		
High Priority	5	83.3%
Medium Priority	4	44.4%
Town Centers and Downtown Areas within walking distance*	9	90.0%
Existing Trails within walking distance*	4	100.0%
Parks within walking distance*	27	45.8%
Colleges and Universities within walking distance*	2	50.0%
Historic Districts within walking distance*	6	100.0%
Agricultural Tourism Sites within walking distance*	3	75.0%
Blueway Access Points withing walking distance*	8	23.5%
Other Connections and Destinations		
Cross-County Connection Points	8	66.7%
Schools within walking distance*	24	41.4%
Libraries within walking distance*	6	85.7%
YMCAs within walking distance*	3	60.0%
Along Proposed Lake Norman Bike Route (mi)	14.0	11.1%
Access		**Percent Served**
Children within service area**	13,207	35.6%
Seniors within service area**	7,867	38.9%
Total Residents within service area**	56,594	36.6%
Low Income Households within service area**	8,768	37.9%
Regional Metrics		
Miles per 1000 residents	0.81	
Miles per 10 sq miles county area	3.03	

*Walking Distance assumed at ¼ mi
**Service Area assumed at ½ mi
***Based on 2007 census projections (Claritas)

NOTE: The following corridors are listed in sequential order beginning with Corridor 1, Segment E as below.

Corridor 1: Three Forks Corridor

(see map page 52)

Segment E. Henry Fork River Corridor: Burke County Line to Brookford Blvd

Route Profile:

- 6.3 miles in length – stream corridor

Access Opportunities:

- Adjacent to Henry Fork River Regional Park

Population within 1/2 mile of proposed segment:

- 1744 residents
- 277 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Brookford Town Center
- Henry Fork River Regional Park
- Henry Fork Blueway Access Site

Cross-County Connections:

- Burke County

Challenges and Opportunities:

- Challenge: US 321 crossing needed
- Challenge: Obtain multi-use easement over sewer easements
- Property owner concerns

Site Visit Notes:

- Henry Fork / Hwy 321 / Hwy 127 will need consideration due to relatively steep embankment along the Henry Fork River at this location
- More analysis of Brookford Blvd / Henry Fork crossing needed
- Hwy 321 has sidewalks along south bound lanes but not north bound lanes
- Street crossings are wide and would need to be upgraded



Overpass at Henry Fork River

Segment F. Bakers Mountain Park Connector: Henry Fork River to Jacob Fork River

Route Profile:

- 4.2 miles in length – stream corridor

Access Opportunities

- Adjacent to Bakers Mountain Park

Population within 1/2 mile of proposed segment:

- 990 residents
- 236 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Baker Mountain Park

Challenges and Opportunities:

- Challenge: Topography

- Challenge: Multiple property owners
- Opportunity: May have some willing property owners south of Bakers Mtn. Park (Catholic Conference Center)

Site Visit Notes

- Not reviewed

Segment G. Jacob Fork River Corridor: Camp Creek to Jacob Fork Park

Route Profile:

- 10.8 miles in length – stream corridor

Access Opportunities:

- Adjacent to Jacob Fork Park
- Provides access to Jacob Fork Blueway Access Sites (3)

Population within 1/2 mile of proposed segment:

- 1562 residents
- 145 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Jacob Fork Park

Challenges and Opportunities:

- Challenge: Topography
- Challenge: Multiple property owners
- Challenge: Several stream crossings
- Opportunity: May have some conservation-minded property owners in area willing to have trail easements
- Opportunity: Trail would be eligible for Clean Water grants if located within a riparian corridor.

Site Visit Notes:

- The Thread Trail team visited this site as part of its walking tours
- Ecologically sensitive and diverse region of the county
- The stream corridor presents unique topographic challenges
- As the river meanders it creates steep bank conditions along the outside bend of each curve
- The trail may receive grants if located within 25 to 50' from top of bank



Utility Easement

Segment H. Henry Fork River Corridor: Brookford Blvd to Jacob Fork Park

Route Profile:

- 7.0 miles in length – stream corridor

Access Opportunities:

- Adjacent to Jacob Fork Park
- Provides access to current and proposed Henry Fork blueway access sites (2)

Population within 1/2 mile of proposed segment:

- 3433 residents
- 490 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Jacob Fork Park
- Brookford Town Center

Challenges and Opportunities:

- Challenge: Hwy 321 crossing
- Challenge: Going around Brookford Dam at old mill site
- Challenge: Going past City of Hickory Treatment Plant facility
- Opportunity: Maintained sewer line to Sandy Ford Pump Station might provide good opportunity for greenway corridor.
- Opportunity: City of Hickory owns undeveloped acreage at north end of segment

Site Visit Notes:

- River corridor and Sandy Ford Pump Station not yet visited; however, there are noted power transmission lines between Robinson Road and the Henry Fork which could be potentially used although there may be topographic constraints.



Utility Easement

Segment I . South Fork River Corridor: Jacob Fork to Lincoln County

Route Profile:

- 8.5 miles in length – stream corridor

Access Opportunities:

- Adjacent to 482 acres of Catawba Lands Conservancy properties and easements
- Adjacent to Jacob Fork Park
- Provides access to proposed South Fork blueway access sites (3)

Population within 1/2 mile of proposed segment:

- 934 residents
- 110 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Jacob Fork Park

Cross-County Connections:

- Lincoln County

Challenges and Opportunities:

- Opportunity: Bridge replacement planned for SR 2019 (Rocky Ford Rd)
- Opportunity: Catawba Lands Conservancy owns large tracts of land along river

Site Visit Notes

- Southern most portion of this route along Jacob Fork is within floodplain and within conserved lands held by the Catawba Lands Conservancy. Connection to Lincoln County to the south via this trail route. There is potential for this to be a priority segment due to the lands being held within conserved property.

Corridor 2: Hickory Connectors

(see map page 53)

A. Hickory Greenway Connector: 2nd Street to Hickory Greenway and Burke County

Route Profile:

- 3.0 miles in length
- 1.4 miles using existing sidewalks along 16th Ave and 6th Street
- 1.2 miles using Hickory Greenway through Glenn C. Hilton, Jr. Memorial Park and along City Park,
- 0.4 mile along 15th Ave and Old Lenoir Rd to Hwy 321 bridge

Access Opportunities:

- Adjacent to Glen Hilton Park, Geitner Rotary Park, Hickory City Park, and the Hickory Greenway.

Population within 1/2 mile of proposed segment:

- 3335 residents
- 1112 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Glenn C. Hilton, Jr. Memorial Park
- Geitner Rotary Park
- Hickory City Park
- Hickory Greenway
- Catawba River Blueway Access Sites (2)

Other Destinations within walking distance (1/4 mi):

- Hickory High School
- Viewmont Elementary
- Kinder Kids School at St Lukes United Methodist

Cross-County Connections:

- Burke County / Caldwell County
- Regional connections to Over Mountain Victory Trail and Mountains to Sea Trail

Challenges and Opportunities:

- Opportunity: Potential bridge replacement at Hwy 321 which can incorporate pedestrian facilities
- Opportunity: Possible sewer easement connections in Burke County to Over Mountain Victory Trail

Site Visit Notes:

- Well established greenway system between these two parks.
- We heard from a resident that there is a significant change in topography accommodated by timber steps.
- 15th Ave and 17th street has a wide street section but no sidewalks or striped bike lanes. 12th street striped shoulder for bikes.

B. Center Street: 16th Ave to Alexander County

Route Profile:

- 3.9 miles in length all along Center Street
- 2.4 miles existing sidewalk
- 0.7 miles proposed sidewalk
- 0.8 miles other

Population within 1/2 mile of proposed segment:

- 6834 residents
- 1752 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- none

Other Destinations within walking distance (1/4 mi):

- Viewmont Elementary
- Jenkins Elementary
- Christian Family Academy
- Kinder Kids School at St.Lukes United Methodist Church

Cross-County Connections:

- Alexander County

Challenges and Opportunities:

- Challenge: Pedestrian and bike accommodation needed at Center St Bridge at Catawba River

Site Visit Notes:

- Good sidewalk connections from 16th Ave. up to Falling Creek Road; however no bike lanes.
- There are no sidewalks from Falling Creek to the bridge.
- The Bridge would need expanded deck width to accommodate multi-modal use.



Geitner-Rotary Park, courtesy of Hickory Parks and Recreation



Greenway Trails in Hickory



City of Hickory Town Center

C. 2nd Street in Downtown Hickory: 16th Ave to 2nd Ave

Route Profile:

- 1.3 miles in length all along existing sidewalks on 2nd St.

Access Opportunities:

- Adjacent to McComb Park

Population within 1/2 mile of proposed segment:

- 3944 residents
- 3033 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- SALT Block
- Ivey Arboretum
- Downtown Hickory
- Claremont Historic District
- Lenoir Rhyne University
- McComb Park



Lenoir-Rhyne University Campus



Highway 127 at Catawba River; connection to Alexander County

Other Destinations within walking distance (1/4 mi):

- Harper House / Hickory History Center
- Maple Grove Historical Museum
- Catawba Valley High School
- Hickory High School
- Viewmont Elementary
- Cornerstone Christian Academy
- Kinder Kids School at St Lukes United Methodist
- Hickory YMCA

Challenges and Opportunities:

- Challenge: No bicycle riding on sidewalks in City
- Opportunity: Side roads are more calm than Hwy. 127

Site Visit Notes:

- Sidewalks are present for both north and southbound routes of Hwy 127.
- Gaps in sidewalk connections are noted across parking lot drive aisles and other drive ways.
- Significant sidewalk gap between 8th and 9th as shown.
- Signage noted for transit, bikes, and area attractions.
- Bike lanes not provided.



Ivey Arboretum on Highway 127



Catawba Science Center along Highway 127



Offset sidewalk across driveway



Utility Conflict in sidewalk



SALT Block



Signed Bike Routes

D. Henry Fork Connector: 2nd St in Hickory to Henry Fork

Route Profile:

- 2.8 miles in length along Hwy 127, 2nd St, and Brookford Blvd
- 1.9 miles existing sidewalk
- 0.4 miles proposed sidewalk
- 0.5 miles other

Access Opportunities:

- Adjacent to Brookford Park, Robinson Park, and Southside Heights Park

Population within 1/2 mile of proposed segment:

- 2807 residents
- 1003 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- SALT Block
- Ivey Arboretum
- Downtown Hickory
- Brookford Town Center
- Claremont Historic District
- Brookford Park
- Robinson Park
- Southside Heights Park
- Taft Broome Park

Other Destinations within walking distance (1/4 mi):

- Harper House / Hickory History Center
- Cornerstone Christian Academy

Challenges and Opportunities:

- Challenge: Section near downtown Hickory with no existing sidewalk
- Challenge: Hwy 70 crossing
- Opportunity: Interstate 40 crossing – 2nd St. crossover bridge has sidewalk

Site Visit Notes:

- Good consistent sidewalks along both north and south bound lanes of Hwy 127
- Several obstacles noted as shown; No bike lanes provided
- Some street crossings need to be upgraded as shown



Highway 127

Corridor 3: Lyle Creek Corridor

(see map page 54)

J. Lyle Creek Corridor: 2nd Street in Hickory to Thornburg Drive in Conover

Route Profile:

- 8.3 miles in length
- 1.0 miles along existing sidewalk using 2nd Ave, 3rd St, Main Ave, 7th Ave, 8th St
- 2.8 miles along existing sidewalk on Highland Ave
- 4.5 miles along Lyle Creek

Access Opportunities:

- Adjacent to McComb Park, Robinson Park, and Cliff Teague Park

Population within 1/2 mile of proposed segment:

- 8039 residents
- 969 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- SALT Block
- Ivey Arboretum
- McComb Park
- Robinson Park
- Cliff Teague Park
- Downtown Hickory
- Lenoir Rhyne University
- Claremont Historic District in Hickory

Other Destinations within walking distance (1/4 mi):

- Harper House / Hickory History Center
- St Stephens Elementary
- Hickory Christian Academy
- Highland Center
- NC Center for Engineering Technologies

Challenges and Opportunities:

- Challenge: Multiple property owners and surrounding neighborhoods
- Opportunity: Potential sewer line easements
- Opportunity: More gentle topography than southwest

Site Visit Notes:

- High volume of vehicular traffic noted.
- Well maintained sidewalks adjacent to Lenoir Rhyne University (LRU).
- Highland Ave. is one way (eastbound) from approximately 8th Ave. NE to 16th Street NE.
- Sidewalks are present but with gaps along Highland Ave.
- Some improvements would need to be made to correct poor utility placement and deteriorating concrete.
- Higland overpass at McDonald Parkway will be a challenge.
- Potential to use Lyle Creek at this location, however, McDonald Parkway will still be a challenge to cross.
- Lyle Creek headwater is less than ideal.

O. Claremont Connector: Thornburg Dr. in Conover to Main Street in Catawba

Route Profile:

- 10.6 miles in length
- 0.5 mile along proposed Conover greenway south of Lyle Creek,
- 1.7 miles along sidewalks on Thornburg Dr,
- 2.7 miles along Conover Blvd sidewalks,
- 0.9 miles along Main St in Claremont,
- 0.4 miles through Claremont Park and along proposed Claremont Greenway,
- 0.4 miles along Centennial Blvd,
- 0.8 miles overland connector south of the I40 Rest Area,
- 3.2 miles along Lyle Creek

Population within 1/2 mile of proposed segment:

- 3207 residents
- 303 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Concordia Lutheran Church
- Bunker Hill Covered Bridge
- Downtown Conover
- Downtown Claremont
- Conover Downtown Park
- Claremont City Park

Other Destinations within walking distance (1/4 mi):

- Conover Library
- Claremont Library
- Claremont Elementary
- Tri-City Christian School
- Claremont Proposed Greenway

Challenges and Opportunities:

- Opportunity: Proposed sidewalks along Centennial Blvd.
- Opportunity: Investigate I-40 rest areas for trailheads (contingent upon NCDOT approval) potential to provide I-40 rest area connection to Bunker Hill Covered Bridge
- Opportunity: Have contacts with property owners around Bunker Hill Covered Bridge – has been in process for some time



Historical Landmarks

Corridor 4: Central County Corridor

(see map page 55)

L. Conover Greenway Connector: Lyle Creek to Conover Blvd

Route Profile:

- 3.1 miles in length
- 0.5 miles along County Home Rd. (Conover proposed greenway route)
- 0.4 miles overland connector (Punch Loop Rd to 10th St.)
- 0.7 miles along existing Conover Greenway
- 0.4 miles on sidewalks on 1st street
- 0.3 miles on sidewalks on 2nd Ave and through Conover Downtown Park
- 0.2 miles on sidewalks on 5th Ave
- 0.2 miles overland connector to 1st Ave
- 0.4 miles on sidewalks along 1st Ave

Access Opportunities:

- Adjacent to Conover Downtown Park, Majestic Park, Travis Park, and Washington/ Southwest Park

Population within 1/2 mile of proposed segment:

- 2882 residents
- 930 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Downtown Conover
- Conover Downtown Park
- Majestic Park
- Washington/Southwest Park

Other Destinations within walking distance (1/4 mi):

- Concordia Lutheran Church
- Conover Library
- Conover School
- Concordia Christian Day School

Challenges and Opportunities:

- Challenge: Hwy 70 crossing
- Opportunity: Existing sidewalk over I-40

Site Visit Notes:

- Thornburg offers exemplary condition of sidewalk trail route
- County Home Road does not have sidewalks or bike lanes
- Appears to have sewer line along this portion of Lyle Creek

M. Newton Connector: Conover Blvd to Southside Park

Route Profile:

- 5.6 miles in length
- 2.4 miles along N. Main Ave in Newton,
- 0.5 miles on West A Street,
- 0.5 miles on Radio Station Rd,
- 0.9 miles along Hildebran Creek ,
- 1.3 miles along Clark Creek to Southside Park

Access Opportunities:

- Within walking distance to Newton Greenway, Newton Recreation Center, Northside/Broyhill Park, Rowe Park, Westside Jaycee Park, and Southside Park

Population within 1/2 mile of proposed segment:

- 5693 residents
- 1017 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Catawba County Museum of History
- Downtown Newton
- North Main Ave Historic District
- Westside Jaycee Park
- Newton Recreation Center
- Central Recreation Center
- Northside/Broyhill Park
- Rowe Park
- Southside Park
- Newton Heritage Greenway

Other Destinations within walking distance (1/4 mi):

- Newton Library
- Thornton Elementary
- Newton Conover Middle School
- Newton Conover High School
- Newton Conover Health-Science High School
- Grace Reformed Church
- Catawba County Courthouse
- Bost-Burris House

Challenges and Opportunities:

- Challenge: Hwy 70 crossing
- Opportunity: 321 crossing at Radio Station Road

Site Visit Notes:

- One way streets in downtown Newton
- Good sidewalks in Newton.
- A stretch between Newton and Conover has sidewalks in disrepair.
- Good sidewalks and pedestrian crossings in Conover.
- Continue to address land owner concerns of South Side Park.
- High traffic volume along 321.

N. Newton to Maiden Connector: Southside Park to Main St in Maiden

Route Profile:

- 5.1 miles in length
- 2.7 miles along Clark Creek corridor
- 0.8 miles along powerline easement – where feasible
- 0.9 miles along Hwy 321
- 0.7 miles along Carolina Ave in Maiden

Population within 1/2 mile of proposed segment:

- 1888 residents
- 370 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Southside Park
- Maiden Town Center

Other Destinations within walking distance (1/4 mi):

- Maiden Elementary
- Maiden Middle School
- Maiden High School
- Maiden Library
- Warren-Hood Farm

Challenges and Opportunities:

- Challenges: Use of powerline easement.
- Duke Energy owns part of this property in fee simple
- Trails and greenways running parallel to Duke Energy right of ways cannot exceed 5' in width
- Trails and greenways may 'meander' in a parallel fashion through the transmission right-of-way, but cannot zigzag from side to side or cross under the lines multiple times.
- Must obtain proper permissions / easements from private land owners.
- Opportunity: Interested land owners west of Clark Creek

Site Visit Notes

- Southern portion of this route through Maiden will require upgrade in sidewalk conditions as well as addition of bike lanes.

K. South Fork – Maiden Connector: South Fork River to Carolina Ave in Maiden

Route Profile:

- 6.0 miles in length
- 0.7 miles along South Fork tributary through Catawba Lands Conservancy (CLC) land
- 0.3 miles north on Herter Rd.
- 0.9 miles along Blackburn Bridge Rd
- 1.3 miles along Startown Rd using Hwy 321 underpass
- 1.3 miles along Maiden Rd.
- 1.5 miles using existing sidewalk along Center St and Main St.



Maiden

Access Opportunities

- Adjacent to 219 acres of Catawba Lands Conservancy properties and easements
- Provides access to proposed South Fork blueway access site

Population within 1/2 mile of proposed segment:

- 1126 residents
- 188 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Maiden Town Center

Other Destinations within walking distance (1/4 mi):

- Maiden Elementary
- Maiden Middle School
- Maiden High School
- Maiden Library
- Santa's Forest

Challenges and Opportunities:

- Challenge: Use of road segments for walking trail
- Challenge: Startown Rd Bridge @ 321 is very narrow
- Opportunity: Property just east of South Fork is owned by the Catawba Lands Conservancy and includes a Clean Water easement along the tributary.
- Opportunity: Potential for new commercial/ industrial development in Startown Road interchange area which could incorporate trail development

Site Visit Notes:

- Pedestrian pathways not present along Blackburn Bridge Rd as shown in the photograph below
- Property owner's fence lines appear to go up to the right of way in many locations
- Several stables were noted in this portion of the county
- Low lying areas adjacent with perceived flooding potential at South Fork / Blackburn Bridge as shown



Rural Roadway



Naturalized Area

Corridor 5: Catawba Connectors

(see map page 56)

P. Lyle Creek Pedestrian Bridge Connector: Main Street in Catawba to Iredell County

Route Profile:

- 1.0 miles in length
- 0.1 miles to connect with proposed pedestrian bridge over Lyle Creek just east of existing bridge
- 0.2 miles along 1st Ave Ct NE
- 0.7 miles existing sidewalks along Hwy 70

Access Opportunities:

- Adjacent to Town of Catawba's Hunsucker Park

Population within 1/2 mile of proposed segment:

- 229 residents
- 229 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Hunsucker Park

Cross-County Connections:

- Iredell County

Challenges and Opportunities:

- Challenge: Route must be outside of Duke Energy's Project Boundary or must obtain special Federal Energy Regulatory Commission (FERC) approval.
- Opportunity: There is adequate room under the Main Street Bridge for pedestrians to safely pass under.
- Opportunity: Through Duke Energy's Federal Energy Regulatory Commission (FERC) relicensing process, there will be a linear park on the south side of Lyle Creek at the southeast corner of where Lyle Creek and the Catawba River merge.

Site Visit Notes

- Significant and costly project to construct bridge connection across Lyle Creek. Consult with plant nursery and land owners along Lyle Creek to determine feasibility of route. Lyle Creek tributaries present additional crossing challenges to the south of Lyle Creek. Power easements may be available. Significant topography along south of Lyle Creek noted as well.

Q. Town of Catawba: Lyle Creek to Hudson Chapel Rd

Route Profile:

- 1.4 miles in length
- 0.4 miles of proposed sidewalk along Main St
- 0.5 miles of existing sidewalks along Main St, 2nd Ave, Rosenwald Rd
- 0.5 miles of proposed sidewalk along 6th Ave, S Main St, and Rosenwald Rd

Population within 1/2 mile of proposed segment:

- 483 residents
- 345 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Catawba Town Center
- Town of Catawba Historic District and Museum
- Hunsucker Park

Other Destinations within walking distance (1/4 mi):

- Catawba Elementary
- Catawba Rosenwald Education Center

Challenges and Opportunities:

- Challenge: Lyle Creek tributaries present additional crossing challenges to the south of Lyle Creek.
  Challenge: Significant topography along south of Lyle Creek noted as well.
  Opportunity: Power easements may be available.

R. Catawba River: Rosenwald Rd to Iredell County

Route Profile:

- 5.7 miles in length
- 0.2 miles along 2nd Ave,
- 0.3 miles along 2nd St,
- 0.2 miles along 3rd Ave,
- 0.5 miles along Catawba Station Dr,
- 4.3 miles along the Catawba River Corridor, and
- 0.2 miles along Hudson Chapel Rd to the Iredell County line

Access Opportunities

- Adjacent to 720 acres of current gamelands

Population within 1/2 mile of proposed segment:

- 894 residents
- 57 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- none

Other Destinations within walking distance (1/4 mi):

- Catawba Elementary
- Downtown Catawba
- Town of Catawba Historic District and Museum
- Catawba Elementary
- Alexander Moore Farm
- Catawba Community Park

Cross-County Connections:

- Iredell County and access to Lake Norman State Park

Challenges and Opportunities:

- Challenge: Hudson Chapel Bridge – Pedestrian and bike accommodation needed
- Opportunity: Possible Catawba River Walk is being explored, based upon coordinated efforts with the Catawba Lands Conservancy
- Opportunity: low traffic count on Hudson Chapel Rd

Site Visit Notes:

- not reviewed

Corridor 6: Murrays Mill/Sherrills Ford Corridor (see map page 57)

S. Murrays Mill Connector: Hudson Chapel Rd to Hopewell Church Rd

Route Profile:

- 9.5 miles in length
- 0.5 miles along Lowrance Rd
- 3.0 miles along Balls Creek and Mill Pond
- 0.8 miles along Shiloh Rd
- 0.5 miles along Thorneburg Rd
- 1.3 miles overland connector east of Sugarfarm Rd
- 1.1 miles along Bandy's Cross Rd
- 2.3 miles along Sherrills Ford Rd

Population within 1/2 mile of proposed segment:

- 1383 residents
- 146 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Murrays Mill
- Murrays Mill Historic District
- Catawba Elementary
- Murrays Mill Trail

Other Destinations within walking distance (1/4 mi):

- Shuford Gold Mine (historic location), not public

Challenges and Opportunities:

- Challenge: Sherrills Ford Rd - Pedestrian and bike accommodation needed
- Challenge: Farmland
- Opportunity: Opportunity with property owners around Murrays Mill – Existing Trails around Mill pond illustrate a good example of a trail in coordination with farming land owner.

