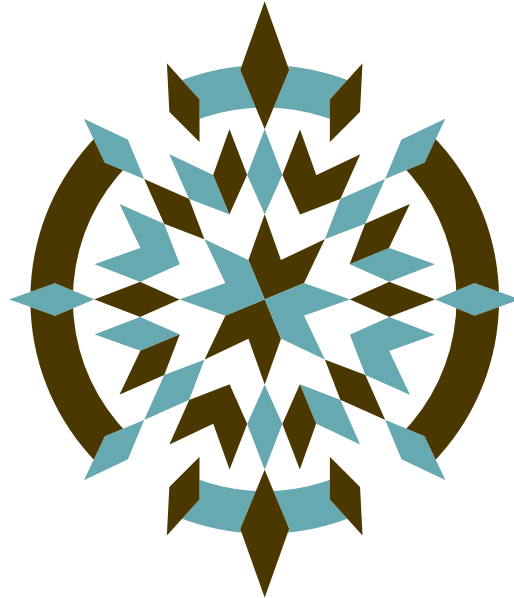

CAROLINA THREAD TRAIL
MASTER PLAN
FOR CABARRUS COUNTY
COMMUNITIES



**CAROLINA
THREAD
TRAIL**

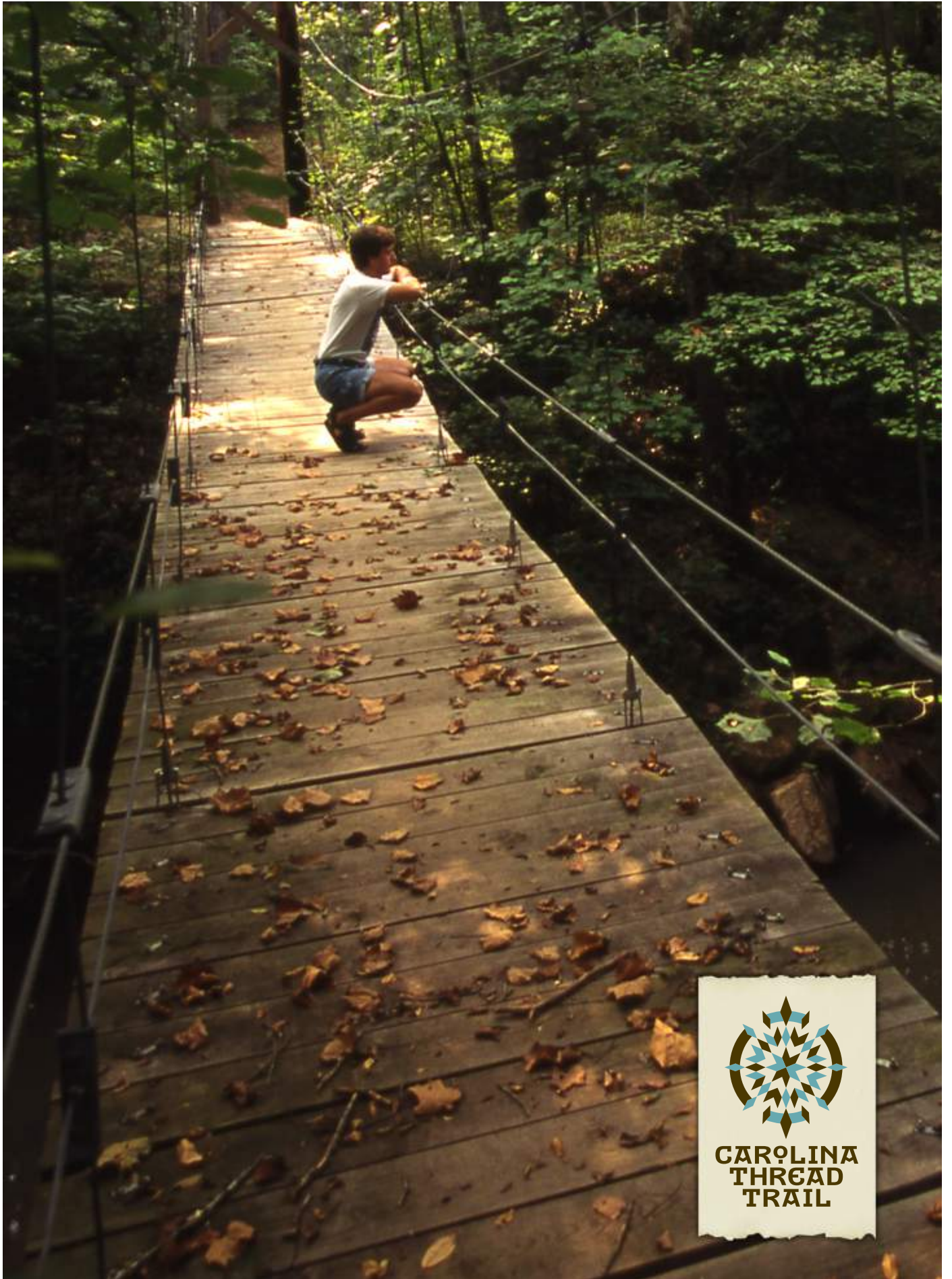
*Weaving
Communities
Together*

AUGUST 2009



VISION STATEMENT

A network of bicycle and pedestrian trails will connect the communities, businesses, schools, parks and other attractions of Cabarrus County, offering valuable opportunities for recreation, transportation, and economic development. This network of trails will also contribute to the future viability of the County through the conservation of open space along trail corridors, protecting natural habitats, water resources, and cultural resources. The trails will be open to all, providing positive opportunities for active living among neighbors, coworkers, families, visitors, and friends. In addition, Cabarrus County will feature its own portion of the Carolina Thread Trail, linking the local trail network to people and places throughout the 15-county region.



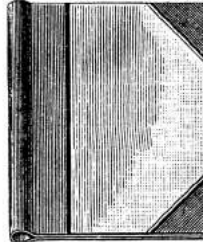


TABLE OF CONTENTS

ACKNOWLEDGEMENTS	6
EXECUTIVE SUMMARY	8
CHAPTER 1: INTRODUCTION	
Carolina Thread Trail	12
CHAPTER 2: PUBLIC BENEFITS OF TRAILS AND GREENWAYS	
Trails Enhance Value of Real Estate	14
Trail Tourism Creates Economic Impacts	16
Bicycle and Pedestrian Transportation	17
Improving Health through Active Living	18
Clear Skies, Clean Rivers, and Protected Wildlife	18
Protecting People and Property from Flood Damage	19
Enhancing Cultural Awareness and Community Identity	19
CHAPTER 3: EXISTING CONDITIONS	