Site Visit Notes:

- Image taken along Sherrills Ford; pedestrian / bike route needed; some multi-modal transportation noted



Rural Roadway

T. Mountain Creek Park Connector: Sherrills Ford Rd to Hwy 150

Route Profile:

- 5.0 miles in length
- 2.8 along a powerline easement - where feasible
- 1.0 miles along Mt. Pleasant Rd
- 1.2 miles along Little Mountain Rd

Access Opportunities:

- Adjacent to Mountain Creek – future County Park

Population within 1/2 mile of proposed segment:

- 818 residents
- 164 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Mountain Creek – future County Park

Other Destinations within walking distance (1/4 mi):

- Birdbrain Ostrich Ranch

Challenges and Opportunities:

- Challenge: Use of powerline easement.
- Challenge: Trails and greenways running parallel to Duke Energy right-of-ways cannot exceed 5' in width
- Challenge: Trails and greenways may 'meander' in a parallel fashion through the transmission right-of-way, but cannot zigzag from side to side or cross under the lines multiple times.
- Challenge: Must obtain proper permissions / easements from private land owners.

Site Visit Notes:

- Power lines images show view from Sherrills Ford Road looking north then south; upgrade Little Mountain Road and Mt. Pleasant to include pedestrian / bike routes.



Utility Corridor

U. Hwy 150 Connector: Little Mountain Rd to Iredell County

Route Profile:

- 4.2 miles in length – all along Hwy 150

Access Opportunities

- Adjacent to Marshall Fishing Area

Population within 1/2 mile of proposed segment:

- 1414 residents
- 337 residents / greenway mile

Priority Destinations within walking distance (1/4 mi):

- Terrell
- Marshall Fishing Area

Other Destinations within walking distance (1/4 mi):

- Terrell Historic District

Cross-County Connections:

- Iredell County

Challenges and Opportunities:

- Challenge: Hwy 150 corridor – Pedestrian and bike accommodation needed
- Opportunity: Growth corridor along Hwy. 150 which would require sidewalk construction with new development approvals

Site Visit Notes:

- Image shows narrow bridge connection across Lake Norman at Hwy 150 between Little Mountain and Slanting Bridge



Bridged Crossing at Slanting Bridge Road

V. Slanting Bridge Road: Hwy 150 to Lincoln County

Route Profile:

- 2.8 miles in length
- All NC DOT designated bike route
- 1.3 mi along Slanting Bridge Road

Population within 1/2 mile of proposed segment:

- 933 residents
- 333 residents / greenway mile

Cross-County Connections:

- Lincoln County (access to Rock Springs Park and Denver area)

Challenges and Opportunities:

- Challenge: Bridge/water crossing – Pedestrian and bike accommodation needed
- Opportunity: Reserved Duke access site on southeast quadrant of Slanting Bridge Road bridge crossing
- Opportunity: County owns large tract on west side of Slanting Bridge road south of Hwy. 150.

W. Sherrills Ford Connector: Hudson Chapel Rd to Hwy 150

Route Profile:

- 9.5 miles in length
- 1.3 miles along Kale Rd
- 0.9 miles along Long Island Rd
- 2.9 miles along powerline easement – where feasible
- 1.3 miles along Raccoon Track Dr
- 0.8 miles along Island Point Rd
- 2.3 miles along Sherrills Ford Rd

Population within 1/2 mile of proposed segment:

- 1094 residents
- 115 residents / greenway mile

Access Opportunities:

- Adjacent to Marshall Fishing Area
- Adjacent to future Terrapin Creek Conservation Easement

Priority Destinations within walking distance (1/4 mi):

- Sherrills Ford
- Terrell
- Long Island Access Site

Other Destinations within walking distance (1/4 mi):

- Uncle Billy's Garden
- Terrell Historic District
- Sherrills Ford Library
- Sherrills Ford Elementary

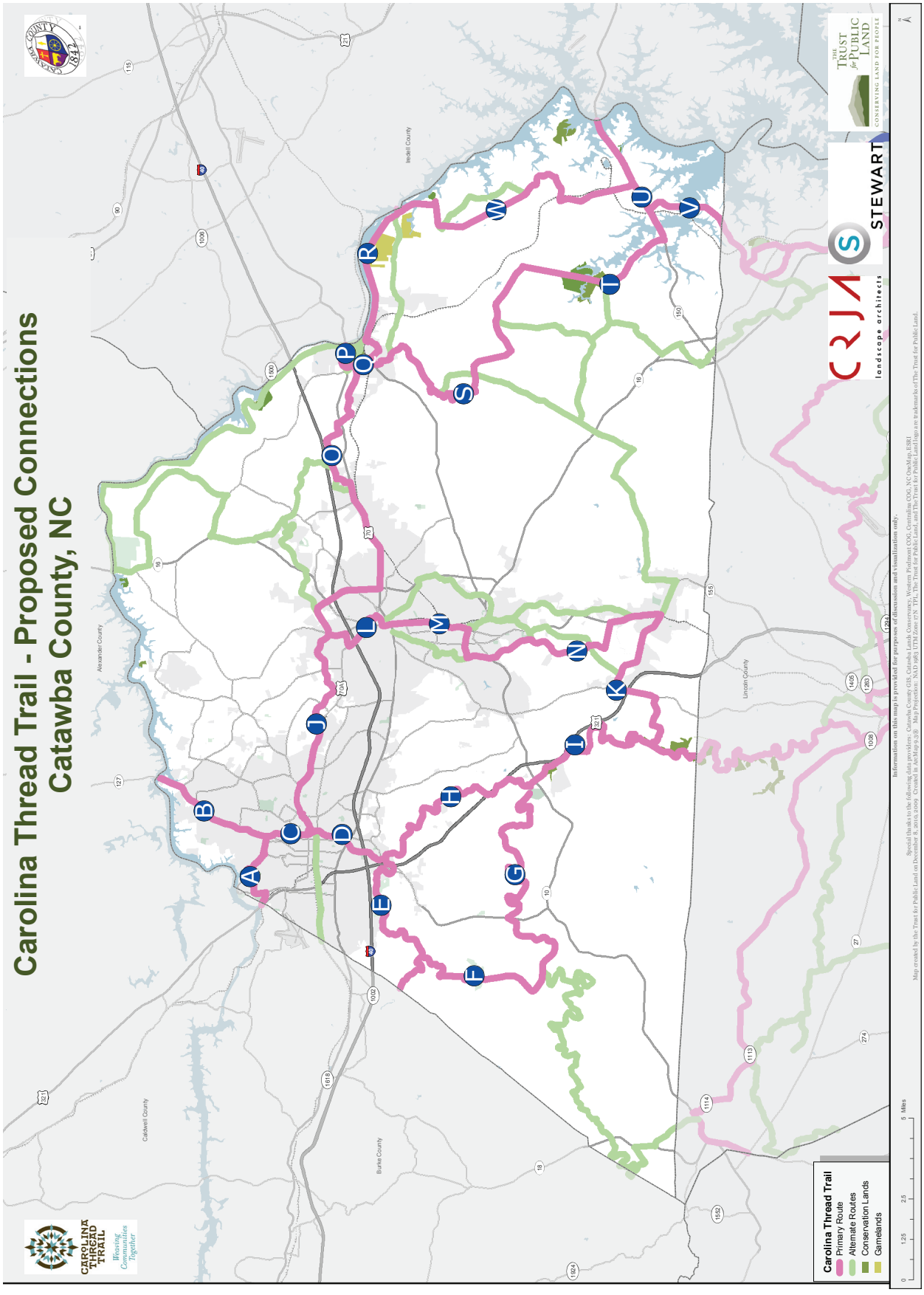
Cross-County Connections:

- Iredell County and access to Lake Norman State Park

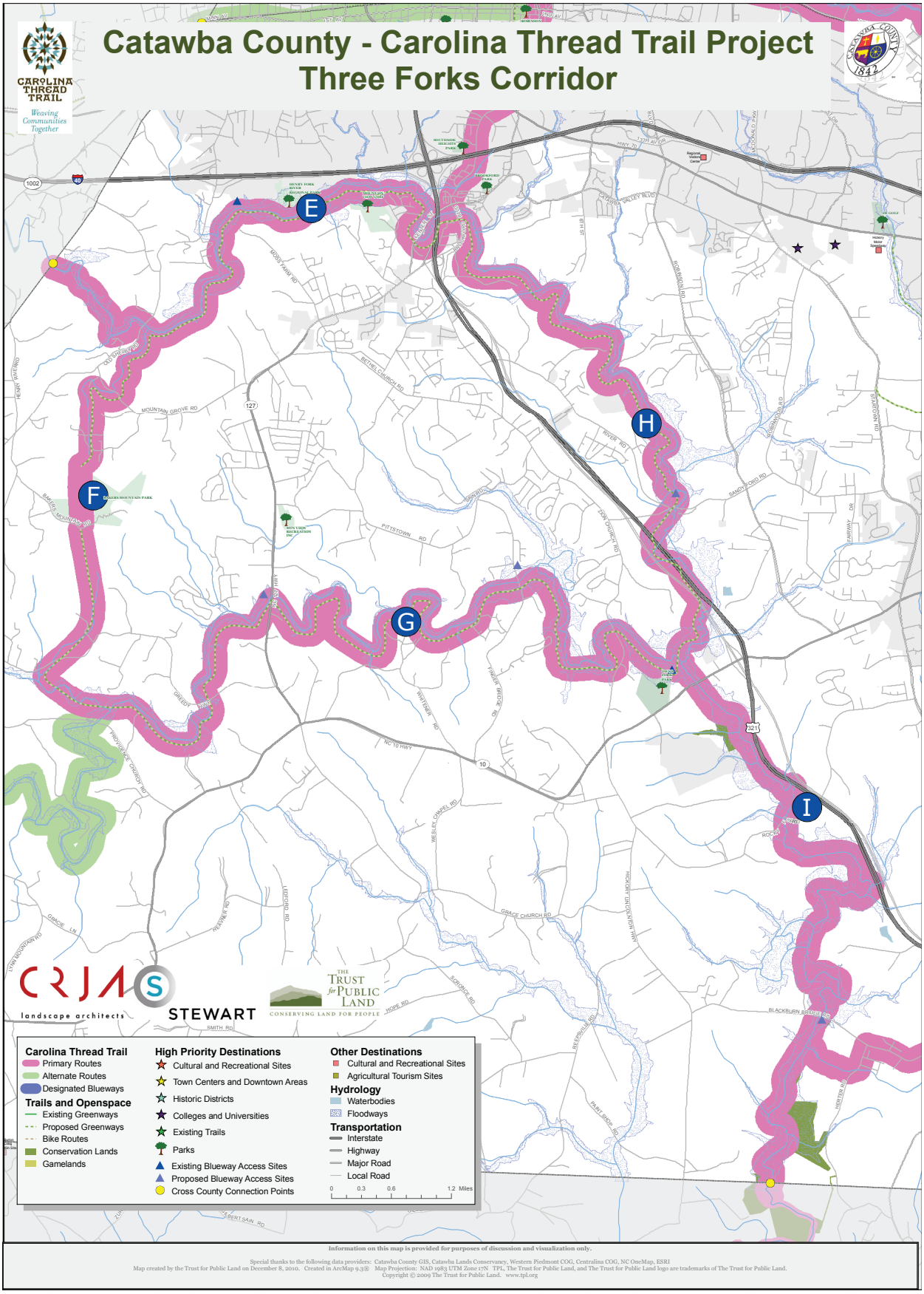
Challenges and Opportunities:

- Challenges: Use of powerline easement:
- Challenge: Sherrills Ford Rd is a busy road – will be a challenge to make safe for pedestrians.
- Trails and greenways running parallel to Duke Energy right-of-ways cannot exceed 5' in width
- Challenge: Trails and greenways may 'meander' in a parallel fashion through the transmission right-of-way, but cannot zigzag from side to side or cross under the lines multiple times.
- Challenge: Must obtain proper permissions / easements from private land owners.
- Opportunity: Pedestrian facilities are required along Raccoon Track Dr. and Island Point Road as part of a proposed development in that area
- Opportunity: Terrain along this route will provide a diverse hiking opportunity in this part of the county.

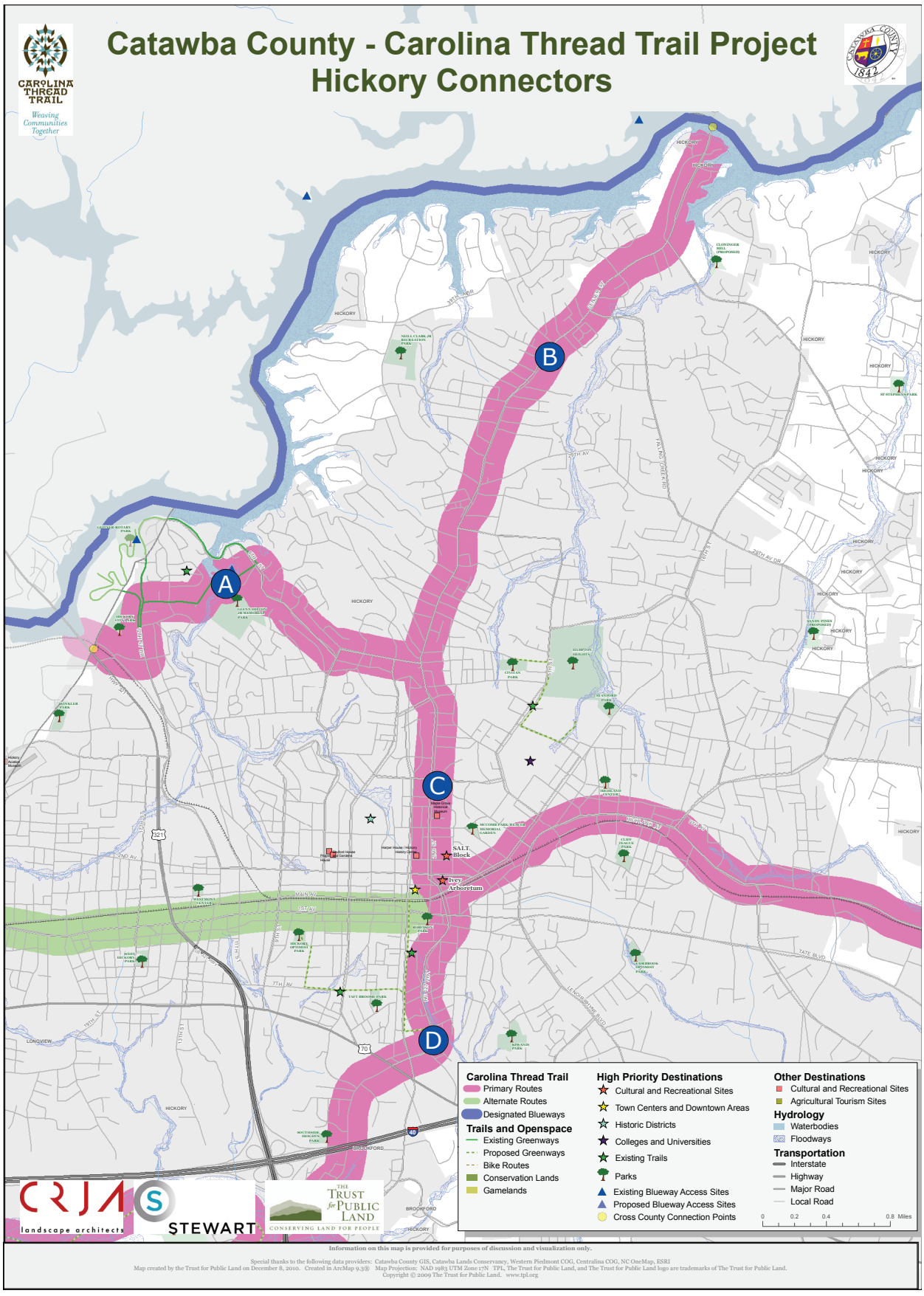
Corridor Segment Map



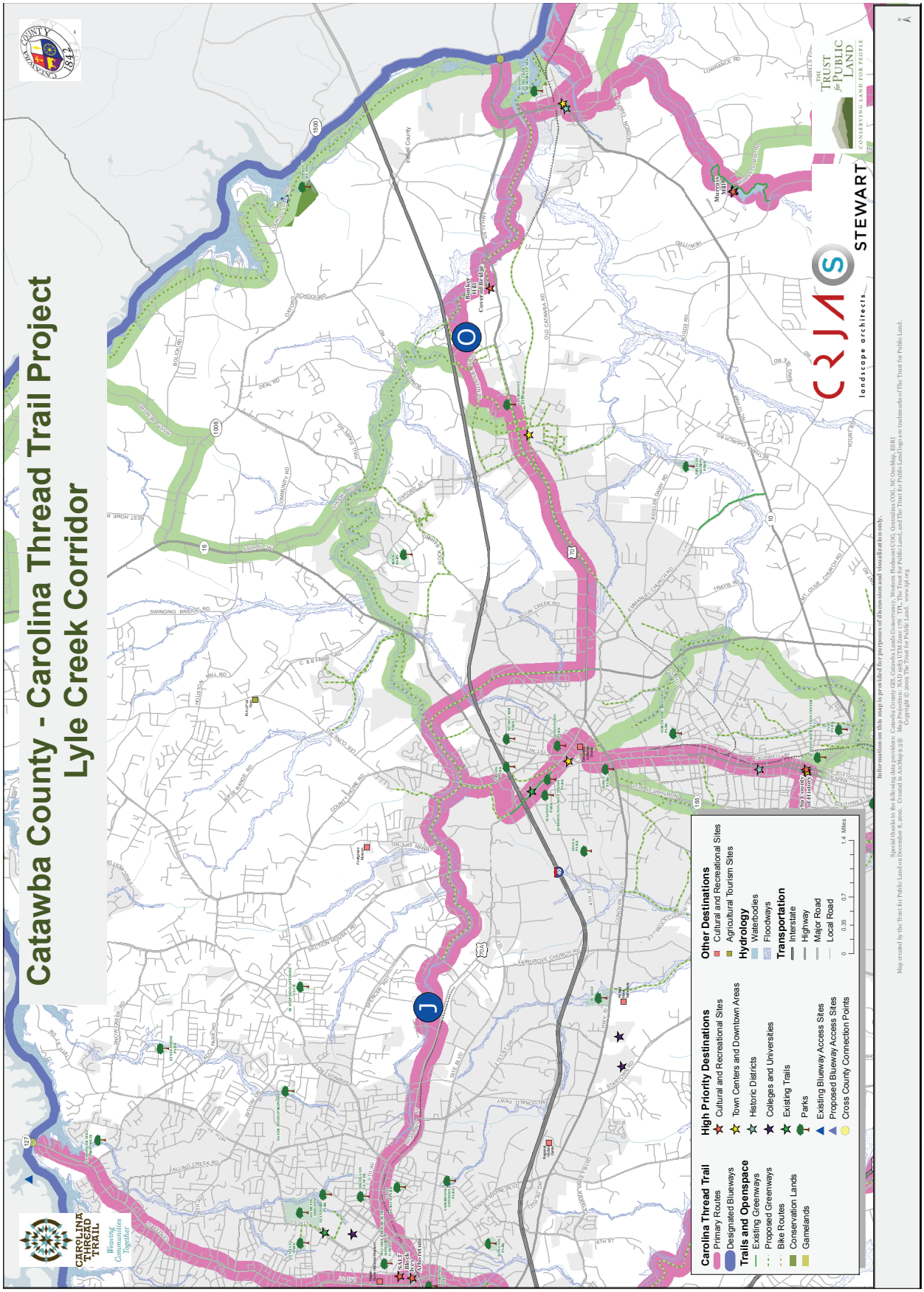
Corridor 1: Three Forks Corridor



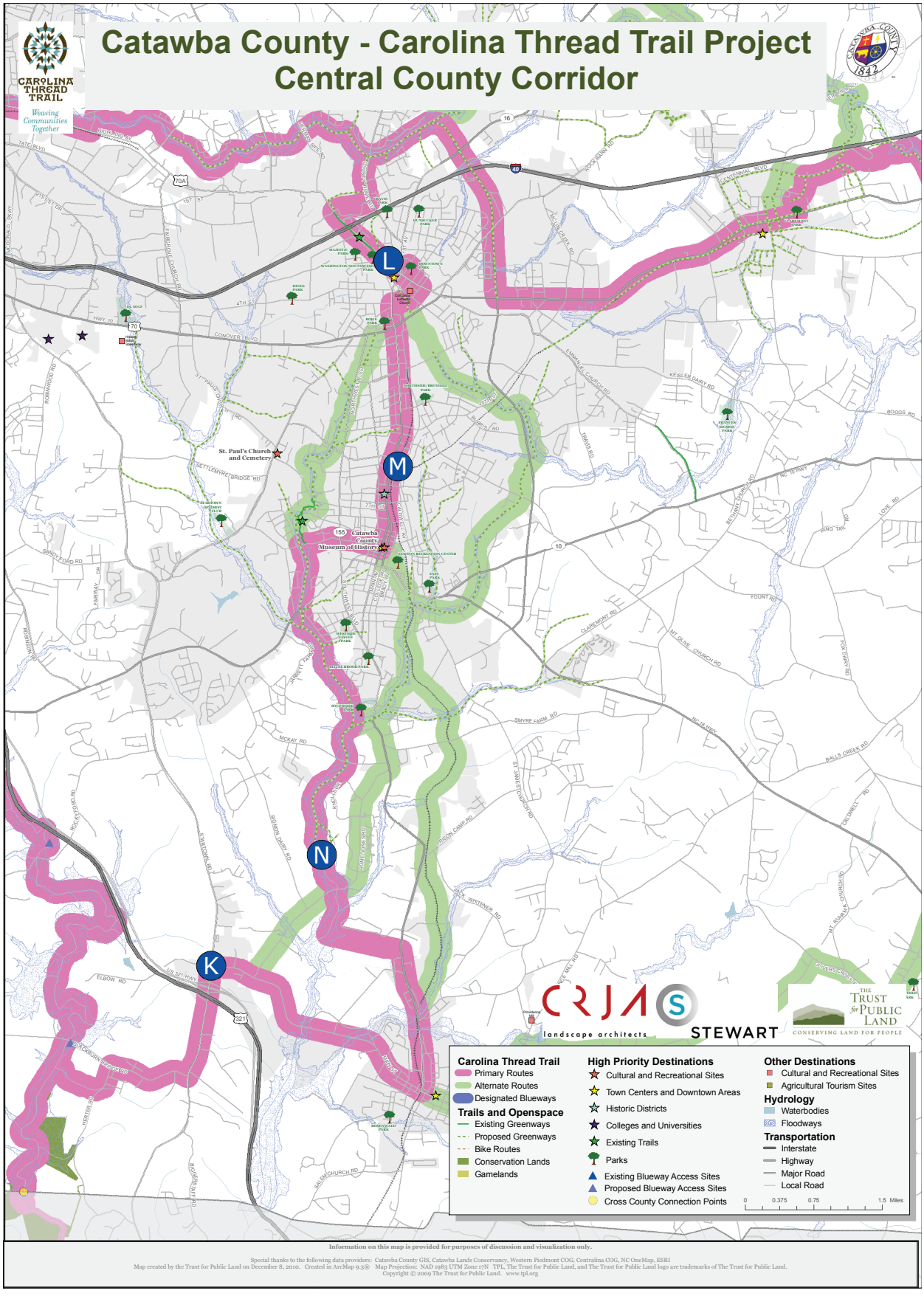
Corridor 2: Hickory Connectors



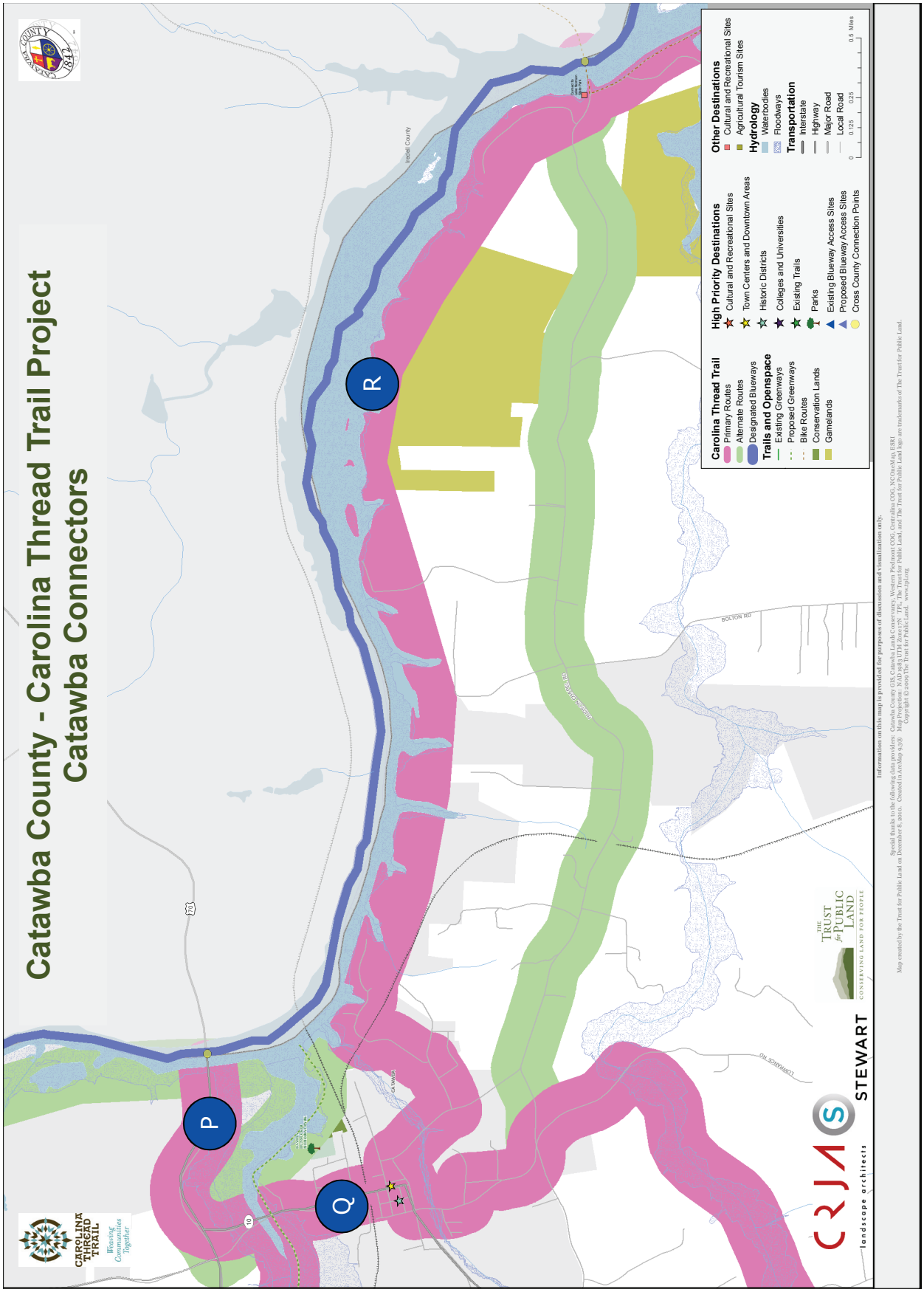
Corridor 3: Lyle Creek Corridor



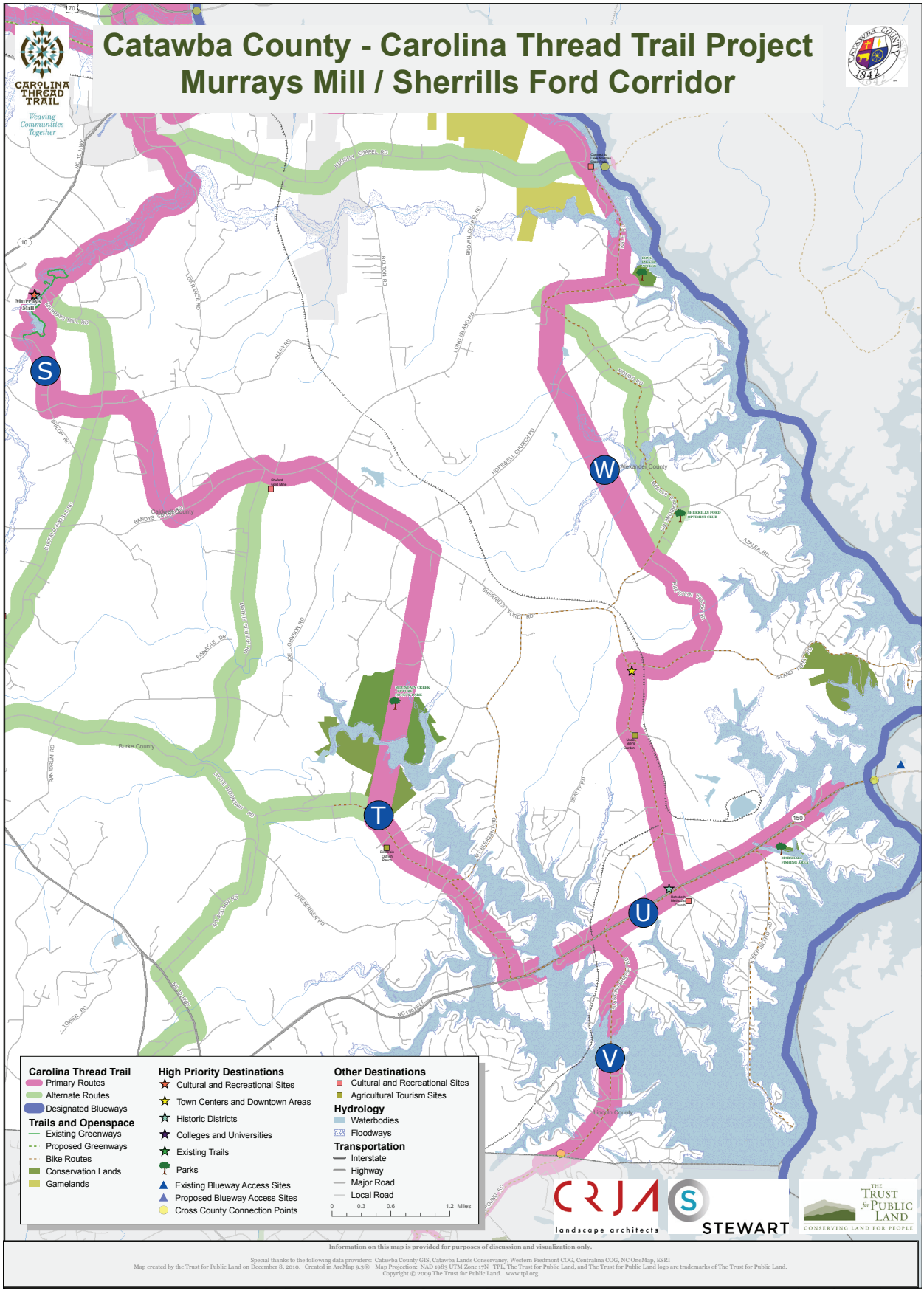
Corridor 4: Central County Corridor

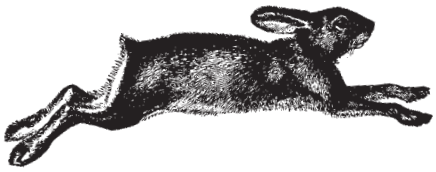


Corridor 5: Catawba Connectors



Corridor 6: Murrays Mill/Sherrills Ford Corridor





Chapter 5. Recommended Actions for Implementation

Plan Adoption

The Steering Committee approved the Carolina Thread Trail Master Plan as shown on page 50 at its committee meeting on September 10th, 2010. Each municipality and Catawba County staff has had the opportunity to review and comment on the plan. The municipalities include Catawba, Claremont, Conover, Hickory, Longview, Maiden, and Newton.

The plan was submitted to each municipal governing body for consideration of acceptance and/or adoption. Upon adoption by the municipal boards, the County Board of Commissioners adopted the plan December 20th, 2010. It is the responsibility of each municipality and the County to review the plan and consider revisions to land development and zoning ordinances to facilitate trail implementation.

PHASE I
Build Public Support

Continuing to build upon the progress made to date is critical for the implementation of the trail routes identified within this document. Upon plan adoption, it is recommended that the County form a Greenway Trails Advisory Committee (GTAC) with representatives from government agencies and local citizens to continue and build upon the momentum already created through this County-wide planning process. The advisory committee could coordinate efforts of not-for-profit conservation agencies to assist with right of way acquisitions, and coordinate planning efforts with local parks and recreation departments, state agencies, and entities such as Duke Energy and the North Carolina Department of Transportation. The advisory committee could also facilitate public awareness campaigns by hosting information booths at festivals or organizing ribbon cutting and dedications as trail segments are completed. It is recommended the GTAC partner with the Western Piedmont Council of Governments Trail Advisory Committee.

Phase I (Build Public Support)
Establish a Greenway Trails Advisory Committee using members of the Steering Committee to promote greenway development and advise the County and local municipalities on trail implementation.
Conduct a public information campaign to advertise trail successes and future trail plans
Form partnerships with regional non-profit organizations to facilitate open space procurement and trail opportunities

PHASE II
Complete Top Priority Segments

Identified in this master plan document are priority segments for development near term (executive summary, p. 4). Priority segments are measured against the following criteria:

Availability of Land:
Land ownership status and assessment of each corridor or segment to determine its availability and potential for development

Public Support:
How likely will the public be to support this route? Consider segments with potentially strong public support as a priority. Areas of high population will likely have strong support.

Linkages:
Priority trail segments should serve as linkages between important destinations.

Maintenance Availability:
Consider trail maintenance and availability of staff or volunteers to keep up each trail segment; partnerships with non-profits could be valuable resources to assist with maintenance.

Resources at Risk:
Evaluate land or resources at risk for being lost to development; prioritize cultural or environmental resources for conservation easements, historic landmarks or other means of preservation.

Priority Segments

The following Priority Segments, in no particular order, are recommended by the Steering Committee. As future land acquisition and funding becomes available additional portions of trail may be added. Refer to Priority Segment Route Map on page 64.

1. Portion of Segments A and C:
   4.4 mile segment from the intersection of Old Lenoir Road and Hwy. 321 to Ivey Arboretum.
   - 3.0 miles are along public sidewalks
   - 1.2 miles via existing greenway
   - 0.2 miles along Old Lenoir Rd ROW

2. Portion of Segment I:
   2.1 miles in length along the South Fork River from the proposed blueway access at Blackburn Bridge Road to Lincoln County's jurisdictional border.

3. Portion of Segment M:
   3.2 miles in length between Catawba County Museum of History in Newton to Southside Park
   - 0.5 miles on West A Street
   - 0.5 miles on Radio Station Road
   - 0.9 miles along Hildebran Creek
   - 1.3 miles along Clark Creek to Southside Park

4. Portion of Segment O:
   2.2 miles in length from Lyle Creek to Hwy 16
   - 0.5 miles are along proposed greenway
   - 1.7 miles along Thornburg Drive, all public sidewalks

5. Portion of Segment O:
   2.5 miles in length from Claremont City Hall to Bunker Hill Covered Bridge along future Centennial Drive sidewalks with an overland connector south of I-40 Rest Area and along Lyle Creek

6. Portion of Segment O:
   2.6 miles in length from Bunker Hill Covered Bridge to Town of Catawba along the Lyle Creek ripariam corridor

7. Portion of Segment S:
   2.6 miles in length from Murray's Mill to the Town of Catawba
   - 1.6 miles along Balls Creek
   - 0.7 miles along Lowrance Road
   - 0.3 miles along proposed 6th Ave sidewalk and South Main Street

8. Portion of Segment T:
   Undetermined length within future Mountain Creek Park

9. Portion of Segment W:
   4.2 miles in length in Sherrills Ford Road along Raccoon Track Drive to Duke Energy power easement.
   - 1.3 miles along Raccoon Track Drive
   - 2.9 along Duke Energy power easement where feasible

Phase II (Prioritization)

Update priority segments as necessary; discuss and rank new greenway priorities based on agreed upon criteria
Identify and maximize local trail opportunities through the development plan review process, open space acquisition, and floodplain regulations; coordinate efforts with Catawba County Planning
Review current and future utility corridors/easements for local greenway opportunities
Continue to analyze criteria for trail priorities (i.e. what other factors may be considered - cost, length of trail, conservation benefit, etc.)
Consider developing and recommending a multi-year, dedicated funding source to support greenway acquisition and stewardship

PHASE III
Identify Funding:

The Carolina Thread Trail has catalytic grants available for implementation to facilitate design and construction of designated trail routes. This money will not totally support trail development but can be used as leverage financing for other grants.

Evaluation by the County and any supporting organizations should be ongoing to organize efforts of non-profits, governmental agencies and county citizens on a yearly basis. Due to the long term goals of trail implementation, a flexible approach guided by the framework put forth within this master plan document will assist in the future success of the Carolina Thread Trail project in Catawba County.

Funding and Financing

Options for funding are available from many different sources, including public and private. Due to the many benefits captured by greenway systems, the sources of funding are just as diverse, including funding related to air, water, land conservation, economic development, and transportation.

These criteria should be used in the ongoing evaluation by the County and any supporting organizations such as the GTAC to organize efforts of non-profits, governmental agencies and County citizens on a yearly basis.

1. Private Funding

Private funding from individual donors and foundations may be available to supplement public funding sources. The Carolina Thread Trail organization, housed within the Catawba Lands Conservancy, is spearheading a private fundraising campaign to make seed dollars available to communities in the form of grants for not only trail planning, but also design, acquisition, and construction of individual trail projects that follow in the heels of the planning process. Fund raising campaigns such as donor bricks at trailheads or 'buy a foot' campaigns spearheaded by the Greenway Trails Advisory Committee could also be implemented. These, along with other potential local funds, can provide catalytic dollars that communities will pool together for trail development.

2. Public Funding

a. Federal Funding Options:

Federally funded programs are described in Appendix V. Trail related programs appear at the top of the list, and many other programs are included that do not relate directly to trails but may be used to help fund trail creation in certain instances. They are all administered by federal agencies but vary in how funds are delivered for on the ground trail projects. For example, some of these program funds are directed to the states, which in turn decide what projects to fund, while other program funds are granted by a federal agency through a competitive process. In still other cases, Congress may "earmark" funds for individual projects. The descriptions provided are meant to provide a broad overview of funding sources.

b. State Funding Options:

Most statewide conservation funding comes through five major trust fund programs including Land and Water Conservation Trust Fund, North Carolina Parks and Recreation Trust Fund, Clean Water Management Trust Fund, National Heritage Trust Fund, and North Carolina Health and Wellness Trust Fund.

3. Local Funding Options:

Generally, there are three primary types of revenue sources available to local governments in North Carolina for parks and trails: discretionary annual spending, creation of dedicated funding streams, and debt financing. The financing options utilized by a community will depend on a variety of factors, such as taxing capacity, budgetary resources, voter preferences and political will.

The ability of local governments to establish dedicated funding sources also depends upon state enabling authority. North Carolina has given local governments a limited number of options to fund land conservation and trail projects. Catawba County has shown foresight and the importance it places on parks and greenways as expressed in the Comprehensive Parks Master Plan. The County could consider funding through referenda similar to Mecklenburg County, which generated nearly 3 million dollars.

Phase III (Funding & Financing)
Pursue all avenues of grants from state, federal and non-governmental funding sources
Consider public fundraising drives

Phase IV
Evaluate Acquisition Options

Methods of land acquisition could include any of the following:

Donations – land or easements (the right to use a portion of land for certain purposes, as defined in a contract, while fee simple ownership is retained) can be donated to a local government or a local land trust by private citizens or business owners, which in turn can generate a tax reduction for them. Details should be confirmed with a qualified tax advisor.

Purchase – this method is probably the most common method of acquiring land, and land trusts can often help acquire land at less than fair market value.

Zoning/Development Regulations – buffers along certain stream corridors in North Carolina are already protected in order to prevent building intrusion into sensitive areas which in turn may be used for some trail corridors. Additional development regulations can also be

adopted that create building restrictions and dedication requirements. Examples of these requirements include, but are not limited to, setbacks from perennial streams, floodplain development restrictions and open space/trail dedication requirements.

Developer Contributions

Once the conceptual route (See page 50) is officially incorporated into community plans, it can be included in GIS layers for local governments. As discussed previously, if a developer applies for a permit for a development and it overlaps with any of the proposed trail connections, local governments can require or offer incentives for an open space set aside, or for that portion of the trail corridor to be developed as part of the subdivision development approval process. The trail will be a marketing benefit to the developer and will in turn allow them to charge a higher premium for the homes adjacent to the trail.

Abandoned Rail Corridors

Discussions will need to be held with the rail corridor owners as well as NC DOT Rails Division. The cost of trail construction is typically lower along abandoned rail corridors because a graded corridor with gradual slopes is already established. However, as discovered in conversations with NCDOT, some rail corridors such as that between Maiden and Newton may be held up in federal relief programs and unable to be used. See Appendix VI for further discussion on this topic.

Phase IV (Acquisition)
Approach property owners about potential voluntary easement(s) or property donations based on the established priorities
Negotiate with property owner(s)
Retain control of the desired trail corridor

Phase V
Design, Construct and Maintain Trails

Once a trail segment is selected and land acquired, trail design typically follows. It will be essential for communities to determine the intended use or uses of a particular segment and design with that in mind. Designing for safety and for affordable maintenance is also highly recommended. Intended uses of the trail will dictate the surface material to be used and will have a direct bearing on the construction and maintenance costs.

Catawba County's planning process revealed that in general, people are most interested in walking, biking, enjoying quiet time, hiking, dog walking, and accessing waterways. During the public process very little interest was expressed in equestrian-friendly trails; however, this could change during design development phases as future greenway segments are opened to public input prior to construction.

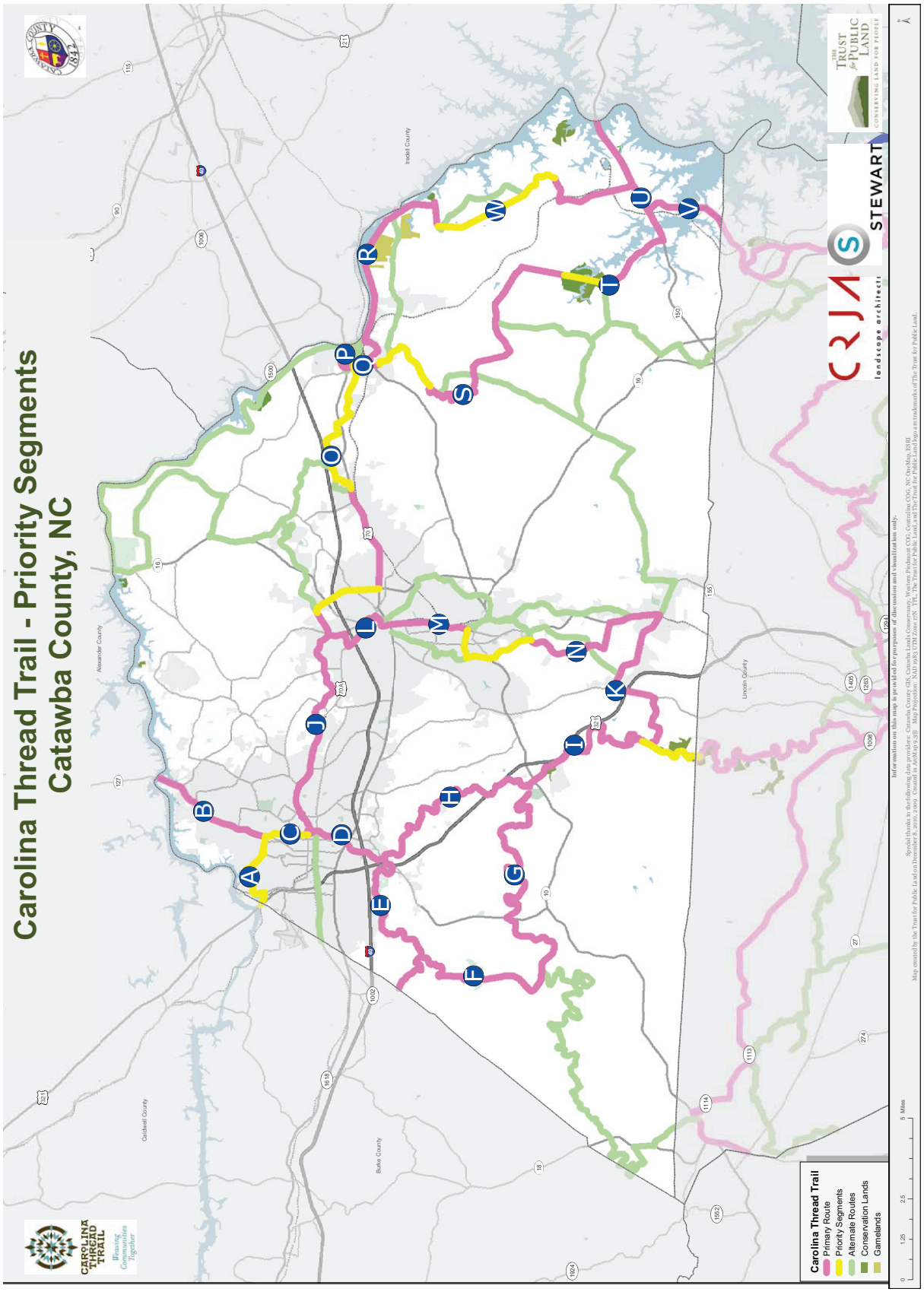
Multi-purpose trail segments for walkers and bikers could use a surface material of either crushed limestone or granite screening. Trail construction costs will vary, and until a project is advertised for competitive bid, there is no way to accurately determine local prices. A competitive bid process should require line items for cost of trail construction in order to fully understand the costs and potential savings amongst installers. Preliminary site plans should be reviewed by all county and local municipal staff members, including emergency service personnel, so they can offer suggestions, guidance, and have their voices heard from the onset. Additionally, trails proposed through utility easements shall require additional

coordination with Duke Energy to ensure design standards are satisfactorily meet.

Trail Life Safety Plans should be developed in conjunction with security experts such as the local police chief or county sheriff. Each should be consulted early on in order to seek their advice and to alert them that the trail will be built and that they need to plan for it as well. Well placed lights, wide-open spaces along the trail, removal of underbrush, and easily accessible trailheads all add to the security matrix. Routine patrols and staff members in uniform will alert people that the trail is being watched. Security tips and procedures can be conveyed on bulletin boards, on brochures and in informal gatherings by park staff along the trail.

Phase V (Design, Construction, and Beyond)
Develop life safety plans with emergency service staff
Establish trail design review process with municipal engineering departments for all local utilities, where applicable
Establish trail design review process with state agency representatives such as NCDOT and Duke Energy where applicable.
Develop a long-term maintenance plan
After the corridor is acquired proceed with the following steps:
- Survey the desired trail segment
- Complete and approve construction drawings
- Bid the trail project and select the contractor
- Oversee completion of work by contractor
- Consider planning and executing a trail ribbon cutting/Grand Opening
- Coordinate with volunteer groups to maintain the trail facilities

Priority Segment Routes



Chapter 6. Conclusion

This Master Plan document represents a year long collaborative planning and visioning process by Catawba County and its municipalities. Although the master planning process concluded, the County is just beginning to execute the vision set forth by the Carolina Thread Trail. The goals are greater connectivity for all citizens of Catawba County, the preservation of its culture and natural resources, and the celebration of the area's colorful and unique history. Ambitious as the Plan is, the local and county governments, its citizens, non-profit groups and advocates will need to work together towards achieving the plan's goals. All of the community partners engaged through this process understand the need to act prudently, yet remain patient and vigilant to capitalize on opportunities as they present themselves. This is only the beginning.



Downtown Newton

Appendix I: Carolina Thread Trail Priority Destinations List

Through previously described planning exercises, the Steering Committee developed a list of Priority Destinations throughout the County. The following list developed by the Committee and using input from the public process highlights the County's regional destinations. The list is not inclusive but rather selects destinations on a regional scale in regard to the entire Thread Trail network. The list of destinations (below) provided the framework by which the public began to stitch together locations of significant regional value.