Geography of the Study Area/Land Cover	20
Population	20
Economy	21
Development Trends	22
Existing Parks and Trails	22
Community Plans	25
Destinations	28
CHAPTER 4: PROPOSED TRAIL NETWORK	
Planning Process	30
Greenway Master Plan Trail Routes	31
Description of CTT Route by Segment	39
CHAPTER 5: RECOMMENDED ACTIONS FOR IMPLEMENTATION	
Adopt this Plan	44
Build Public Support	44
Complete Priority Greenway Segments	45
Define Funding and Financing	46
Evaluate Land or Right-of-Way Acquisition	48
Design, Construct and Maintain Trails	49
CHAPTER 6: CONCLUSION	50



MAPS:

All Proposed Trail Connections for Cabarrus County, NC	32
Proposed Trail Connections for Concord, NC	33
Proposed Trail Connections for Harrisburg, NC	34
Proposed Trail Connections for Kannapolis, NC	35
Proposed Trail Connections for Midland, NC	36
Proposed Trail Connections for Mt. Pleasant, NC	37
CTT - Proposed Connections by Segment	38

TABLES:

Table 1: A Demographic View of Cabarrus County and the Metropolitan Area	20
Table 2: Population Change of Cabarrus County's Largest Municipalities	21
Table 3: An Economic View of Cabarrus County and the Metropolitan Area	22
Table 4: Local Conservation Financing Options in North Carolina	47

APPENDICES:

Appendix I: Carolina Thread Trail Public Meeting Summary	52
Appendix II: Public Comment Form Summary	54
Appendix III: Funding and Financing	60
Appendix IV: Conservation Toolbox	78
Appendix V: Design Guidelines	84

FOOTNOTES	112
------------------------	-----



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:

Cabarrus County

Cabarrus County Tourism Authority

**Cabarrus Regional Chamber
Board of Directors**

Cabarrus Rowan MPO

City of Concord

City of Kannapolis

Town of Harrisburg

Town of Midland

Town of Mount Pleasant

Healthy Cabarrus

Cabarrus County Communities

Carolina Thread Trail

Steering Committee Members:

Jeff Ashbaugh
Site Solutions

Troy Barnhardt
Town of Mount Pleasant

Ellen Boyd
Kannapolis City Schools

Dr. John Benbow
Community Leader

Sharon Campbell
Cabarrus CVB

Andy Christy
City of Concord Business and Neighborhood Services

Phil Conrad
Cabarrus-Rowan MPO

Mark Conversano
City of Concord Parks and Recreation

Adrian Cox
Town of Mount Pleasant

Brett Crosby
Cannon Memorial YMCA

Bennie Darden
Philip Morris USA- Manager of Community Affairs

Bob Dowless
City of Concord Parks and Recreation

Mike Downs
Cabarrus County

Gina Goff
Healthy Cabarrus, Cabarrus Health Alliance



Jeff Huss

Cabarrus County- Planning for Midland

David Joseph Hall, Jr.

Town of Harrisburg

Brian Hiatt

City of Concord

Coleman Keeter

WSACC

Mark Kincaid

City of Concord

Shawn Line

Town of Harrisburg

Colleen Nelson

Cabarrus County Planning

Rick Price

Town of Midland Planning and Zoning Commission

Jonathan Marshall

Cabarrus County Commerce

Gary Mills

City of Kannapolis

Daniel McClellan

Cabarrus Soil and Water Conservation

Alex Rankin

Carolina Thread Trail- Governing Board

Irene Sacks

City of Kannapolis

Eddie Smith

City of Kannapolis

Phil Stephens

CMC-Northeast Medical Center

Londa Strong

Cabarrus County Parks

Dennis Testerman

Cabarrus Soil and Water Conservation District

Ben Warren

City of Kannapolis

Josh Watkins

Town of Harrisburg

David Whitley

City of Concord

Joe Wilson

City of Concord Transportation

Jeff Young

City of Concord

Thanks also to the members of the Technical Advisory Team who assisted in collecting and analyzing data, and proposing alternative scenarios for consideration by the public and the steering committee: Jeff Ashbaugh (Site Solutions), Phil Conrad (Cabarrus-Rowan MPO), Adrian Cox (Town of Mount Pleasant), Colleen Nelson (Cabarrus County), Rick Price (Town of Midland), Londa Strong (Cabarrus County), Josh Watkins (Town of Harrisburg), and David Whitley (City of Concord).



EXECUTIVE SUMMARY

This report outlines a means for long-term coordination of greenway and trail development within the county, cities and towns in Cabarrus County to help promote the preservation and improvement of residents' quality of life. It builds on past plans to integrate all existing and proposed municipal and county trails with additional greenway/trail segments that will together create a comprehensive multi-use network for connecting people, places and destinations to each other and surrounding counties.

This plan is the outcome of a nine-month public process spearheaded by the Carolina Thread Trail initiative and supervised by a steering committee of representatives from municipal and county governments as well as 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 in order to create an interconnected trail system with major regional trails designated as The Carolina Thread Trail (CTT).

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, as applicable (See pages 32-38). Trails displayed in purple are those recommended for the CTT designation and trails in green are presented for consideration by local communities wishing to augment or create trail plans to further tie together the people and destinations of Cabarrus County communities. The trail routes in this plan are depicted with 1/4 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.

In sum, the 100-mile CTT route includes about six miles of existing trails, and it incorporates 77 miles of trails that were already proposed by local governments in Cabarrus

County, particularly from the Livable Community Blueprint. 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 and 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 to date:

ADOPT THIS PLAN

The first order of business will be to have Cabarrus County and all of the partner municipalities in the County adopt this plan and make it an official element of the comprehensive plan. In addition to adopting the Master Plan, some of the municipalities and the County may wish or need to make revisions to zoning ordinances, land development codes and other policies, plans and procedures that enable greenway development to take place. It will be incumbent upon each local government to properly assess the changes that are needed and to make these changes, amendments and policy decisions as soon as practically possible.