Catawba County Carolina Thread Trail: Priority Destinations

Cultural and Recreational Sites

High Priority

- Bunker Hill Covered Bridge
- Murray's Mill
- SALT Block
- Catawba County Museum of History
- St. Paul's Church and Cemetery
- Ivey Arboretum

Medium Priority

- Rehobeth Methodist Church - Terrell
- Shuford House and Gardens
- Shuford Gold Mine
- Harper House / Hickory History Center
- Hickory Aviation Museum
- Jenny Lynn Forge
- Providence Mill
- Maple Grove Historical Museum
- Propst House

Existing Trails and Parks

- Conover Gateway Greenway
- Hickory Greenway
- Newton Heritage Trail Greenway_Parks
- Existing and Proposed Parks

Colleges and Universities

High Priority

- Lenoir Rhyne University
- Catawba Valley Community College
- Appalachian State University Extension

Medium Priority

- N.C. Center for Engineering Technology

Town Centers and Downtown Areas

High Priority

- Hickory
- Newton
- Conover
- Catawba
- Claremont
- Maiden
- Sherrills Ford

Medium Priority

- Longview
- Brookford
- Terrell

Historic Districts

High Priority

- Murray's Mill Historic District
- Terrell Historic District
- Town of Catawba Historic District
- Claremont Historic District – Hickory
- North Main Ave Historic District - Newton

Medium Priority

- Catawba College Historic District

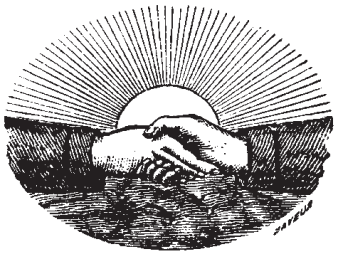
Agricultural Tourism Sites

Medium Priority

- BirdBrain Ostrich Ranch
- Buffalo Beal's Animal Park
- Uncle Billy's Garden
- Ira's U-Pick Farms

Blueways and Riparian Corridors

- Catawba River
- Jacob Fork
- South Fork Catawba River
- Glen Hilton Park Blueway
- Henry Fork
- Lyle Creek
- Clark Creek



Appendix II:
Public Meeting Summary

Three Public Forums were held in January, 2010. The community was solicited to help with identifying strategic greenway routes throughout the county. Forums were held at:

January 25th Sherrils Ford Elementary School - Sherrills Ford, 38 attendees

January 26th Newton Depot- Newton, 34 attendees

January 28th Highland Recreation Center - Hickory, 24 attendees



Public Forums

Following questions and answers about the project, the consultant facilitated an interactive mapping exercise. Participants were asked to draw on maps of the county to show where they felt the trail should go and what destinations it should connect. These maps were later digitized and incorporated into the project mapping. As the maps were digitally "stacked," we were able to see patterns and concentrations of routes. This mapping was crucial in the development of the plan's overall draft routes.



Newton- Opportunities to voice personal ideas.



Sherrills Ford- Understanding how communities are connected



Hickory- Selecting Thread Trail routes

Open Houses

Four Open Houses were held in June 2010 to present the draft Plan to the public for review and comment. Each of the open houses were held at:

June 14th ,2010 Sherrils Ford Elementary School - Sherrills Ford, 23 attendees
June 15th ,2010 Newton Depot- Newton, 13 attendees
June 16th ,2010 Highland Recreation Center - Hickory, 7 attendees
June 17th ,2010 Mountain View Elementary School - Mountain View, 8 attendees



Appendix III: Survey Summary

Survey One:

176 responses tabulated

Public Meeting Comment Form
Catawba County Carolina Thread Trail Master Plan
January 25, 2010 Sherrills Ford Elementary

Name:_____ Email: _____

Address: _____
Street City Zip Code

For the CTT in Catawba County which types of trail users are most important (Rank **H**igh, **M**edium, **L**ow):

___ Walkers/Hikers ___ Cyclists ___ Rollerbladers
___ Equestrians ___ Baby Carriages ___ Other:_____

The CTT in Catawba County will be similar to an interstate system for trails. What are the most important Towns and Cities to connect? (Rank **H**igh, **M**edium, **L**ow):

___ Brookford ___ Catawba ___ Other:_____
___ Claremont ___ Conover ___ Other:_____
___ Hickory ___ Longview
___ Maiden ___ Newton

How will you use the trail? (Rank your top three most likely activities – **1** - **2** – **3**):

___ Walking / Hiking ____ Horseback Riding ____ Touring the County
___ Running ____ Rollerblading ____ Teaching Children
___ Cycling ____ Daily Exercise ____ Connect to Rivers
___ Commute to Work ____ Reduce Car Trips ____ Entertain Guests
___ Trips to other counties ____Other:_____ ____ Other:_____

Please share with us any general comments you have about the project:

_____
_____
_____
_____

Over →

*Catawba County is rich in cultural, recreational and natural resources. Which are the most important to connect into the CTT Trail Network? (Rank **H**igh, **M**edium – leave blank for Low):*

Cultural and Recreational Sites
___ Harper House / Hickory History Center
___ Murray's Mill
___ Bunker Hill Covered Bridge
___ SALT Block
___ Catawba County Museum of History
___ St. Paul's Church and Cemetery
___ Speedway
___ Firefighters Museum
___ Hickory Aviation Museum
___ Shuford House and Gardens
___ Ivey Arboretum
___ Propst House
___ Maple Grove Historical Museum
___ Houk's Chapel
___ Piedmont Wagon Company
___ Hoff Cemetery
___ Sherrill Cemetery
___ McCorkle Cemetery
___ Concordia Lutheran Church in Conover
___ Jenny Lynn Forge and Providence Mill
___ Shuford Gold Mine
___ Burlon Craig Kiln Site

Existing Trails
___ Conover Gateway Greenway
___ Hickory Greenway
___ Newton Heritage Trail Greenway

Colleges and Universities
___ Lenoir Rhyne University
___ Catawba Valley Community College
___ Appalachian State Univ. Extension
___ N.C. Center for Engineering Tech.

Historic Districts
___ Claremont Historic District – Hickory
___ Town of Catawba Historic District
___ Catawba College Historic District
___ Murray's Mill Historic District
___ North Main Ave Historic District - Newton
___ Terrell Historic District

Agricultural Tourism Sites
___ BirdBrain Ostrich Ranch
___ Santa's Forest
___ Buffalo Beal's Animal Park

Blueways and Rivers
___ Glen Hilton Park Blueway
___ Catawba River
___ Henrys Fork
___ Jacobs Fork
___ South Fork Catawba River
___ Clark Creek
___ Lyle Creek
___ Tail Race below Oxford Dam

Others: _____ _____
_____ _____

Thank you for your input. If you are unable to return the form tonight please get it to us via fax, email or mail. Send to:

Iona Thomas, AICP
Stewart Engineering
412 Fayetteville St., Suite 400
Raleigh, NC 27604

Email: ithomas@stewart-eng.com
Fax: 919.380.8750
Phone: 919.866.4762

Results of Survey One:

Which types of users are most important in Catawba County?

	High Priority	Low Priority
Walkers and Hikers	91 %	3 %
Cyclists	58 %	6 %
Baby Carraiges	23 %	27 %
Equestrians	10 %	56 %
Rollerbladers	5 %	62 %

The Carolina Thread Trail in Catawba County will be similar to an interstate system for trails. What are the most important towns, cities and crossroads to connect?

	High Priority	Low Priority
Hickory	84 %	5 %
Newton	82 %	3 %
Conover	76 %	6 %
Catawba	60 %	9 %
Claremont	51 %	10 %
Maiden	49 %	14 %
Sherrills Ford	46 %	19 %
Long View	31 %	28 %
Terrell	36 %	27 %
Brookford	23 %	33 %

How would you describe your attitude towards the idea of the Carolina Thread Trail?

Strongly Support	43 %
Support	17 %
Don't Feel Strongly Either Way	3 %
Oppose	0 %
Strongly Oppose	2 %
No Answer	36 %

What are you concerns about building a network of trails in Catawba County?

Safety of Trail Users	57 %
Property Rights	37 %
Potential Damage to Farmland	12 %

Other Comments:

- There are other projects that are more important
- Maintenance
- The project is taking too long
- Environmental Concerns
- Cost to taxpayers
- Trails should be paved
- Equestrian access
- Visual intrusion on adjacent property owners
- Difficulty in getting easements

Catawba County is rich in cultural, recreational and natural resources. Which of the following are the most important to connect into the CTT trail network?

Destinations	High Priority	Low Priority
Bunker Hill Covered Bridge	87%	4%
Propst House	86%	3%
Ivey Arboretum	61%	13%
Firefighters Museum	60%	8%
Burlon Craig Kiln Site	43%	15%
Harper House / Hickory History Center	42%	22%
Shuford House and Gardens	36%	19%
Hoff Cemetery	33%	17%
Catawba County Museum of History	33%	20%
Murray's Mill	32%	22%
Piedmont Wagon Company	27%	29%
Houk's Chapel	27%	17%
Shuford Gold Mine	27%	19%
Sherrill Cemetery	26%	33%
Hickory Motor Speedway	24%	23%
McCorkle Cemetery	20%	41%
Jenny Lynn Forge and Providence Mill	19%	25%
Maple Grove Historical Museum	16%	56%
Concordia Lutheran Church in Conover	9%	45%
SALT Block	8%	49%
Hickory Aviation Museum	7%	49%
St. Paul's Church and Cemetery	6%	51%
Existing Greenway Trails		
Hickory Greenway	80%	4%
Newton Heritage Trail Greenway	80%	3%
Conover Gateway Greenway	74%	6%
Universities and Colleges		
Lenoir Rhyne University	72%	8%
Catawba Valley Community College	72%	8%
Appalachian State Extension	50%	17%
NC Center for Engineering Tech	30%	30%

Historic Districts

Murray's Mill Historic District	82%	4%
North Main Ave Historic District - Newton	65%	6%
Town of Catawba Historic District	57%	7%
Claremont Historic District - Hickory	52%	8%
Terrell Historic District	43%	14%
Catawba College Historic District	40%	12%

Agri-tourism

Buffalo Beal's Animal Park	31%	34%
BirdBrain Ostrich Ranch	20%	35%
Uncle Billy's Garden	19%	42%
Santa's Forest	13%	47%

Rivers

Catawba River	92%	2%
South Fork Catawba River	73%	7%
Jacob Fork	69%	6%
Glen Hilton Park Blueway	69%	8%
Tail Race Below Oxford Dam	69%	9%
Henry Fork	68%	5%
Lyle Creek	64%	7%
Clark Creek	42%	14%

Survey Two:
69 responses tabulated

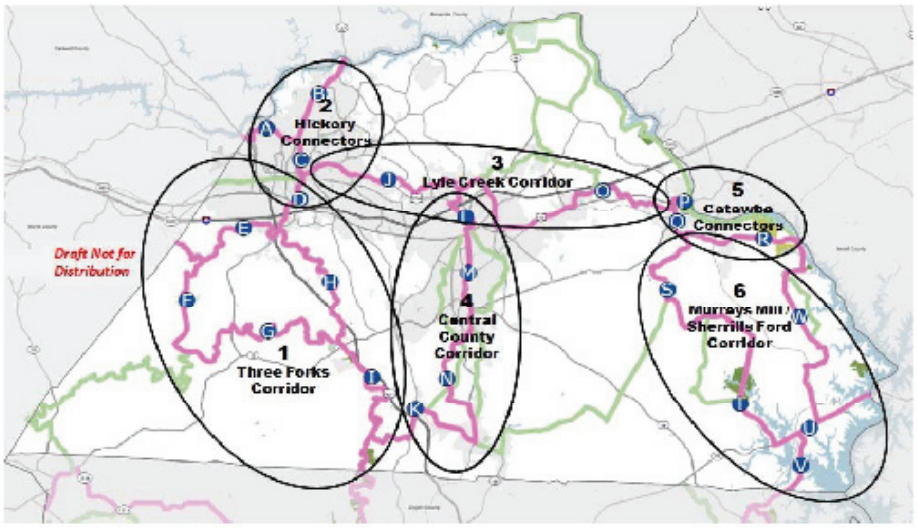
Catawba County / Carolina Thread Trail
Draft Survey Route Survey

Name: _____
Town and Zip: _____
Email : _____

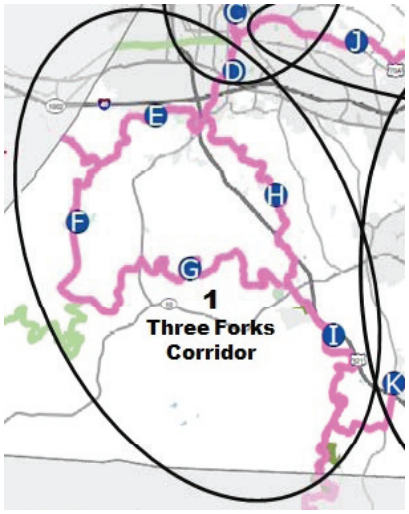
Welcome to the second public survey on the Carolina Thread Trail route within Catawba County. There have been a series of public meetings and outreach efforts to solicit input for the development of a county wide trail plan. This survey has been created based on your input to date. At each public meeting participants were asked to draw their recommended routes on county maps and to rank the most important destinations within the county. The maps and destinations that you will be asked to comment on today are the results of public input, existing plans and the guidance of the Steering Committee, which is composed of county and municipal staff and Catawba County Citizens.

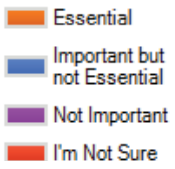
The map below represents the draft routes being analyzed for the final plan. Trails displayed in pink are those recommended for the Carolina Thread Trail designation and trails in green are presented for consideration to further tie together the people and destinations of Catawba County communities. The trail corridors in this plan are depicted with ¼ mile wide lines to show the general location of the intended route. The trail itself will be narrower, in recognition that communities will determine the exact location of their segments upon trail design and development. The broadly defined greenway corridors present multiple opportunities and adjustments for a defined route, so that landowners can continue to be involved in fine tuning and defining the location of trails and amenities. The draft routes have been grouped into six corridors, including:

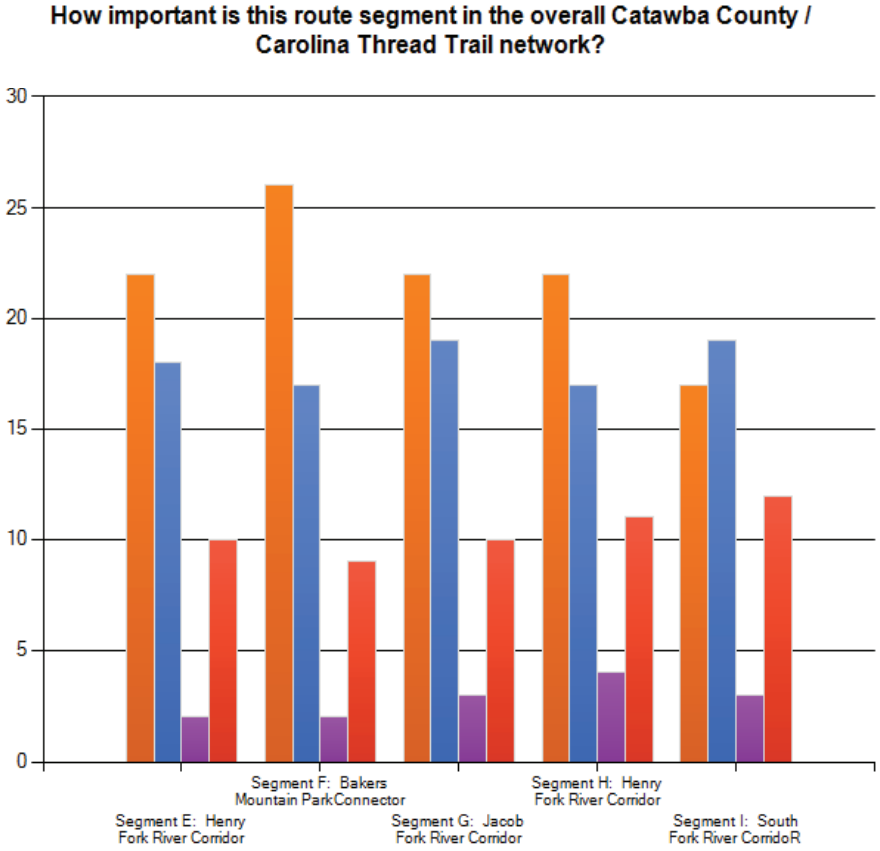
1) Three Forks Corridor
2) Hickory Connectors
3) Lyle Creek Corridor
4) Central County Corridor
5) Catawba Connectors
6) Murrays Mill / Sherrills Ford Corridor



Corridor 1 – Three Forks Corridor





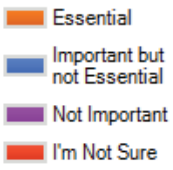


STEWART

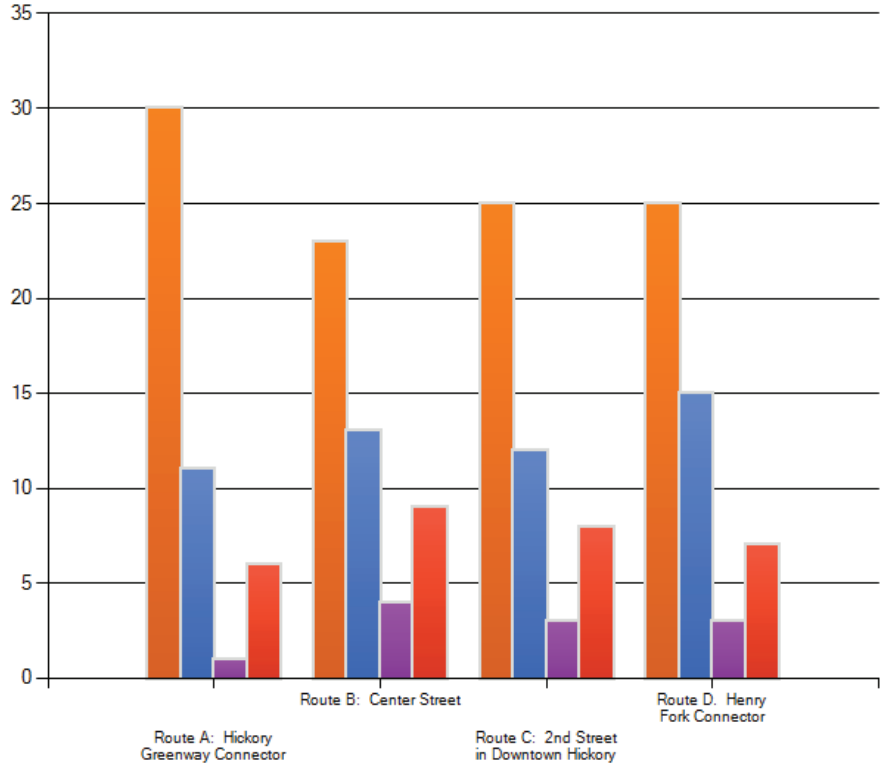
Corridor 2 – Hickory Connectors

CRJA landscape architects

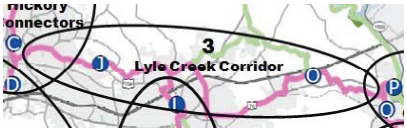


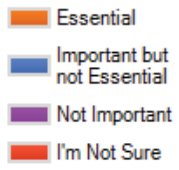


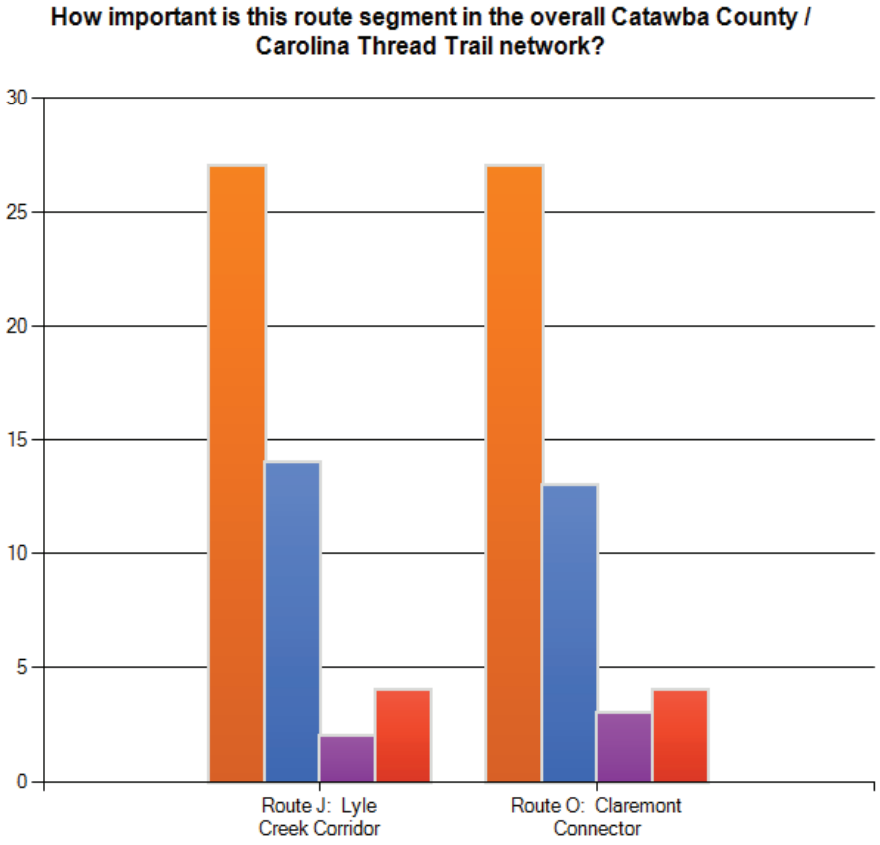
How important is this route segment in the overall Catawba County / Carolina Thread Trail network?



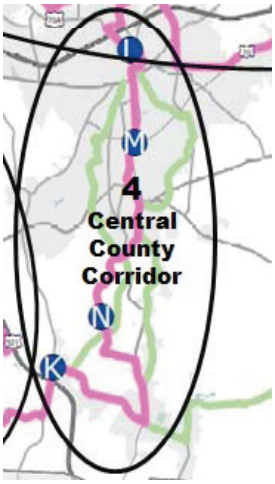
Corridor 3 – Lyle Creek Corridor







Corridor 4 – Central County Corridor



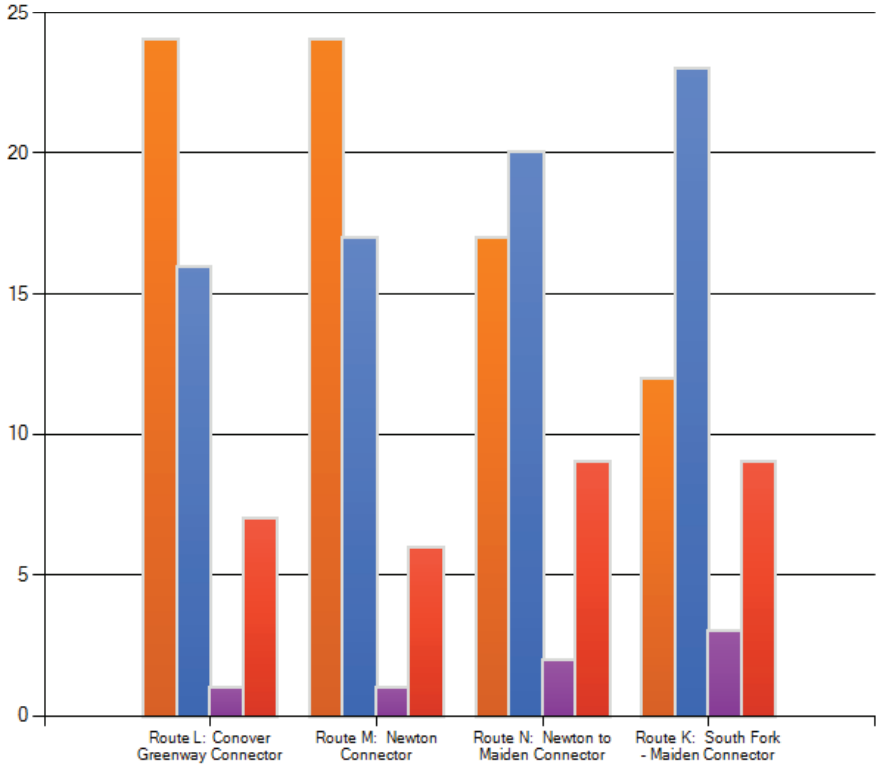
Essential

Important but not Essential

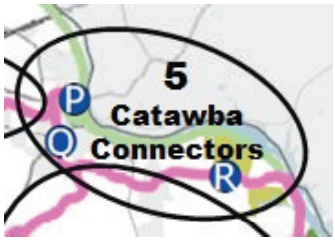
Not Important

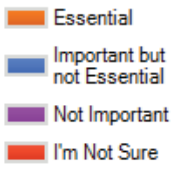
I'm Not Sure

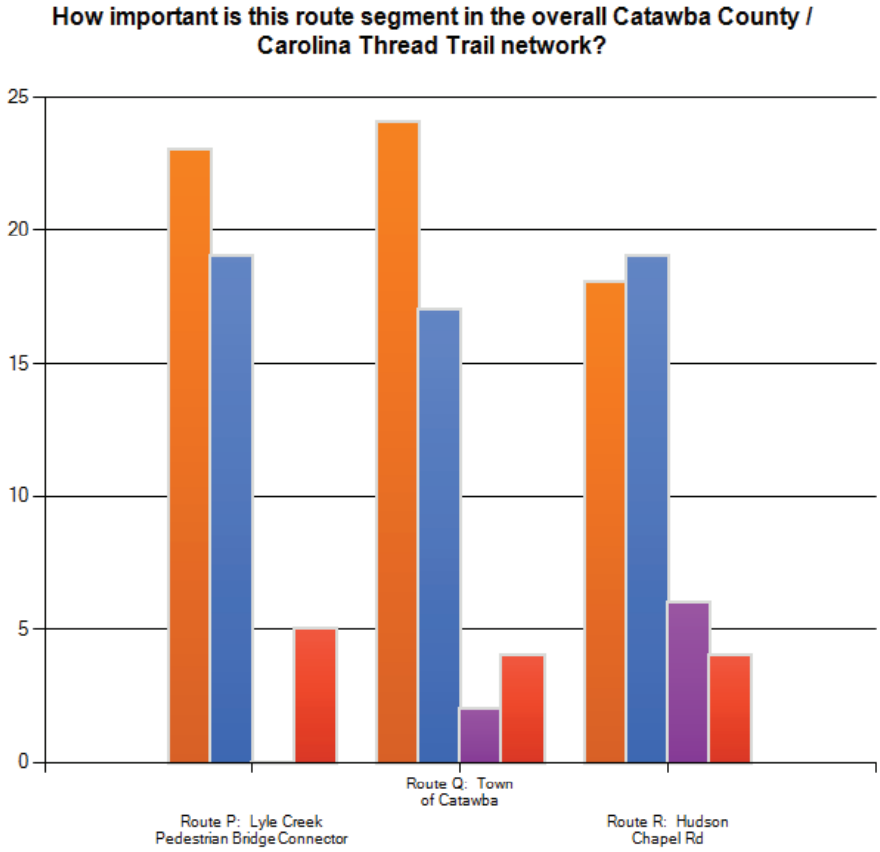
How important is this route segment in the overall Catawba County / Carolina Thread Trail network?



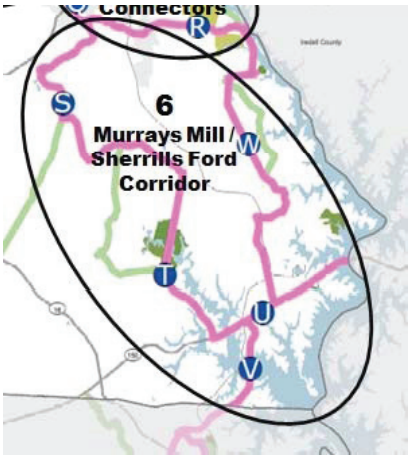
Corridor 5 – Catawba Connectors





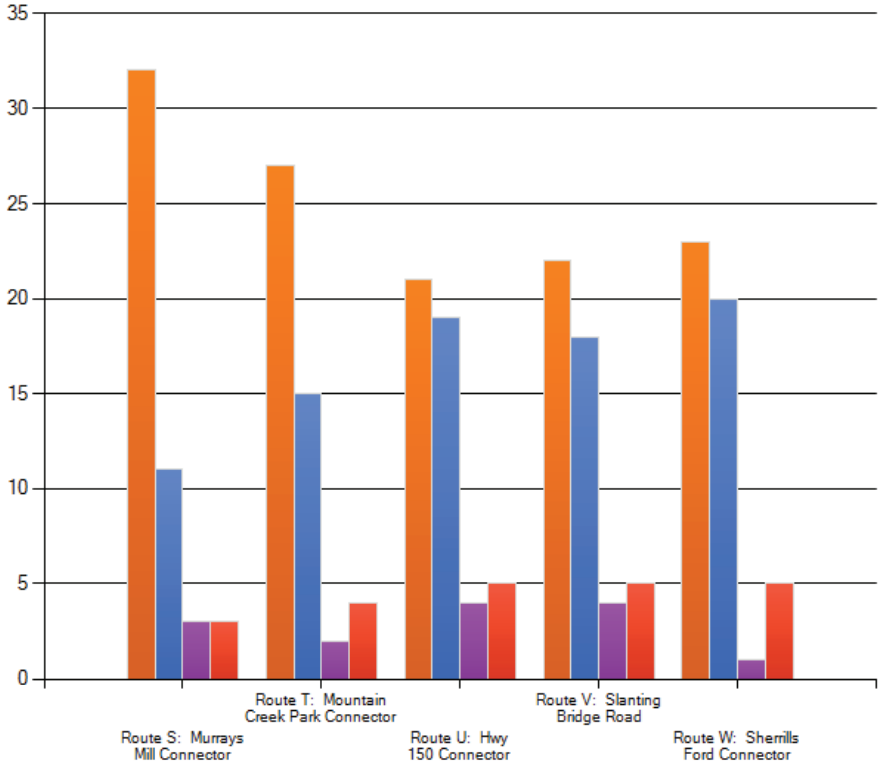


Corridor 6 – Murrays Mill / Sherrills Ford Corridor

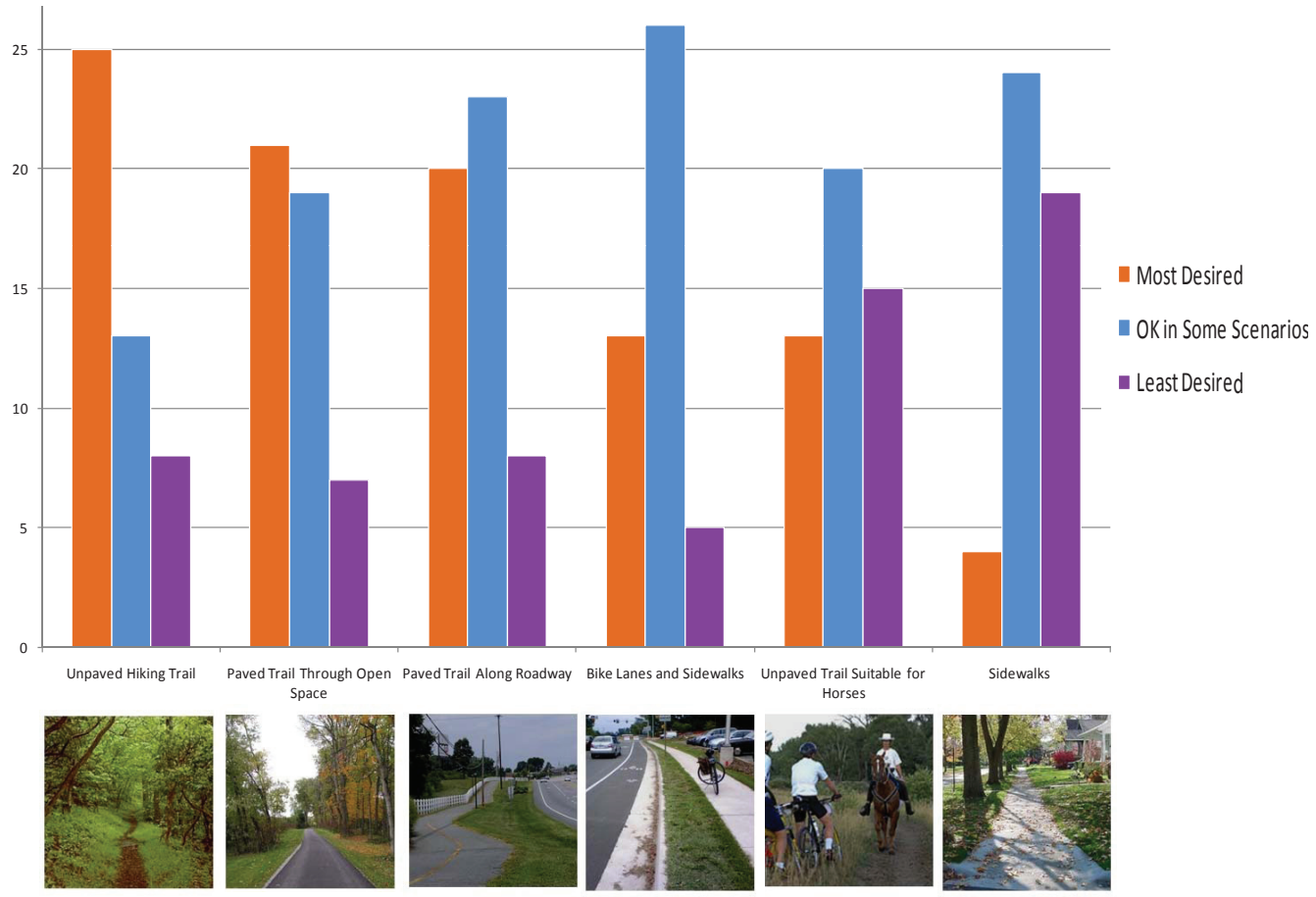


Essential
Important but not Essential
Not Important
I'm Not Sure

How important is this route segment in the overall Catawba County / Carolina Thread Trail network?



Trail Surface Preference



Appendix IV:
Stakeholder Walks

A Review of Potential Corridors and Key Locations
Thursday March 25th

Walk 1 Jacob Fork

First Stop-

Jacob Fork River at Hwy 127. Commonly used canoe put-in using private gravel drive as pull-off point. Vertical clearance below the overpass will allow greenway to cross Hwy. 127 along the river below the overpass. The embankment is heavily armored with rip-rap.

Recommendation: leave route as-is.

Second Stop-

Jacob Fork River at Sand Pit Road. Several properties on the north bank of the river have been acquired and are held by a developer. Opportunity may exist to work with the developer to establish a trail through the property. As noted, the river has a wide meander. At each outside curve of the river, significant topography and rock were noted. Each inside curve of the River was relatively flat with sandy shoals. This flip-flop of steep topography along both north and south banks presents challenges. The consultant recommends continuing the proposed alignment on the north bank and planning conservation easements in conjunction with the developer to avoid topographic constraints.

Recommendation: leave route as-is.

Walk 2 Catawba

First Stop-

Hunsucker Park. The Group walked the grounds and reviewed the adjacent property in which the Town of Catawba will obtain an easement. Hunsucker Park is currently along an alternate route.

Recommendation: leave route as-is.

Second Stop-

Boat launch at Duke Energy land holdings. Area not part of Thread network; however, this property would provide creekside linkage from the Thread to Hunsucker Park.

Recommendation: leave route as-is.

Third Stop-

Main Street Bridge Crossing. Location on proposed route for potential pedestrian bridge; could potentially cross Lyle Creek and connect to abandoned right-of-way.

Recommendation: leave route as-is.

Fourth Stop-
With permission of land owners, the trail could run between the tree farm and the creek. Design elements such as fences or plantings could help reinforce the trail limit and discourage trespassing onto Tree Farm property. Lyle Creek tributary requires another bridge crossing. Steep topography on the south side of the creek west of the Tree Farm.
Recommendation: Consider shifting route to north side of creek, but review connection back to southern bank of creek at Bunker Hill Bridge.

Walk 3 Claremont

First Stop-
Claremont City Park located immediately off Hwy 70/Main Street has asphalt trails and other park amenities on site. It is bounded by a small drainage conveyance to the north. Ultimately it was decided to not route the trail through this park and instead utilize Lookout Street to connect Main Street and Centennial Boulevard.
Recommendation: leave route as-is.

Second Stop-
I-40 Rest Area could be considered as a trailhead location; however, this would take careful coordination with NCDOT. The trail will skirt along the southern property of the I-40 rest area east toward Lyle Creek. During the drive, difficulty providing an I-40 crossing through a box culvert along Lyle Creek was noted.
Recommendation: Revise the route to provide I-40 crossing utilizing Thornburg Drive.

Third Stop-
Neighborhood along Peachtree Street was reviewed for potential sewer easement connection from Centennial to Highway 70/Main Street.
Recommendation: Consideration of this easement at this time was not recommended due to potential costly construction. Additionally there is no clear connection from the sewer easement to Hwy 70.

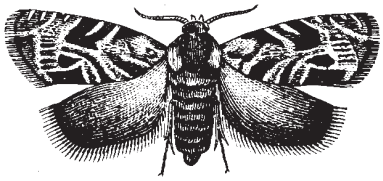
Fourth Stop-
Thornburg Drive is a well developed, boulevard style, roadway crossing I-40. Good sidewalks and planted medians could allow this crossing to be part of a priority route.
Recommendation: Consider alternatives other than Lyle Creek for crossing I-40. Thornburg Drive could make a good north-south connection across the interstate. Highway 70 / Main Street appears to be the most accessible route to connect Claremont and Conover.

Walk 4 Sherrills Ford

The group convened at the library and proceeded to take a car tour of potential routes in the area. Raccoon Track Drive, as part of development approval, will provide sidewalk connections within its right of way. This road also ties in well with Duke Energy's high power transmission line, allowing a strong connection from the Sherrills Ford area to Hudson Chapel Road. Both Raccoon Track Drive and the power transmission easement occur within significant topography; major grading would be necessary to control erosion and ease longitudinal slopes as much as possible.
Recommendation: leave route as-is.

Walk 5 Southside Park, the Town of Maiden

Sam, Alex, Mary George, and Cliff Brooks gathered for a final walk on Friday March 26th. The group traveled to Southside park to review the potential for connecting to Newton's Heritage Trail and discuss the potential for the trail to follow the creek. Alex informed the group of potential land owner issues adjacent to the park. A sewer easement is located south of the park. The remainder of the tour was conducted by car reviewing business 321, Blackburn Bridge and the Town of Maiden proper. It was noted without use of the Newton to Maiden Rail a strong north south connection will be difficult and require further review beyond master planning.



Appendix V: Funding and Financing

FEDERAL GRANTS AND FUNDING

The Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy of Users of 2005 (SAFETEA-LU)

U.S. Department of Transportation- Federal Highway Administration

http://www.fhwa.dot.gov/safetealu/summary.htm

- Finances bicycle, pedestrian, and greenway projects at local and state levels.
- Provides up to 80% for development and construction costs
- Used for facilities such as sidewalks, rail-trails, bike-lanes and greenways.
- Primarily used by municipalities (since its focus is on bicycle and pedestrian corridors, environmental mitigation, historic preservation, and scenic byways.
- A thorough engineering assessment should be performed to determine construction costs prior to applying.

Recreation Trails Program

U.S. Department of Transportation-Federal Highway Administration

http://www.fhwa.dot.gov/environment/rectrails/

- Assistance program of the Department of Transportation's Federal Highway Administration.
- Funds are distributed equally between states, and then in proportion to their non-highway recreational fuel (snowmobiles, off-road motorcycles, etc.) usage.
- Funds are used to develop and maintain recreation trails and trail-related facilities for both non-motorized and motorized recreation trail users.

Federal Aid Construction Funds

U.S. Department of Transportation- Federal Highway Administration

http://www.fhwa.dot.gov/specialfunding/stp/

- Provided for the construction of pedestrian/bicycle transportation facilities.
- Are included in the National Highway System (NHS) Surface Transportation Program (STP), and Congestion Mitigation and Air Quality (CMAW).
- The primary source of funding is STP Enhancement Funding.

Safe Routes to School Program (SRTS)

U.S. Department of Transportation

http://safety.fhwa.dot.gov/saferoutes/

- Federal-Aid program of the U.S. Department of Transportation's Federal Highway Administration (FHWA).
- Funded at $612 million over five Federal fiscal years (FY 2005-2009).
- Provides funds to the states to improve the ability of primary and middle school students to walk and bicycle to school safely.

Watershed Protection and Flood Protection

United States Department of Agriculture

http://www.nrcs.usda.gov/programs/watershed/

- Grant falls under the USDA Natural Resource Conservation Service.
- Assists state and local governments in their operation/maintenance of watersheds less than 250,000 sq. acres.
- Provides financial and technical assistance
- Projects should involve improvement of watershed protection, flood prevention, sedimentation control, public water-based fish and wildlife enhancements, and recreation planning.

- NRCS requires a 50% local match for public recreation and fish/wildlife projects.

STATE GRANTS AND FUNDING

North Carolina Parks and Recreation Trust Fund (PARTF)

The North Carolina State Parks System

http://www.ncparks.gov/About/grants/partf_main.php

- Established for local governments and the North Carolina Division of Parks and Recreation.
- It is a funding source for the development and/or improvement of parks and recreation facilities (including land acquisition)
- It is state funded and matches money spent by municipalities (on parks and recreation)
- The fund request is a maximum of $1,000,000.

Land and Water Conservation Fund (LWCF)

The North Carolina State Parks System

http://www.ncparks.gov/About/grants/lwcf_grant.php

- Federally-funded, LWCF was established for local and state governments to fund outdoor recreational development and land acquisition.
- It is funded from the sale or lease of nonrenewable resources (offshore oil/gas leases and surplus federal land sales)
- Money may be used on a large variety of outdoor public projects and may include minimalistic facility (roads, water supply, etc.) design.
- No more than 50% of the project cost may be federally funded by LWCF (other assistance programs may be used.)

Adopt-A-Trail Grant Program (AAT)

http://www.ncparks.gov/About/Grants/trails_main.php

- Funding provided by the state of North Carolina
- A total of $108,000 available per year. Maximum grant amount per applicant is $5,000.
- Program provides funds to governmental agencies and non-profit organizations to be applied to related promotional information, new trail construction, trail renovation, adjacent facilities, and land acquisition through willing sellers.

North Carolina Ecosystem Enhancement Program

North Carolina Department of Transportation, North Carolina Department of Environmental and Natural Resources

http://www.nceep.net/

- Combines a wetlands-restoration initiative by the N.C. Dept. of Environment and Natural Resources with environmental efforts by the Dept. of Transportation to restore, enhance, and protect its wetlands and waterways.
- Provides watershed planning and project implementation efforts within NC's threatened/degraded watersheds.
- Provides compensation for unavoidable environmental impacts associated with transportation, infrastructure, and economic development.

North Carolina Natural Heritage Trust Fund (NHTF)

http://www.ncnhtf.org/

- Provides supplemental funding to select state agencies for the acquisition and protection of important natural areas.
- The eligible agencies are: Dept. of Environment and

Natural Resources, the Wildlife Resources Commission, the Dept. of Cultural Resources, and the Dept. of Agriculture and Consumer Services.
- Catawba County is not eligible although other grants are awarded for the preservation and/or educational purposes.

Clean Water Management Trust Fund (CWMTF)

http://www.cwmtf.net/a/index.html#home.html

- Grants money to local governments, state agencies, and non-profit conservation groups
- Funds projects that specifically address water pollution issues.
- Eligible plans include projects contributing toward a network of riparian buffers and greenways.
- No match is required by local municipalities; however, the "suggestion" of a match is highly recommended.

The North Carolina Conservation Tax Credit

North Carolina Department of Environmental and Natural Resources

http://www.onencnaturally.org/pages/ConservationTaxCredit.html

- Provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes.
- The goal is to manage stormwater, protect water supply watersheds, preserve working farms and forests, and set-aside greenways for ecological communities, public trails, and wildlife corridors.

Farmland Protection Trust Fund

North Carolina Department of Agriculture and Consumer Services

http://www.ncadfp.org/

- Funded through an allocation by the NC General Assembly to the NC Deportment of Agriculture and Consumer Services.
- Funding (over recent years) has ranged from a couple hundred thousand dollars to millions of dollars.
- It is a voluntary program designed to protect farmland from development by either acquiring property outright or acquiring conservation easements on the property.

State Construction Funds

- These funds (not including the Highway Trust Fund for Urban Loops and Interchanges) may be used for the construction of sidewalks and bicycle accommodations that are a part of roadway improvement projects.

LOCAL FUNDING OPPORTUNITIES, LAND ACQUISITION AND DEVELOPMENT

Life Estate

- A gift in which a donor retains the land during his/her lifetime, and then relinquishes title of the property after his/her death.
- The owner (or family) is then relieved of property tax for the given land.

Local Gifts

- Local gifts refer to the donations of land, money, labor, and/or construction.
- Should utilize an organized and very specific strategic method to procure.
- Involves contacting potential donors—such as individuals, institutions, foundations, service clubs, etc.

Easements

- Most common type of "less-than-fee" interest in land.
- Seeks to compensate property owners for the right to use his/her land in some way, or to compensate for the loss of his/her privileges to use the land
- Usually, the land owner may still use the land,
- Continues to generate property tax revenue for the county.

Fee Simple Purchase

- Most common method used to acquire municipal property for park facilities.
- Very limited monetary resources makes it difficult to pursue.
- Has an advantage of simplifying justification to the public

Fee Simple with Lease-Back or Resale

- Allows local governments to acquire land through fee simple purchase, but also allows them to either sell or lease the property to prospective users.
- Has restrictions that enable local governments to preserve land from future development.
- Results from situations in which land owners, who have lost monetary amounts in property value, determine it is more economical to sell land to the County.

Long Term Option

- Allow counties to purchase property over long periods of time.
- Enables the County to consider pieces of land that may have future value, though not currently desired/ affordable at the time.
- County can protect the future of the land without purchasing it upfront
- Purchase price will not increase
- All privileges relinquished by the land owner require compensation in the form of securing the option.



Appendix VI:
Summary of Rail and Utility Discussions

Rail Corridors

Although the use of inactive railway lines in the County remains an attractive option for Carolina Thread Trail routing, significant hurdles exist. In particular, it was noted in the Public Forums that there is desire to utilize the inactive rail corridor between Newton and Maiden to serve a strong north-south connection through the County.

However, this portion of rail segment is held through NCDOT lease agreement and federal funding. The land on which the easement exists is not held in fee simple. The terms of the lease dictate that if NCDOT were to release the easement and remove the tracks, then the land would revert to original property owners within 7 years. However, as part of the recent stimulus from the federal government, federal dollars are used to maintain the easement for potential future commerce. NCDOT no longer has the authority to release the easement, as this must be granted at the federal level. As understood through conversations with NCDOT, there is little desire or incentive for the federal government or NCDOT to release the land at this time.

The Town of Maiden has had conversations with NCDOT prior to the involvement of the federal government. The legal finding from those conversations , which took place in 2002 is included within this appendix. -Summary of Conversations with Steve Head NCDOT



Inactive rail corridor between Newton and Maiden

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 17, 2002

Mr. Kevin Sanders, Interim Town Manager
Town of Maiden
P.O. Box 125
Maiden, NC 28650-0125

Dear Mr. Sanders:

The purpose of this letter is to respond to a concept that was described in an article published in the August 21 edition of the Maiden Observer News Enterprise.

The article theorized a series of steps wherein the former Norfolk Southern line known as the Maiden Branch (comprising 6.3 miles between South Newton and the Lincoln County line, mile-posts HG 70.07-77.0) could be converted from its present inactive status into a rail trail.

This conceptual plan is in error. The rail corridor in question was acquired by NCDOT pursuant to North Carolina's rail corridor acquisition and preservation statutes. The rail corridor preservation statutes do not give the NCDOT the authority to abandon or relinquish its interest in acquired rail property. Absent a situation involving a restoration of rail service, abandonment or relinquishing of our property rights is contrary to the General Assembly's express mandate concerning corridor preservation.

Please call on me if I can respond to any questions that you may have.

Sincerely,

Patrick B. Simmons
Rail Division Director

PBSsb

cc: Dan Arrasmith, NC Rails-Trails

MAILING ADDRESS:
NC DOT RAIL DIVISION
1553 MAIL SERVICE CENTER
RALEIGH NC 27699-1553

TELEPHONE: 919-733-4713
FAX: 919-715-8500

WEBSITE: WWW.BYTRAIN.ORG

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Powerline Utility Corridors

Within the County there are several high power transmission lines operated and maintained by Duke Energy. Steadman Sugg of Duke Energy informed the Steering Committee of the utility company's policy with regard to trail use within its easement. However each of the power line easments, while maintained by Duke Energy, is owned by the underlying property owners who must give consent to a greenway trail prior to approaching Duke Energy.

During the public forums the County's citizens expressed a desire to utilize this type of easement by creating maps deineating trail locations, in particular a north-south connector between Sherrills Ford and Hudson Chapel Road. This corridor provides a desirable connection without relying upon additional road right of way; however only after exhausting other options should this right of way be planned. Additionally, the Committee agreed upon routing trail between Sherrills Ford Road and Mountain Creek Park via another transmission line easement. See Appendix VII for design guidelines within transmission rights of way.



High power trainsmisson line connecting Sherrills Ford Road and Mountain Creek Park

Appendix VII:
Design Guidelines



Context Sensitive Design Solutions:

Protection of ecologically sensitive and diverse areas:

Occasionally trail routes may come in conflict with ecologically sensitive areas. This disturbance should be limited and efforts made during the design development process to avoid these areas. Where determined necessary boardwalks and trail barriers may mitigate a trail's impact.