BUILD PUBLIC SUPPORT

One of the most important implementation steps is the continued involvement of residents in the future greenway development. It is recommended that the County constitute a Greenways and Trails Advisory Committee, either as a component of the County Parks and Recreation Department or as a stand alone advisory group to the Board of County Commissioners. This advisory group can provide valuable assistance, feedback, support and coordination on all aspects of implementation.



The County should also form partnerships with other local non-profits and consider convening a partnership among local governments, in particular park and recreation providers, to coordinate future greenway implementation. One of the goals with non-profits would be to work together to secure land and/or rights-of-way for greenway corridors.

COMPLETE PRIORITY GREENWAY SEGMENTS

This master plan has identified some top priority greenway corridors and projects that should be developed by the Cabarrus County and its partners. The CTT staff stands ready to assist the county and its partners with implementation, including providing catalytic grants that can jump start acquisition and trail development. In order to develop the future greenway system in an orderly and systematic manner, the following criteria is used to select trail segments for future phased development: *Proximity to population; available land/right-of-way; functionality; ease of development; and, available funding.* Based on this criteria, the following segments of Carolina Thread Trail are recommended as priorities (see map on page 38 for location of trail segments):

- Irish Buffalo Creek Corridor: Rowan County Line (Research Campus) to North Cabarrus Park
- Cabarrus Ave: Connector to Myers Park Greenway
- Rocky River Corridor: Clarke Creek to Harrisburg

DEFINE FUNDING AND FINANCING

It is recommended that local, state and federal funding is used to achieve implementation objectives. Page 46 offers a summary of possible funding sources for use in developing the Cabarrus County Greenway System, and Appendix III provides brief descriptions of many more funding sources available.

EVALUATE LAND OR RIGHT-OF-WAY ACQUISITION OPTIONS

Acquiring land and/or right of way for the countywide greenway system will be one of the most important objectives for the County and its partners. Methods of land acquisition can include donations, purchase, zoning/development regulations, developer contributions, etc. Descriptions of each method are provided in Appendix IV of this plan.

DESIGN, CONSTRUCT AND MAINTAIN TRAILS

Once the land or right-of-way for a trail segment has been acquired, trail design and development will follow. The three most common trail construction surfaces are granite screening, asphalt, and concrete. The trail design process should accurately describe the intended final use in order to fully understand the costs and potential savings when making a decision between one surface material over another. Appendix V offers detailed guidance for designing and constructing trails in Cabarrus County.

CONCLUSION

Through a collaborative planning process, community members in Cabarrus County articulated a vision for a community greenway system and put forth thoughtful recommendations for how best to connect people and places with trails throughout the county. The many community partners who have been involved in the planning process recognize the urgency of starting a county-wide and region-wide linear park system now, while opportunities still exist for making connections and linking important places. They also recognize that this plan will not be implemented overnight, and that while segments should begin appearing soon, it will take years, if not decades, to link them all together. The time to start is now.

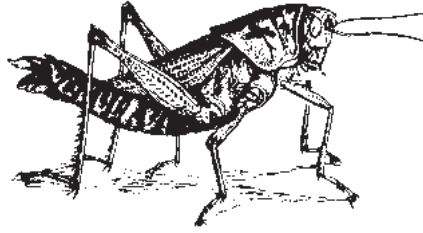
COMMUNITY INPUT



COMMUNITY INPUT



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

The Cabarrus County Greenway Master Plan defines a 100-year vision, 20-year master plan and 5-year action plan for developing an interconnected system of lands and waters that will conserve important natural resources and, over time, provide public access to some of the most scenic and important cultural areas of the County. Implementation of this plan will take place during the course of the next several decades, and it is important for all county residents to understand that participation in this greenway program will occur through a partnership with willing landowners. Most importantly, this Plan defines Cabarrus County's desire to be linked with a part of the 15-county regional Carolina Thread Trail (CTT, or 'The Thread'). Careful thought and consideration has been given to select routes and corridors that will become designated as elements of the Thread.

With oversight provided, a steering committee of municipal, county and interested non-governmental organizations, residents in Cabarrus County, North Carolina, participated in a locally-driven process to create this countywide Greenway Master Plan. This plan is meant to serve as a guiding document for greenway and trail development throughout the county.