Restricted Access Trails:

Occasionally trail routes may pass through sensitive ecological areas and environmental assessment will allow trail at grade but require the protection of surrounding plant communities. Restricted access trails limits all disturbance to the confines of the trail. Appropriate barriers may include black chain link fence, wood posts and cable, wood fence, or steel rail.



Boardwalks:

A design may require a trail to pass through ecologically sensitive areas. Elevated boardwalks offer a minimal impact design solution. Boardwalks designed with a pinned footing detail allow trails to extend through sensitive areas without the heavy impact associated with concrete footings, which require damaging excavations and the use of large construction equipment. Also pinned footings allow boardwalks to 'float' above sensitive plant and animal communities; their construction does not require the heavy equipment associated with concrete footing installation.





Trail Adjacent Farmlands:

Locations in which planned trail routes lie adjacent to farmlands careful consideration should be given to include mitigation strategies to protect the interest of both land owners and trail users.

Potential strategies may include:

- Early engagement with land owners to discuss trail implementation and facilitate collaboration.
- Designed buffers including physical barriers such as appropriately designed fencing and/or plant screening.
- Establish minimum offset from edge of pavement to property boundary.
- Discuss each land owner's operation and maintenance procedures, specifically pest mitigation strategies, to review potential conflicts with trail users.

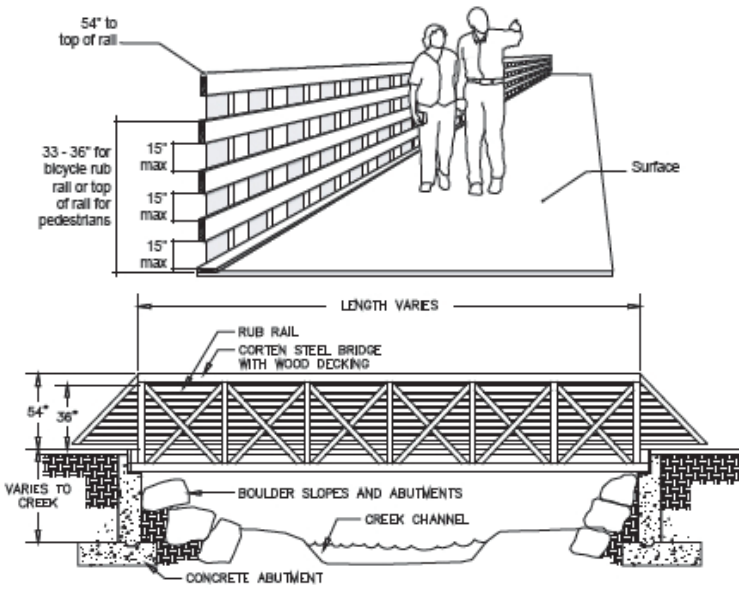
Bicycle/Pedestrian Bridge:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- The function of a bridge in an off-road, multi-use trail situation is to provide access to the user over certain natural (i.e. streams) or man-made (i.e. roadways) features.
- If a corridor already contains a bridge such as an abandoned rail bridge, an engineer should be consulted to assess the structural integrity before removal or reuse
- A trail bridge should support 6.25 tons
- Information about the load bearing capacity of bridges can be found in the American Association of State Highways Transportation Officials (AASHTO) Standard Specifications for Highway Bridges.
- There are many options in terms of high quality, prefabricated pedestrian bridges available.
- 54 inches to top of rail Surface; 33-36 inches for bicycle rub rail or top of rail for pedestrians 15 inches

Railings

- Railings are important safety features on bridges, boardwalks or in any areas where there may be a hazardous drop-off.
- At a minimum, railings should consist of a horizontal top, bottom, and middle rail. Picket style fencing should be avoided as it may present a safety hazard for bicyclists.
- A pedestrian railing should be 42" above the surface.
- The middle railing functions as a "rub rail for bicyclists and should be located between 33 and 36" above the surface.
- Local, state, and/or federal regulations and building codes should be consulted to determine when it is appropriate to install a railing.



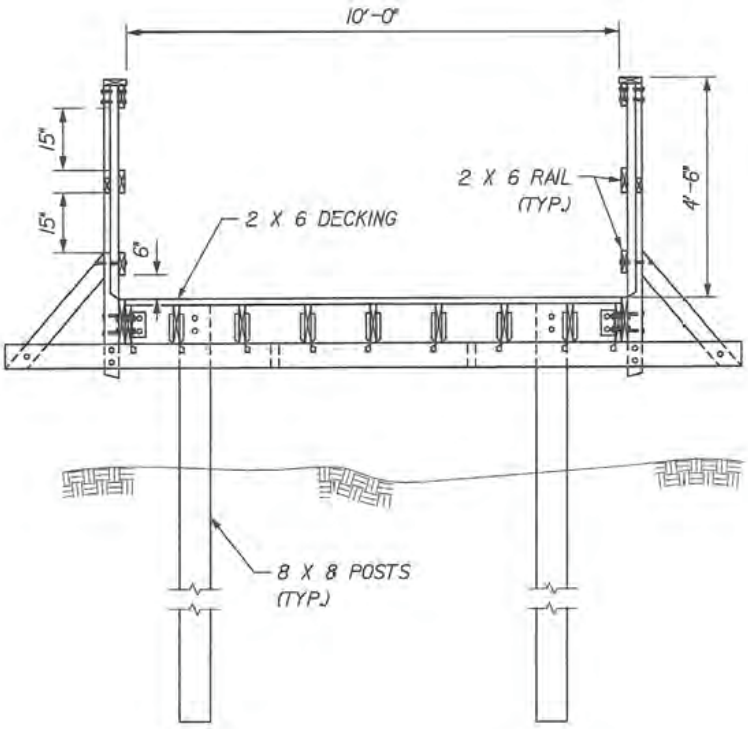




Boardwalk and Bridges:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- Boardwalks are used in environmentally sensitive areas where they function as "mini-bridges"
- When the height of a boardwalk exceeds 30 inches, railings are required
- The thickness of the decking should be a minimum of 2 inches
- Decking should be either non-toxic treated wood or recycled plastic.
- The foundation normally consists of wooden posts or auger piers (screw anchors). Screw anchors provide greater support and last much longer.
- Opportunities exist to build seating and signage into boardwalks.
- In general, building in wetlands should be avoided.



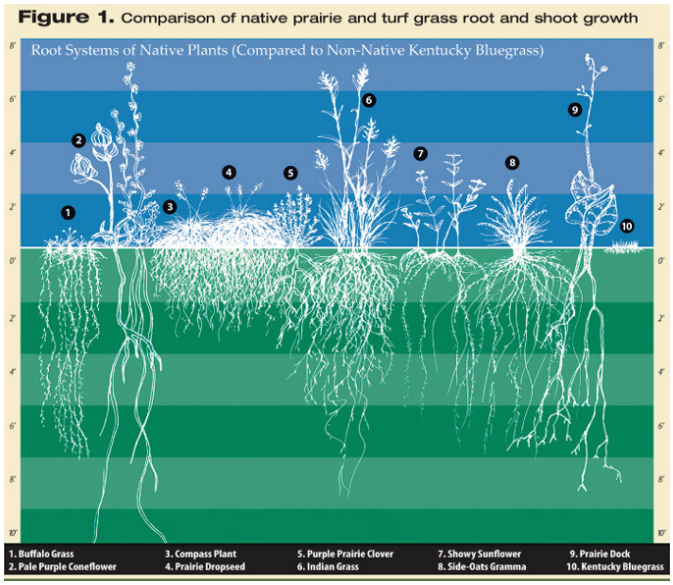
Erosion Mitigation Strategies:

During trail construction, erosion control is required to prevent sedimentation deposit outside the limit of work. Hay bales, waddles, coir logs, and siltation fences are examples of devices used to limit migration of sediment from the construction zone. Preferable options include seed embedded filter socks and interpretive stormwater features such as the ecological sculptures by Daniel McCormick. The artist uses local riparian materials in the form of subtle sculpture and mounding to assist in the reestablishment of damaged watershed zones.

Temporary seeding is usually part of any erosion control strategy. Seeding of native grasses and forbs is recommended for temporary and permanent erosion control. Native grasses produce root zones up to 6 feet in depth providing greater protection against erosion than other conventional warm season grasses such as fescues and Bermuda.



Established Meadow



Native grass root zone depth chart



Reclamation art by Daniel McCormick



Native plug installation

Interpretive Signage:

Signage may be used for wayfinding or as an interpretive element in the landscape. Interpretive signage highlights site context and deepens the observer's understanding of a site's historical, cultural, and ecological context.

- Signage may be incorporated into natural features
- Signage may be stand-alone kiosks or boards with an educational element
- Constructed elements should acknowledge the site specific context
- Constructed elements should complement other site furnishing elements





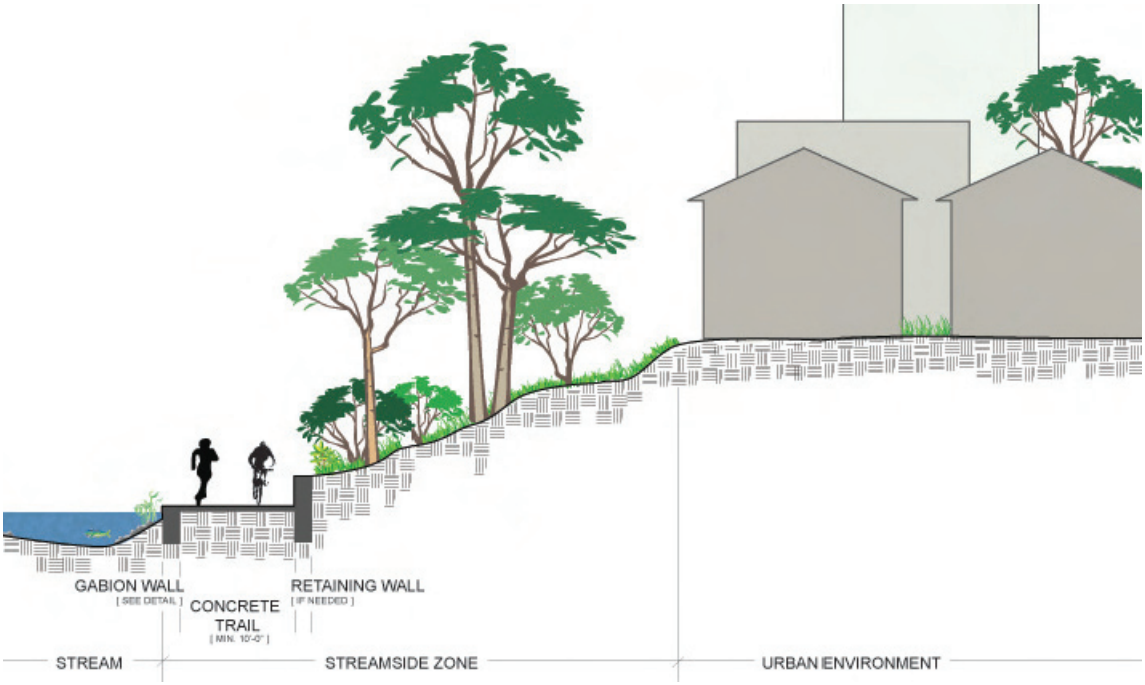




Creekside Trail (urban areas only)

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- Located only in urban areas where right-of-way constraints and channelized streams restrict trail development
- Typically positioned directly adjacent to the stream channel and are, therefore, subject to frequent flooding.
- Parking areas near urban creeks can also be retrofitted to accommodate this type of trail.
- When box culverts are built along creeks on planned trail routes, they should be designed to meet this trail type, and should have sufficient space for trail users.
- Require hard paved surfaces of concrete to withstand high-velocity stream flows.
- Retaining walls or other structural elements may also be required for stable construction and to protect the trail from erosion and flood damage.
- The installation of railings, benches, signage, and trash receptacles, which could obstruct flow during storm events, should be carefully considered.
- The use of retaining walls as seat walls is one way in which non-obtrusive amenities can be included.
- Special consideration should be given to the mitigation of impacts from trail construction on the natural environment.
- Minimum 10 feet width for multi-use trails.



Floodway Trail (limited areas):

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Typically positioned within the floodway, but not directly adjacent to streams; some vegetative buffer between the stream and trail should be left intact.

• Subject to infrequent, periodic flooding.

• Require paved surfaces of either asphalt or concrete depending on frequency of flooding and expected velocity of flow.

• Proper trail foundation will increase the longevity of the trail.

• No soft shoulder should be constructed due to flood considerations.

• All elements of the trail, including the trail tread, railings, benches, and trash receptacles, will be periodically flooded; materials should be carefully selected and sited accordingly.

• Special consideration should be paid to the mitigation of impacts from trail construction on the natural environment.

• Minimum 10 foot width for multi-use trails.



Floodplain Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Typically positioned outside the floodway, within the floodplain; significant vegetative buffer between the stream and trail should be left intact.

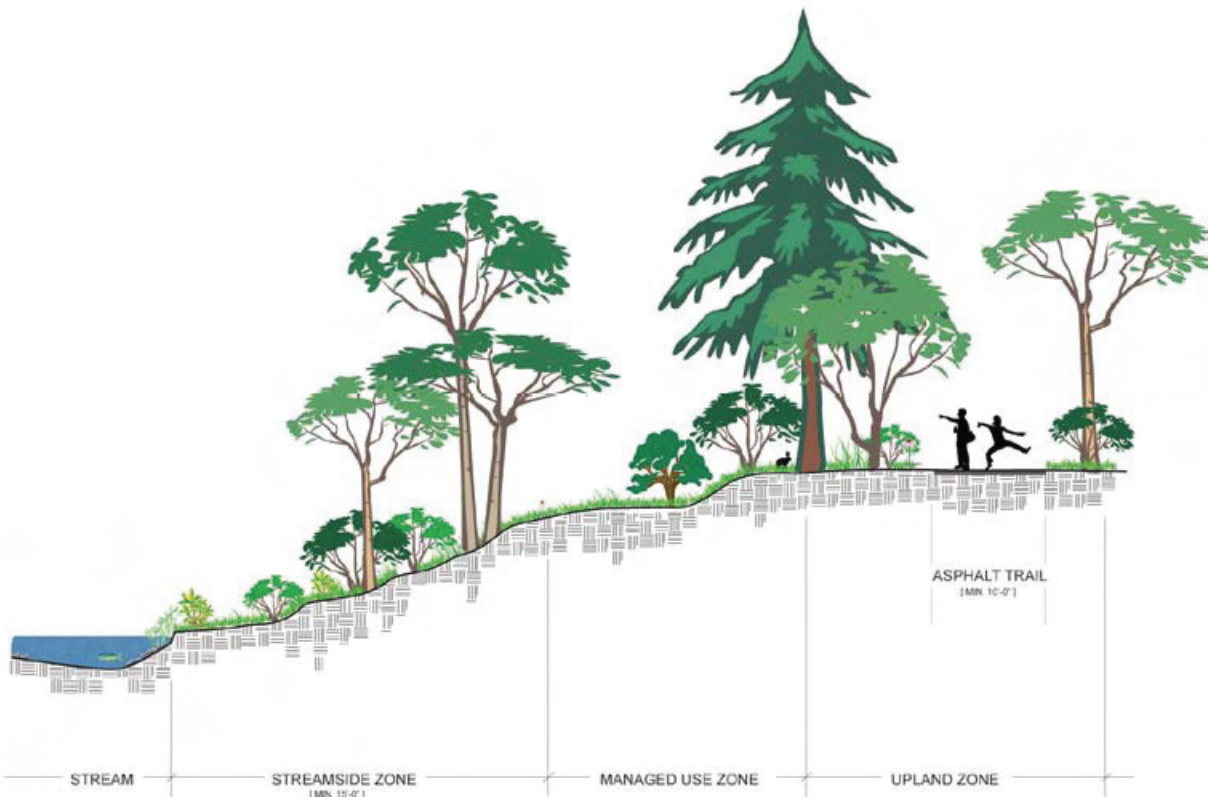
• Subject to occasional flooding, during large storm events.

• Paved asphalt recommended, though an aggregate stone surface may be adequate in some locations.

• Proper trail foundation will increase the longevity of the trail.

• Minimum 2 foot graded shoulder recommended.

• Minimum 10 foot width for multi-use trails.



Water Trail and Water Trail Access Sites:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Also known as water-based trails, paddle trails, blueways or blue trails.

• Typically defined as sections of rivers, creeks, wetlands, and other water bodies that are designated as routes for canoeing, kayaking, and tubing.

• Clearly marked access points and/or trailheads should be provided.

• Educational signs, directional signs, and regulatory signs should inform users of their surroundings and safe navigation of the watercourse safely.

• Improved rapids are increasingly popular along water trails; they should only be used in areas where high usage is expected and a demand for such a facility has been established.

• The provision of designated picnic areas and camp sites along water trails can reduce the problem of trespassing private property along the watercourse.

• If a pathway from parking area to water access exceeds 1500 feet, a permanently affixed canoe or kayak stand should be positioned every 1000 feet.

• Informational signs containing emergency contact numbers, as well as contact numbers for the managing partner, must be displayed at the parking area and/or within 150 feet of the access site.

• Access to waterway must be firm, compacted, and permanently delineated.

Minimum construction for facilities:

• Lights in parking and picnic areas are recommended

• Maps should be provided to guide users along the watercourse and to access sites for drop-in and take-out.

• Natural, but well maintained pathway from parking to water access:

- Pathway at least 6 feet wide
- Grass not higher that 8 inches
- Tree overhang not lower than 14 feet
- Grade must not exceed 20 percent







Natural Surface Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- Also known as footpaths or hiking trails
- Designed to accommodate pedestrians on foot; not intended for cyclists or other wheeled users.
- Trail surface typically made of dirt, rock, soil, forest litter, snow, ice, pine mulch, leaf mulch, or other native materials.
- Preparation varies from machine-worked surfaces to those worn only by usage.
- May be more appropriate for ecologically sensitive areas.
- Provide positive drainage for trail tread without extensive removal of existing vegetation.
- Varies in width from 18 inches to 5 feet.
- Vertical clearance should be maintained at 9 feet.



Equestrian Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Vertical clearance for equestrians is at least 10 feet, with 12 feet preferred.

• A horizontal clearance should be at least 5 feet.

• Dirt or stabilized dirt is a preferred surface. Crushed granite screenings are also acceptable. Hard surfaces like asphalt and concrete are undesirable for equestrians because they can injure horses' hooves. Granular stone may also present problems because loose aggregate can get stuck in hooves.

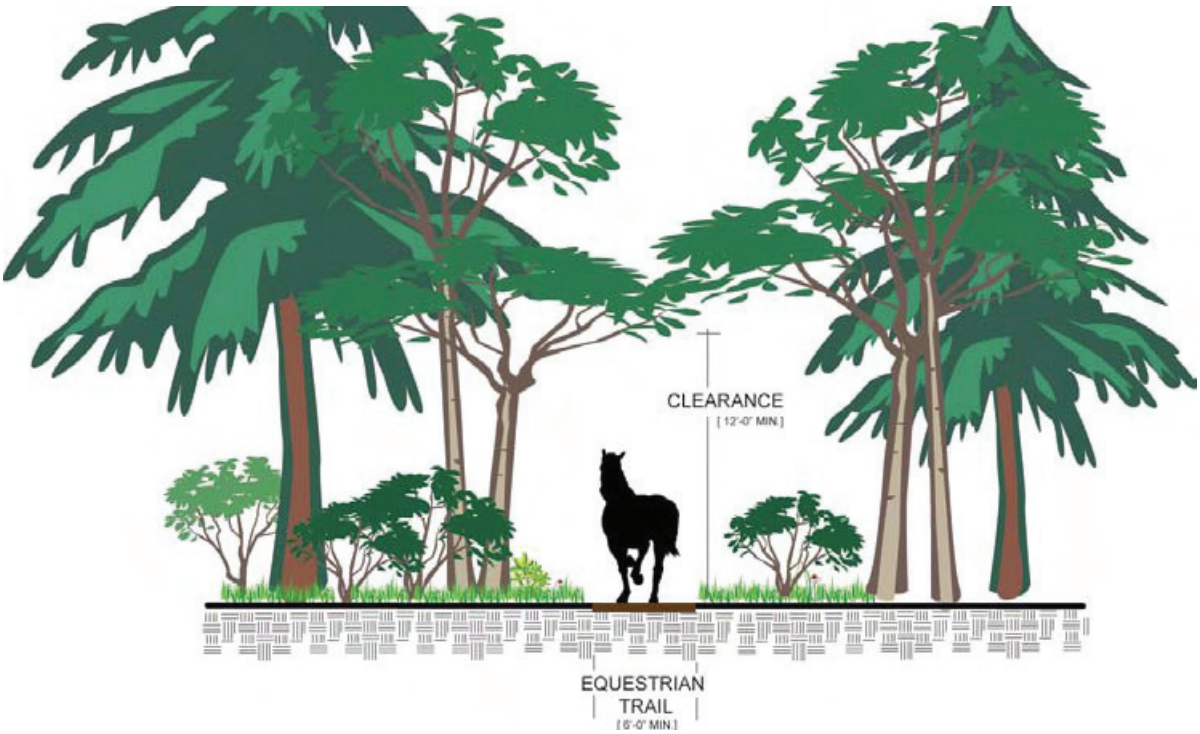
• Within the tread, large rocks, stumps, and other debris should be cleared.

• Sight distances for equestrians, who usually travel between 4 and 6 miles per hour, should be at least 100 feet.

• Hitching posts should be installed at rest stops, picnic areas, and rest rooms.

• For horseback riders, a water crossing is preferred over a high and narrow bridge. If erosion is a concern, or if water crossing is for some reason undesirable, then provide mounting blocks at the bridge so riders can dismount and lead their horses.

• Equestrians should be expected to remove their horse's manure from trail surfaces. Many riders are not comfortable dismounting and taking care of this as it occurs. Therefore, equestrians should be strongly encouraged (or possibly required in exchange for use of the trail) to join fellow riders on manure clean-up days.



Multi-Use Equestrian Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Standards from 'Equestrian Trail' on preceding page also apply here.

• Although equestrians prefer a separate tread, a cleared shoulder could suffice if necessary.

• If a single tread is used to accommodate numerous users, including equestrians, extra effort should be used to ensure the sub-base and sub-grade of the trail are firm and properly prepared.

• Signs indicating that equestrians have the right-of-way on a multi-use trail should be included in the design plan and posted on the trial. Signs that can quickly and clearly indicate trail protocol can help educate trail users about equestrians.

• Maps should be provided to guide users along the watercourse and to access sites for drop-in and take-out.

• Natural, but well maintained pathway from parking to water access:

- Pathway at least 6 feet wide
- Grass not higher that 5 inches
- Tree overhang not lower than 14 feet
- Grade must not exceed 20 percent



Unpaved Multi-Use Trail (10' wide typical):

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Potential materials used to surface an unpaved, multi-use trail include natural materials, soil cement, graded aggregate stone, and shredded wood fiber.

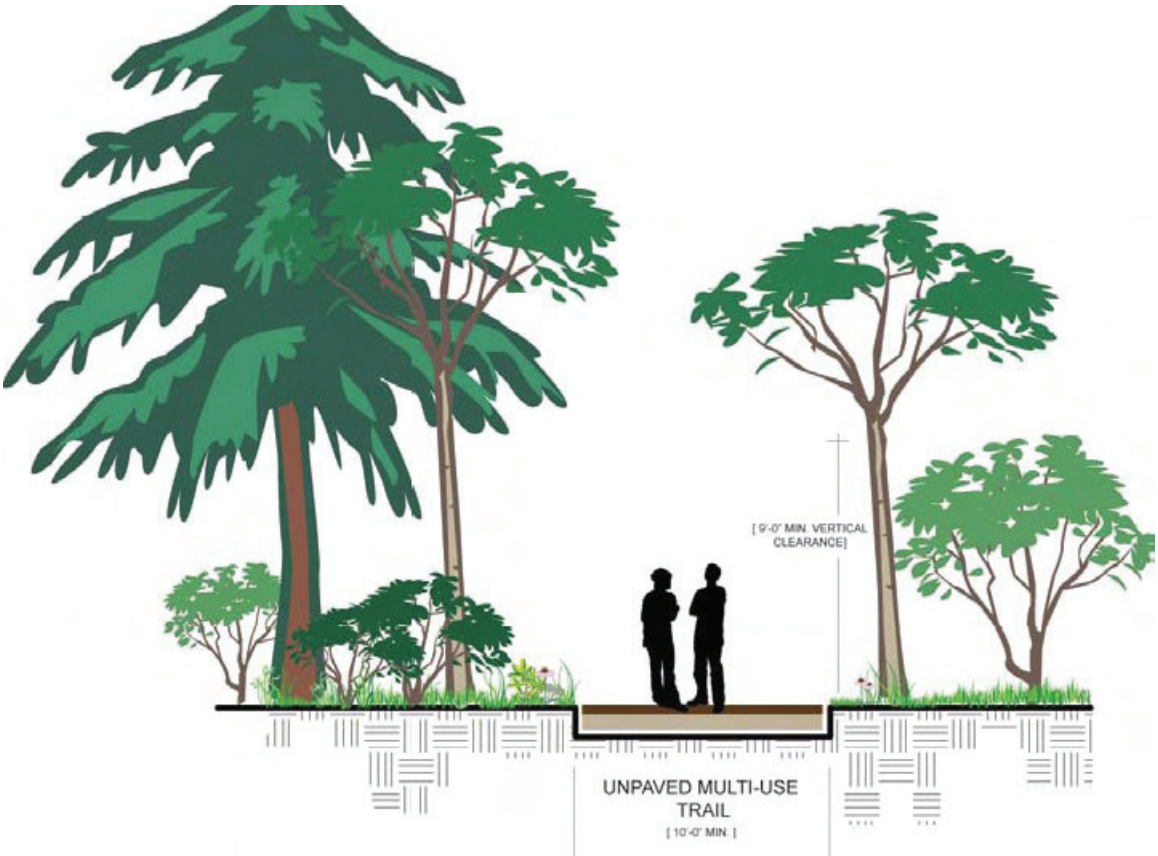
• The soft surface materials are less expensive to install and compatible with the natural environment; however, they do not accommodate certain users, such as roller-bladers and the physically disabled. Soft surface trails are preferred by some runners and mountain bicyclists.

• While soil cement will accommodate most users, bicyclist should have only restricted use to prevent premature degradation of the surface.

• Graded aggregate may need to be kept in place with wood or metal edging, and is limited to flatter slopes.

• If properly compacted and constructed, granular stone surface trails can support bicycles and wheel-chairs.

• Shredded wood fiber blends with the natural environment, but decays rapidly and must be installed on flat subgrades.



Paved Multi-Use Trail (10' wide typical):

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Typically composed of asphalt or concrete, paved multi-use trails should be designed to withstand the loading requirements of occasional maintenance and emergency vehicles.

• In areas prone to frequent flooding, it is recommended that concrete be used for its excellent durability.

• As a flexible pavement, asphalt should be considered when installing a paved multi-use trail on slopes.

• A concern for the use of asphalt is the deterioration of trail edges. Installation of geotextile fabric beneath a layer of aggregate base course can help to maintain the edge of the trail. It is also important to provide a 2 foot wide graded shoulder to prevent edges from crumbling.

• Most often, concrete is used for intensive urban applications. It is the strongest surface type and has the lowest maintenance requirement if it is installed properly.

• Centerline stripes should be considered for trails that generate substantial amounts of traffic. Centerline stripes are particularly useful along curving sections of trail.



Neighborhood Entrance Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

Where an access trail is developed in a residential area to link to a greenway, the following standards are recommended:

• Trail pavement shall be 8 feet wide to accommodate emergency and maintenance vehicles, meet ADA requirements and be considered suitable for multi-use.

• Trail widths should be designed to be less than 8 feet wide only when necessary to protect large mature native trees over 18 inches in caliper, wetlands or other ecologically sensitive areas.

• Trail pavement shall not encroach within the sideyard set back to a distance equal to the sideyard setback of the adjacent property.

• No access trail shall be less than 5 feet wide.

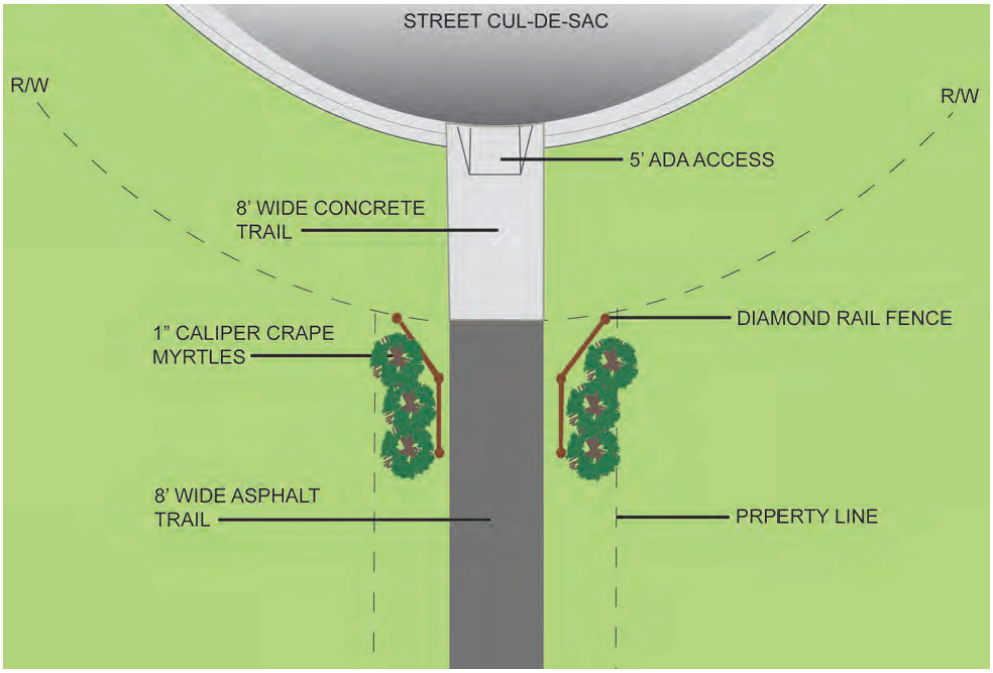
• Access trails should meander whenever possible.

• All landscape materials shall be installed during the appropriate planting season for the particular species.

• Other ornamental landscape shall be included at the street frontage of the access trail based upon input from the residents of the area.

• Annuals may be provided when there is a commitment from at least 3 neighbors or a Home Owners Association to install and maintain these plants.

• Two sections of diamond rail fencing can be included on each side of the trail near the street frontage. Diamond rail will not be included if the respective neighborhood deeds and covenants do not permit it.



Trail Intersections:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

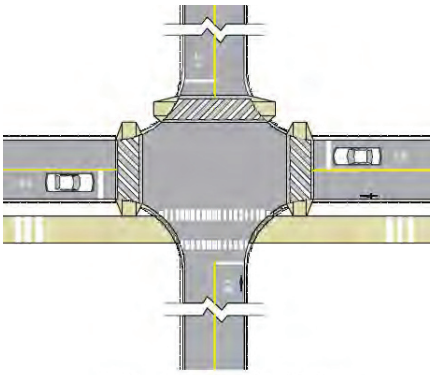
• Site the crossing area at a logical and visible location.

• Warn motorists of the upcoming trail crossing and trail users of the upcoming intersections.

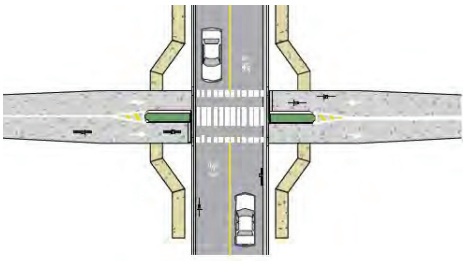
• Maintain visibility between trail users and motorists.

• Intersection approaches should be made at relatively flat grades so that cyclists are not riding down hill into intersections.

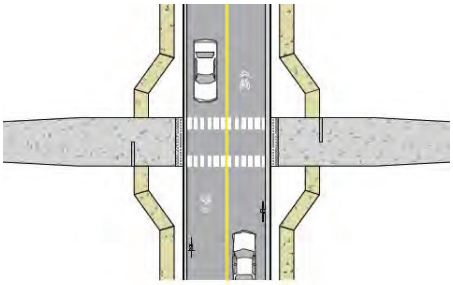
• If the intersection is more than 75 feet from curb to curb, it is preferable to provide a center median refuge area.



4-WAY INTERSECTION CROSSING
Shared Use Path



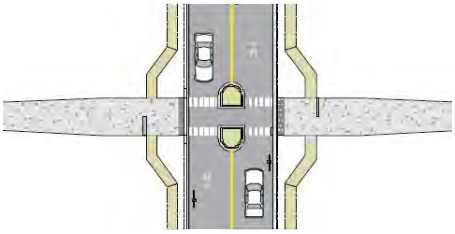
MIDBLOCK CROSSING
Shared Use Path with Sidewalks and Medians



MID-BLOCK INTERSECTION
Shared Use Path with Sidewalks

MEDIAN REFUGE
Shared Use Path with Sidewalks



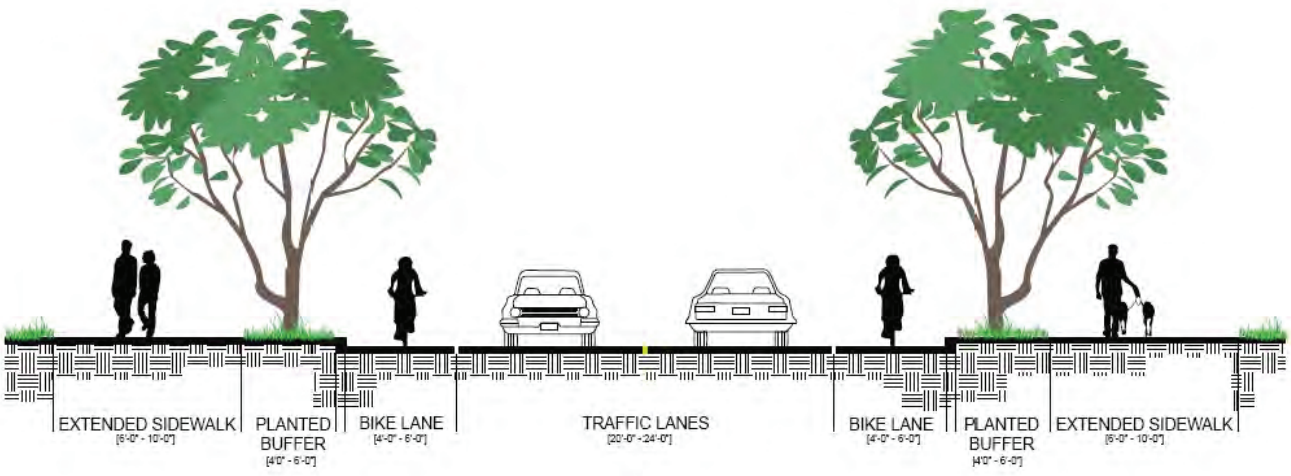




Street Based Trail:
Sidewalks and Bikeways

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

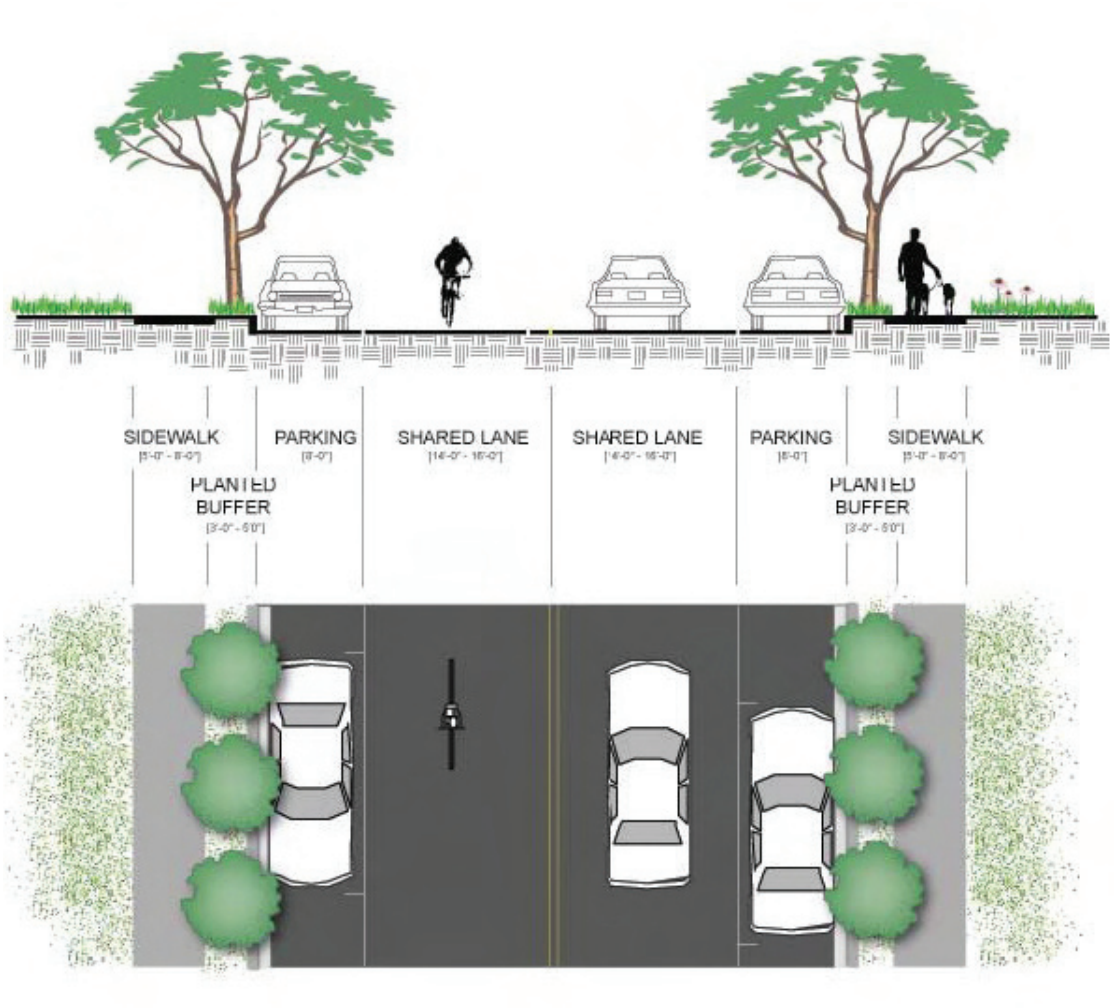
On the following pages several different types of bicycle facilities are described for street based trails, including signed/ shared roadways, wide outside lanes, bicycle lanes, and side paths. In addition to bicycle facilities, all street based trails should have a wide sidewalk (6-10 feet wide), except where pedestrians are accommodated on sidepath.



Street Based Trail:
Signed/Shared Roadway

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

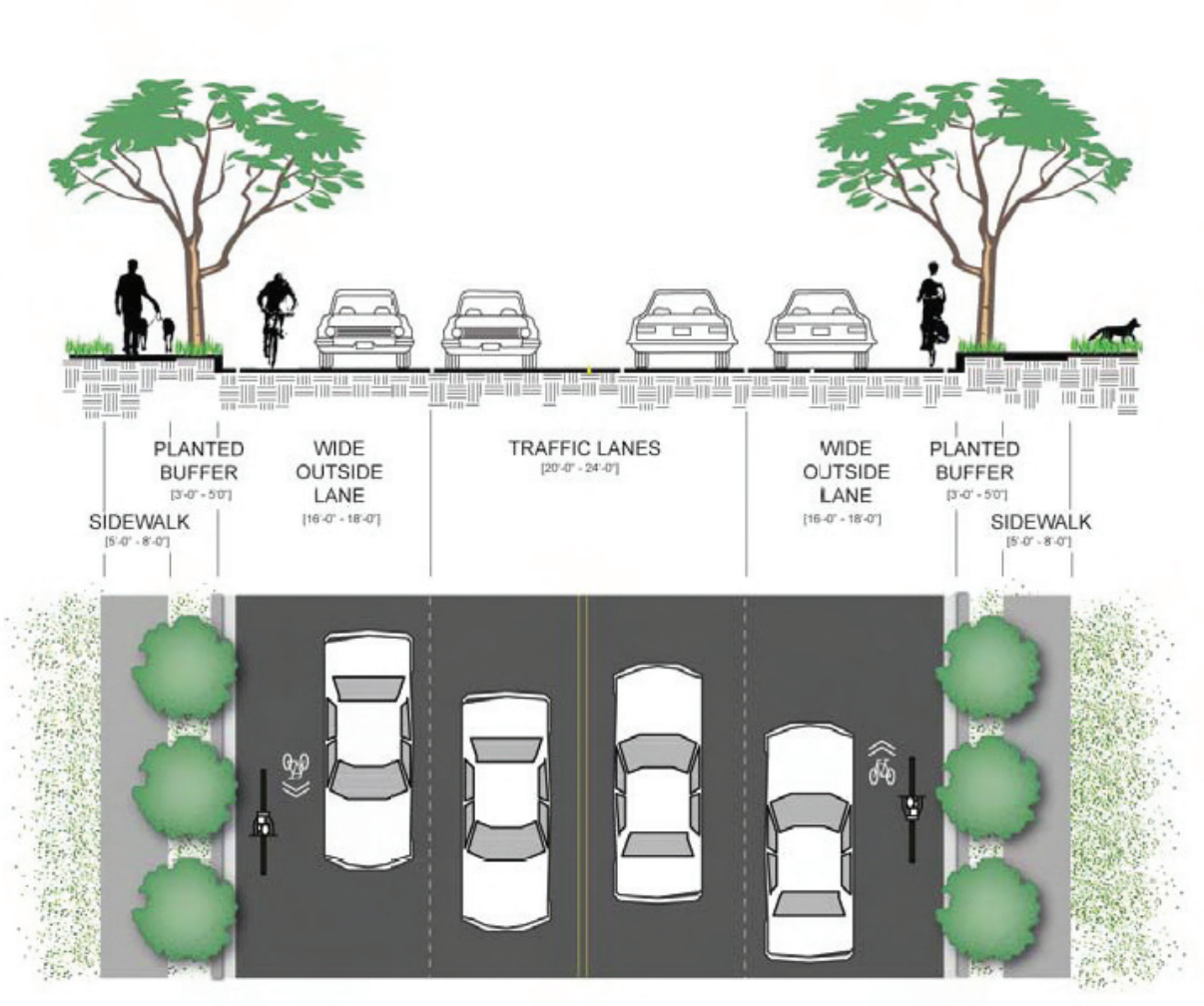
• May either be a low volume (less than 3000 cars per day) roadway with traffic calming and signage to create a safe shared use environment, OR a higher volume roadway with wide (14 foot) outside lanes.



Street Based Trail:
Wide Outside Lane

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- For skilled bicyclists who are capable of sharing the road with motor vehicles.
- Provide smooth pavement, free of debris.
- Provide compatible storm grates (so that grate openings do not run parallel to the roadway)

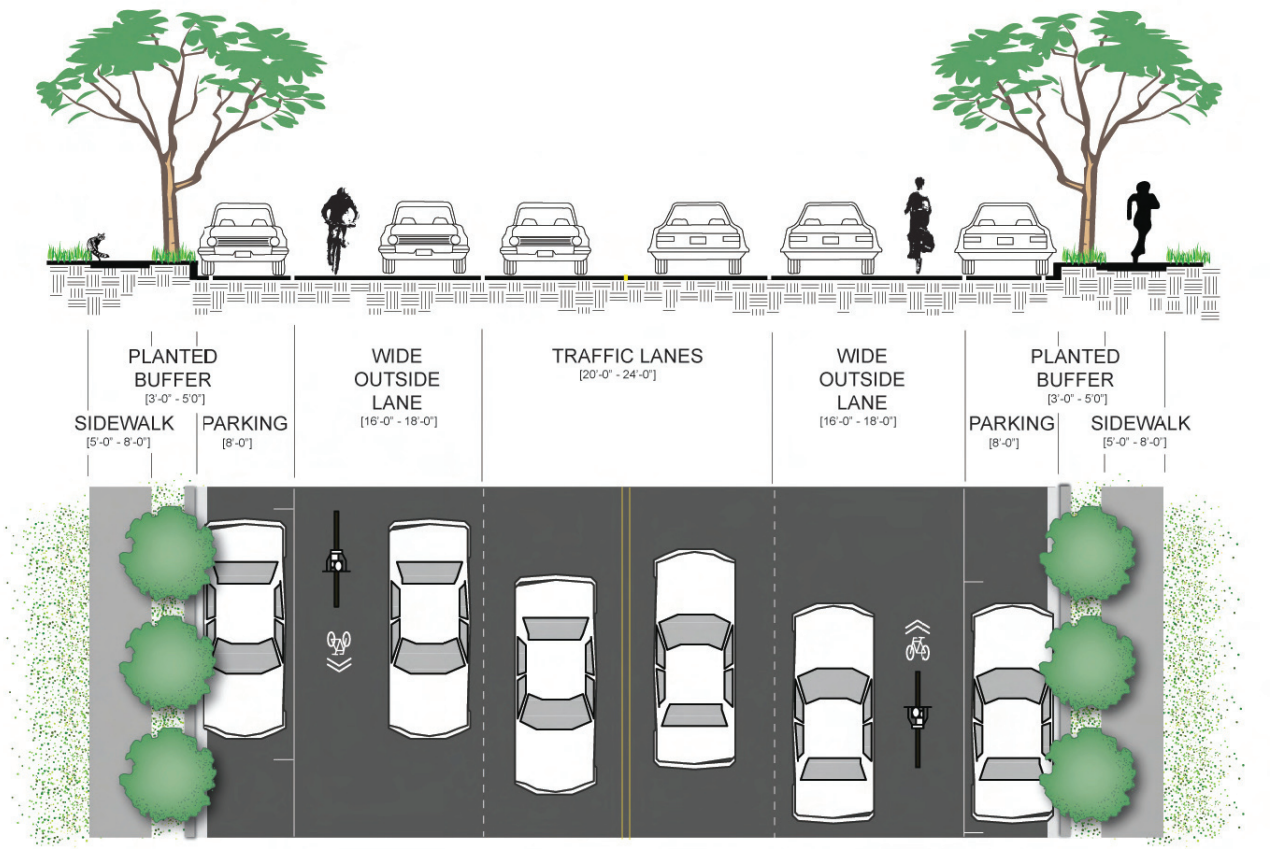


Street Based Trail:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

Wide Outside Lane with Parking

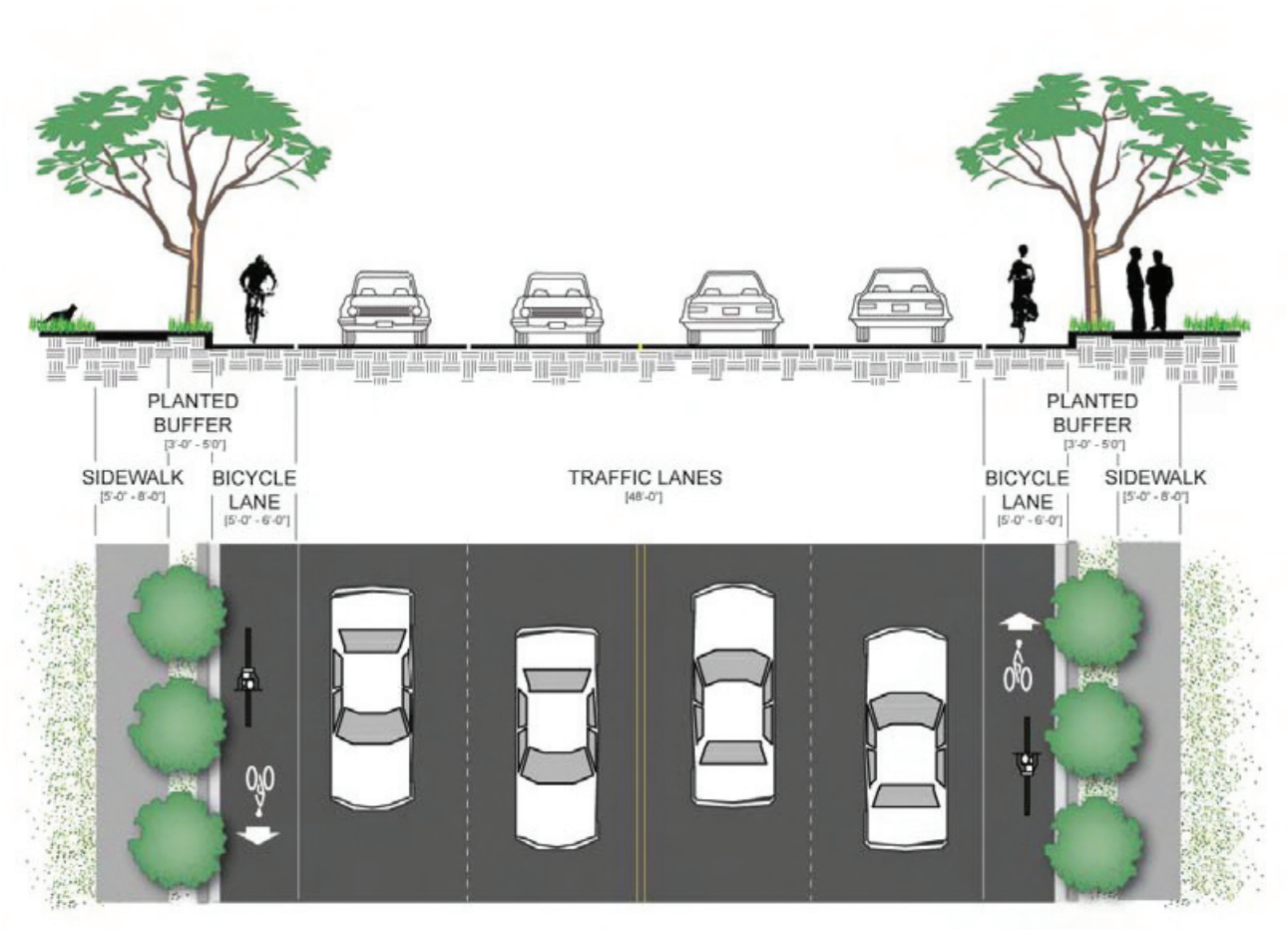
Refer to 'Wide Outside Lane' standards on preceding page.