This master plan includes an introduction to the benefits of greenways and trails, a description of current conditions in Cabarrus County, summary of the planning process, a concept map for a network of greenways and trails throughout the county, introduction to the Carolina Thread Trail and proposed route, and a description of recommended implementation steps. These action steps are intended to provide ideas for local governments to fund segments and expeditiously put them on the ground.

The Carolina Thread Trail initiative, which has helped to spur the development of this plan, is an effort to encourage

15 counties in the south-central piedmont of North Carolina and the north-central portion of South Carolina create a large, interconnected trail system that will preserve and increase the quality of life within the local communities. This plan presents a conceptual route for trails throughout the county, some of which will receive the CTT designation. Lands to be incorporated can include prime farmland, wildlife habitat, environmentally fragile lands, open fields and forests.

In general, 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 the sake of brevity, the word "trail" will be used throughout the plan to encompass both types of amenities.

CAROLINA THREAD TRAIL

The Carolina Thread Trail is a regional network of trails and conserved land that will reach approximately 2.3 million citizens. It will link people, places, cities, towns and attractions. The Thread will help preserve our natural areas and will be a place for the exploration of nature, culture, science and history, for family adventure and celebrations of friendship. It will be for young, old, and people of all abilities. This is a landmark project, and creates a legacy that will give so much, to so many, for so long.

The scale of the Carolina Thread Trail's connectivity is unparalleled and is based on certain guiding principles and core values: collaboration, community self determination, connectivity, inclusivity, leverage and respect for the land, and respect for landowners.



COLLABORATION AND SELF-DETERMINATION

Collaboration and communication among the communities of Cabarrus County is as important as connectivity. This master plan has been produced through a collaborative process in which trail corridors have been conceived and located in cooperation with adjoining communities in such a way that regional asset is created from a series of interrelated local decisions and actions.

CONNECTIVITY AND 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. In offering the vision of greater community interaction, the program seeks to build bonds among diverse neighborhoods, as well as afford all residents greater access to our natural surroundings. Through this master plan, these goals are established.

LEVERAGE

The success of this master plan depends on generating additional investment of outside capital in the county’s natural resources. Funding sources at the local, state and federal level are included in Chapter 5 and Appendix III.

RESPECT FOR THE LAND AND LANDOWNERS

During the planning process, Cabarrus County and its partners determined the locations for countywide greenways and segments of the Carolina Thread Trail by considering alternative routes and alignments that took into account public lands, property owned by landowners willing to participate in future greenway development and land developers that view greenways as an amenity to neighborhoods. The broadly defined greenway corridors

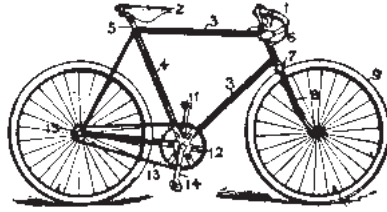
present multiple opportunities and adjustments for a defined route, so that landowners can continue to be involved in fine tuning and defining the location of trails and amenities. Expert trail builders indicate that trails are built by assimilating land parcels over time in this manner and that eminent domain is very rarely, if ever, used.

Through an inclusive, collaborative process, Cabarrus County and its partner municipalities have determined where the countywide greenway system will be developed and how this system links to the Carolina Thread Trail. Not all local trails and greenways are destined to be part of The Thread. Analogous to our highway systems, The Thread will be developed as a “green interstate” focused on linking local trails and regionally significant attractions. Other trails will continue to exist or be planned but may not receive The Thread designation. Local trails will retain their own identities, whether or not they are designated as part of The Thread.

The look and feel of the Carolina Thread Trail may vary from community to community, county to county. Designation as the Carolina Thread Trail will signify that a particular trail is part of a plan to create an interconnected system, and a plan created by local communities working together with their neighbors to identify connection points and to build trails that will grow together over time.



Respect for landowners is a guiding principle of The Thread.