Street Based Trail:
Bicycle Lane

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

- Should be used on roadways with 3,000 or more average daily traffic (ADT).
- Recommended width of 5 feet-6 feet with a minimum width of 4 feet (ASHTO national standard is 5 feet).

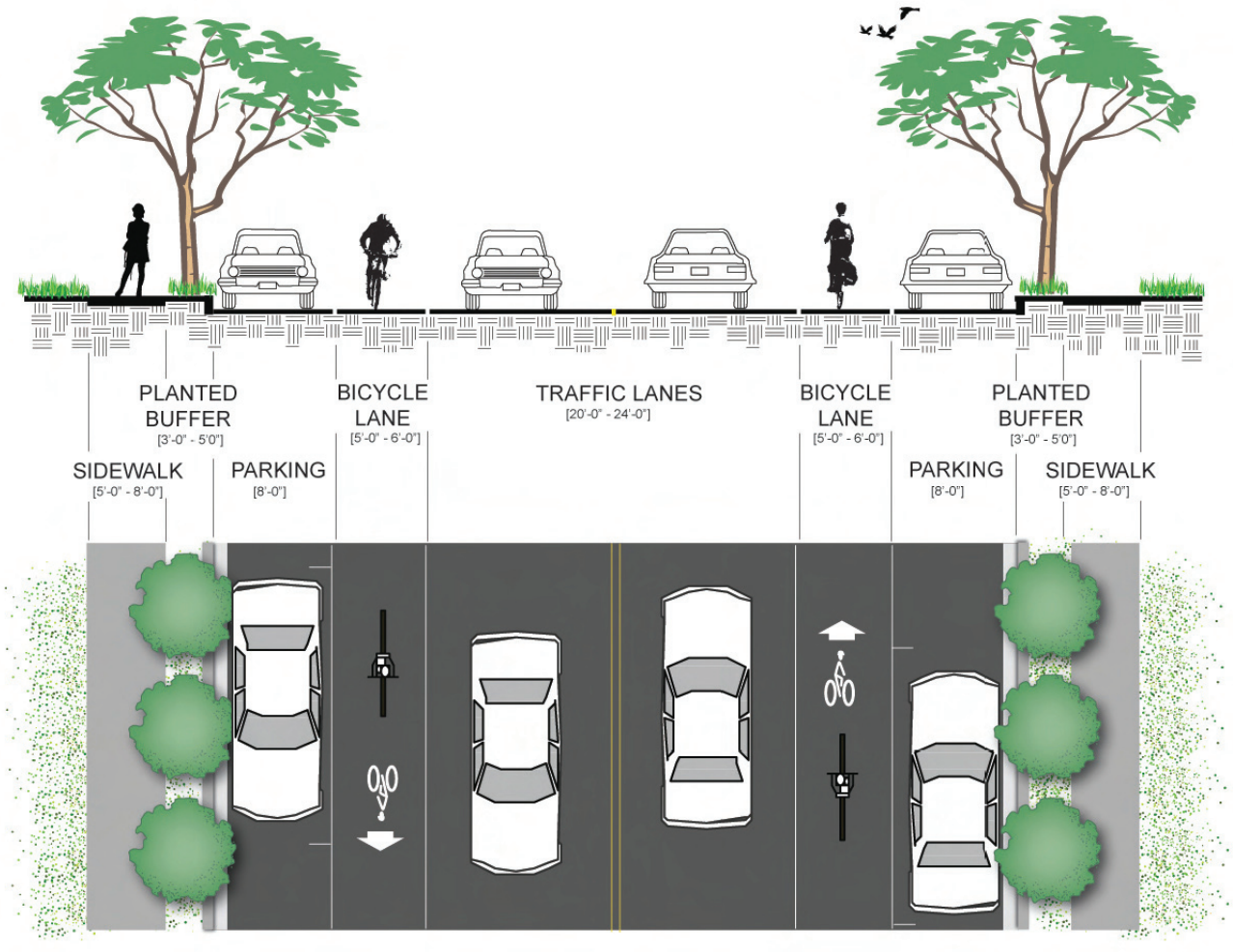


Street Based Trail:
Bicycle Lane with Parking

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• On moderate volume roadways, such as minor collectors, where on-street parking is permitted and a bike lane is provided, the bike lane must be between parking and the travel lane.

• Appropriate space must be allocated to allow passing cyclists room to avoid open car doors.



Street Based Trail:
Side Path

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• This type of trail works best in corridors where there are limited driveway/intersection crossings and more desirable destinations along one side of the roadway, or where no roadway space is available to provide bike lanes.

• The trail should be at least 10 feet wide (preferable 12 feet) with a 3 foot to 5 foot, preferably 6 foot, vegetated buffer where possible.

• Side paths are the preferred facility when the primary trail is a street-based.



Trail Underpass:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Typically utilize existing overhead roadway bridges adjacent to steams or culverts under the roadway that are large enough to accommodate trail users.

• Vertical clearance of the underpass must be at least 8 feet, preferably 10 feet.

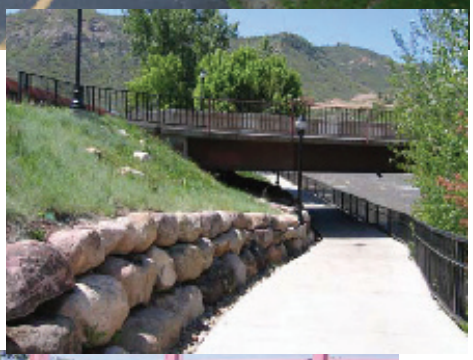
• Width of the underpass must be at least 12 feet.

• Proper drainage must be established to avoid pooling of stormwater.

• Lighting is recommended for safety.











Rural Roadways:

Many of Catawba County roadways stretch into the rural landscape. We heard from folks at open houses express a desire for better and safer bike facilities on the County's rural roadways. Where feasible a Shared Use Pathway offers a solution to accomodate off-road facilities. Design considerations for these areas as recommended from (ASHTO Guide to Development of Bicylce Facilities) include:

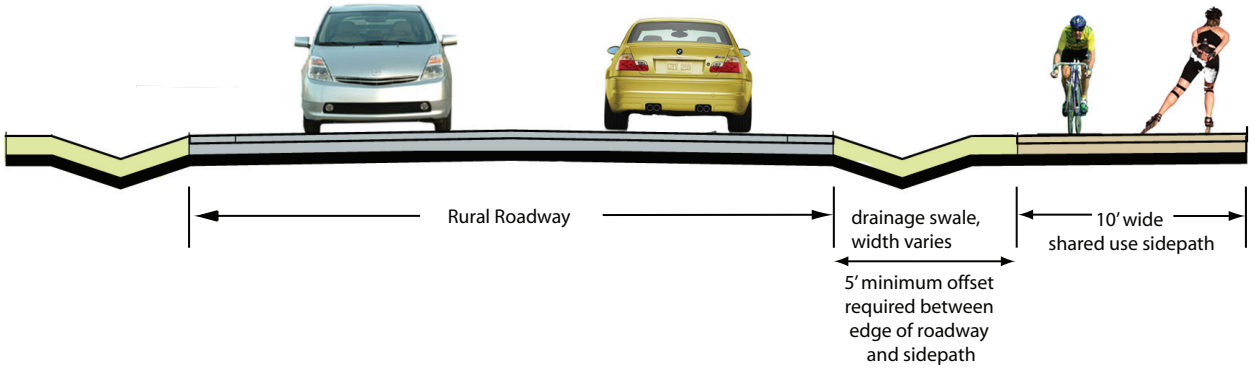
- Provide minimum 5 feet horizontal clearance from edge of pavement to nearest edge of trail.
- In any condition where less than 5 feet clearance is provided a vertical barrier with a minimum height of 42 inches is required.
- 10' minimum trail width is recommended. Wider trails may be considered for high-use areas.

Additional considerations include:

- Consult affected landowners to discuss potential right of way development to include trail.
- Coordinate trail development with all utilities.
- Review all local, state and federal statutes for necessary permitting prior to pursuing design development within the right of way.







Under Bridge Crossings:

Catawba County has a wealth of riparian corridors. In many instances, The Thread Trail is routed adjacent to a stream corridor. At locations in which proposed trails cross a street or highway condition, this may occur as an at-grade crossing, or in some instances, the trail may need to be routed underneath a bridge overpass. Design considerations for these areas include:

• Provide minimum 8 feet vertical clearance from top of trail surface to lowest point of bridge deck structure, 10 feet vertical clearance is recommended

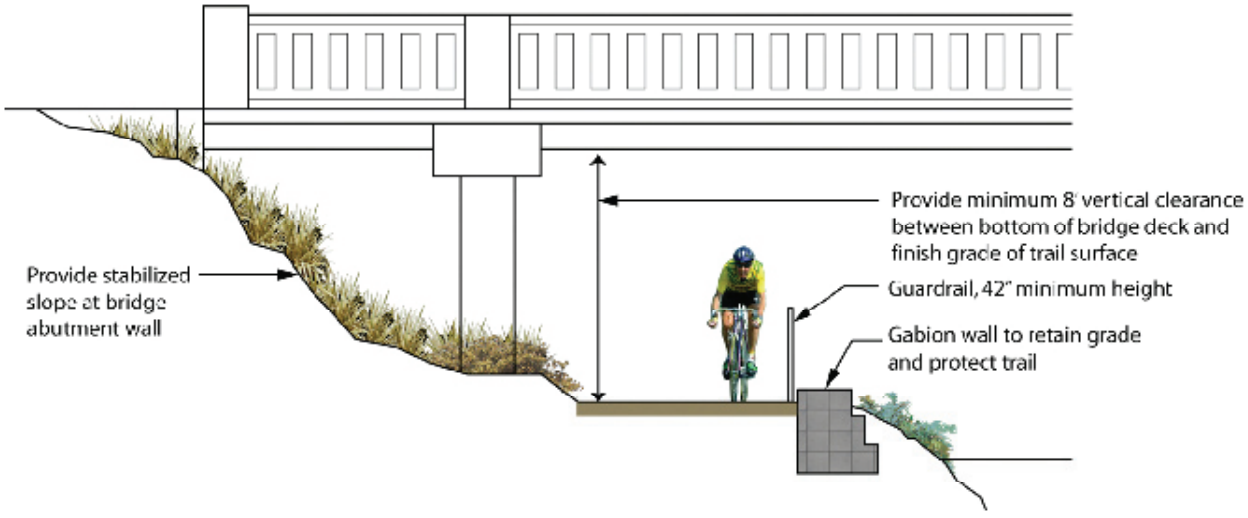
• Gabion walls may be necessary to protect the trail, retain grade, and create a flat 'shelf' upon which to construct the trail.

• Concrete trail with crushed stone base is recommended for durability and longevity, minimizing maintenance.

• Review all local, state and federal statutes for necessary permitting prior to pursuing design development within the floodzone.







Trail along stream corridor at vehicular overpass

Trail Overpass:

(Images and text from Carolina Thread Trail Master Plan for Lincoln Counties; produced by Greenways Inc.)

• Safety should be the primary consideration in bridge/overpass design.

• Specific design and construction specifications will vary for each bridge and can be determined only after all site-specific criteria are known.

• Always consult a structural engineer before completing bridge design plans, before making alterations or additions to an existing bridge, and prior to installing a new bridge.

• A signature bridge should be considered in areas of high visibility, such as over major roadways. While often more expensive, a more artistic overpass will draw more attention to the trail system in general, and could serve as a regional landmark.







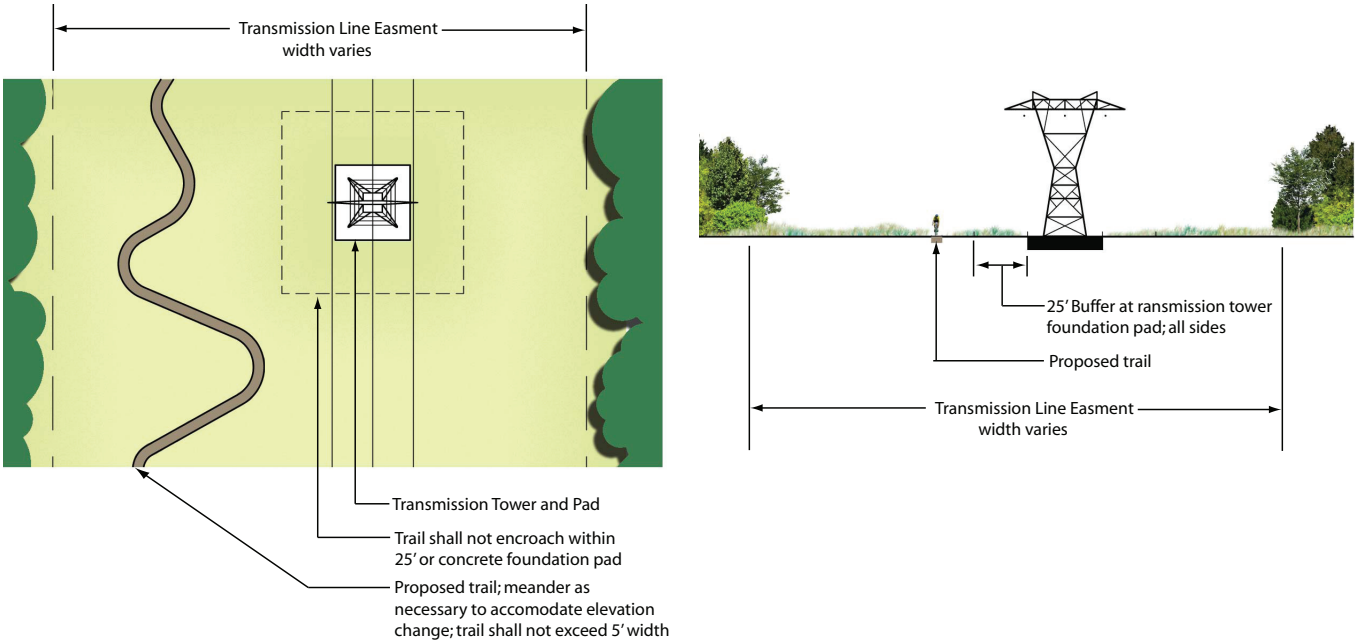


Trail within Duke Energy Transmission Easement

Any trail segment utilizing Duke Energy's easements is required to adhere to the established public criteria regarding trails and greenways, as well as the following stipulations:

- The trail must not exceed 5 feet in width.
- The easement shall only include the width of the 5' trail. A maintained shoulder will not be included.
- The trail must not encroach within 25 feet of a utility tower foundation pad.
- The trail will be allowed to meander as much as necessary to control erosion and/or ease longitudinal slopes along the trail.
- The trail must not cross under power transmission lines. Its layout is required to be 'justified' to the open side of the easement.
- Most of Duke Energy's Rights of Way are located on private property. In no way will Duke Energy seek to obtain the rights of ingress and egress onto private property nor will Duke work on behalf of the applicant to secure these rights.
- Duke Energy is not responsible for the destruction of any property in an attempt to ingress or egress from the Right of Way.
- Duke Energy reserves the rights to approve or deny any application, for any reason, that meets these criteria.
- Duke Energy's Electric Transmission Rights-of-Way Guidelines / Restrictions apply. For reference, these guidelines are provided on the following page

During the design development process, Duke Energy should be involved in the coordination and review of greenway design. All trails within the easement shall be approved in writing by Duke Energy prior to construction.



DUKE ENERGY'S
ELECTRIC TRANSMISSION RIGHTS-OF-WAY GUIDELINES/RESTRICTIONS
VALID FOR NORTH CAROLINA AND SOUTH CAROLINA

This list of rights-of-way restrictions has been developed to answer the most frequently asked questions about property owner use of Duke Energy's electric transmission rights of way. This list does not cover all restrictions or all possible situations. You should contact the Asset Protection Right-of-Way Specialist if you have additional concerns about the rights of way. This list of restrictions is subject to change at any time and without notice. Duke Energy reserves all rights conveyed to it by the right-of-way agreement applicable to the subject property. All activity within the rights of way shall be reviewed by an Asset Protection Right-of-Way Specialist. It is strongly suggested that you contact Duke Energy and submit plans for approval prior to construction of any improvements within the rights of way.

1. Structures, buildings, manufactured homes, mobile homes and trailers, satellite signal receiver systems, swimming pools (and any associated equipment and decking), graves, billboards, dumpsters, signs, wells, septic systems or storage tanks and systems (whether above or below ground), refuse of any type, flammable material, building material, wrecked or disabled vehicles and all other objects (whether above or below ground) which may, in Duke Energy's opinion, interfere with the electric transmission right of way, in any way, are not allowed within the rights-of-way limits. Transformers, telephone/cable pedestals (and associated equipment), and fire hydrants are not allowed. Manholes, water valves, water meters and backflow preventors are not permitted.
2. Fences shall not be attached to poles or towers. Fences shall not exceed 10 feet in height and shall be installed greater than 25 feet from poles, towers and guy anchors. Fences shall not parallel the centerline within the rights of way but may cross from one side to the other at any angle not less than 30 degrees with the centerline. If a fence crosses the rights of way, a gate (16 foot wide gate at each crossing) shall be installed by the property owner, per Duke Energy's specifications, to allow free access required by Duke Energy equipment.
3. Contact Duke Energy and obtain written approval before grading or filling on the rights of way. Grading (cuts or fill) shall be no closer than 25 feet from a pole or tower leg, and the slope shall not exceed 4:1 on the rights of way. Grading or filling within the rights of way or near a structure, which will prevent free equipment/vehicle access, or creates ground to conductor clearance violations, will not be permitted. Sedimentation control, including re-vegetation, is required per state regulations.
4. Streets, roads, driveways, sewer lines, water lines, and other utility lines, or any underground facilities shall not parallel the centerline within the rights of way, but may cross, from one side to the other, at any angle not less than 30 degrees with the centerline. No portion of such facility shall be located within 25 feet of Duke Energy's supporting structures.

Intersections of roads, driveways, or alleyways are not permitted within the rights of way.

5. Any drainage feature that allows water to pond, causes erosion, directs storm water toward the rights of way, or limits access to or around a structure is prohibited.
6. Contact Duke Energy prior to the construction of lakes, ponds or retention facilities, etc. within the rights-of-way limits.
7. Duke Energy does not object to parking within the rights of way, provided that:

   a. A barrier, sufficient to withstand a 15 mph vehicular impact, shall be erected by the party constructing the parking area to protect the pole, tower or guy anchor. The barrier shall be located in such a manner as to restrict parking to at least 5 feet from the structure.

   b. Any access areas, entrances, or exits shall cross (from one side to the other) the rights of way at or near right angles to the centerline, and shall not pass within 25 feet of any structure. Parking lot entrances/exits cannot create an intersection within the right of way.

   c. Lighting structures within the rights-of-way limits must be approved by Duke Energy before installing. Total height may not exceed 15 feet.

   d. Signs and other attachments to Duke Energy structures are prohibited.

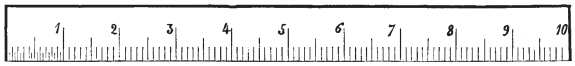
8. Duke Energy Carolinas will not object to certain vegetation plantings as long as:

   a. It does not interfere with the access of existing structures or the safe and reliable operation and maintenance of the line.

   b. With prior written approval, Duke Energy Carolinas does not object to plants, shrubs and trees that are of a species that will not exceed, at maturity, fifteen (15) feet in height.

   c. Duke Energy Carolinas reserves the right to object to the planting of all plants, shrubs and trees within the right of way easement that may interfere with the proper operation and maintenance of the line.

   d. Duke Energy Carolinas may exercise the right to cut "danger trees" outside the rights of way limits as authorized by the right of way agreement applicable to the subject property and as required to properly maintain and operate the transmission line.



footnotes

1 The First National Biking and Walking Study

2 Centers for Disease Control and Prevention, Promoting Physical Activity Through Trails

(http://www.cdc.gov/nccdphp/dnpa/physical/trails.htm)

3 http://www.surgeongeneral.gov/index.html

4 Burke, Edmund R., Ph.D. Benefits of Bicycling and Walking to Health (for FHWA), Washington, DC, 1992, p. 13.)

5 Unifour Air Quality Plan page 7

6 Ibid page 15

7 Ibid page 28

8 Ibid pages 50-52

9 Ibid pages 50-52

10 U.S Department of Agriculture, Forest Service Pamphlet #R1-92-100, cited in "Benefits of Trees in Urban Areas," Colorado Tree Coalition, www.coloradotrees.org/.

11 www.railstotrails.org/resources/documents/resource_docs/tgc_economic.pdf

12 Robert Chambers, Speaker West Virginia House of Delegates, From "Green Jobs" Speech to the West Virginia House of Delegates, Feb. 21, 1995.

13 Barthlow, Kelly, Moore, Roger, The Economic Impacts and Uses of Long-Distance Trails, The National Park Service, 1998, p 49.

14 A Regional Economic Impact Study of the Carolina Thread Trail, March 2007

15 www.railstotrails.org/resources/documents/resource_docs/tgc_economic.pdf Walking the Walk: How Walkability Raises Home Values in U.S. Cities By Joe Cortright, Impresa, Inc., for CEOs for Cities

16. www.AmericanHiking.org

17 Catawba County Website, catawbacountync.gov

18 US census data

19 Conover Parks Master Plan, produced by the City of Conover Planning Department; City of Conover, NC 28613

20 2008 Conover Pedestrian Transportation Plan, produced by the City of Conover Planning Department; City of Conover, NC 28613

21 The Park and Recreation Master Plan for Hickory, North Carolina; produced by Gardner Gidley and Associates, Clemmons NC 27012; February, 1997

22 Sidewalk, Bikeway, Greenway, and Trail Master Plan, Hickory NC produced in 2000 and updated in 2005

23 The Parks and Recreation Needs Assessment, produced by Site Solutions for the City of Hickory, NC; May 4, 2010.

24 Duke Energy Comprehensive Relicensing Agreement Recreation Amenities for Catawba County

25 Lake Norman Regional Bicycle Plan -http://www.lakenormanrpo.org

26 The Greater Hickory Recreation/Tourism Plan was prepared in 2006 by Woolpert Incoporated

27 The Mountain Creek Park Plan, prepared by Catawba County Planning Department, 2008 January 16

28 Foresight , Final Report July 2004, produced by the FORESIGHT Committee in association with the Western Piedmont Council of Governments

29 Catawba County's Parks Master Plan, McGill Associates Hickory, NC 28601 adopted 2007 December 17, prepared for Catawba County Board of Commissioners.

30 County's Small Area Plans

31 The Unifour Strategic Air Quality Plan (DRAFT Revision) August 13, 2010;

http://www.surgeongeneral.gov/topics/obesity/calltoaction/fact_vision.html


CAROLINA
THREAD
TRAIL