CHAPTER 2. PUBLIC BENEFITS OF TRAILS AND GREENWAYS

When considering the dedication in time and resources that it will take to fulfill the goals of this plan, it is also important to measure the immense value of trails and greenways. Trails help to improve people's health and fitness, enhance environmental conditions, generate economic activity, and will contribute to a greater sense of community. Scores of studies from experts in the fields of public health, urban planning, urban ecology, real estate, transportation, sociology, and economics have supported such claims and have acknowledged the substantial value in supporting trails and greenways.

Communities across the United States and throughout the world are implementing strategies for greenway and trail development, and have been doing so for many years. They do this because of their obligations to promote health, safety and welfare, and also because of the growing awareness of the many public benefits outlined below.

TRAILS ENHANCE VALUE OF REAL ESTATE

There are many examples, both nationally and locally, that affirm the positive connection between greenspace and property values.¹ Residential properties will realize a greater gain in value the closer they are located to trails and greenspace. In the 2007 *Economic Impact Study: The Potential Economic Impacts of the Proposed Carolina Thread Trail*, homes in the affected area of the Carolina Thread Trail are estimated to increase approximately 4% in value after trail construction.

According to a 2002 survey of homebuyers by the National Association of Home Realtors and the National Association of Home Builders, trails ranked as the second most important community amenity out of a list of 18 choices.² Additionally, the study found that 'trail availability' outranked 16 other options including security, ball fields, golf courses, parks, and access to shopping or business centers.

Examples of where this is true in the region are as follows:

Testimonial from Bill Gartland, VP, Crosland:

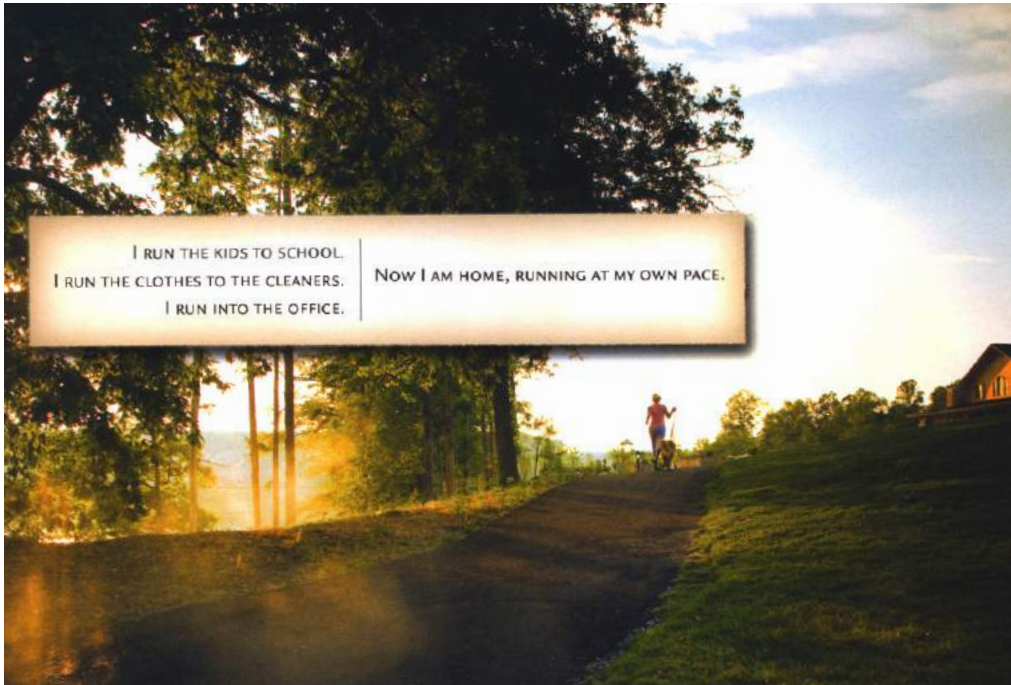
"We feel that greenway trails are a great amenity for residential & mixed use developments as walking trails and open space are critical elements for making great places. It is difficult to quantify the impact of incorporating greenways on property values as they are only one component of the amenity package which include parks, pools etc., in our communities. However, homes that front on significant greenway space are easier to sell and do often generate premiums of 5% of more than comparable homes internal to the neighborhood." (Bill Gartland, Vice President, Crosland, 2006)

Testimonial from Ivan Jecklin, VP, Weinstein

Properties: "We market the (Bexley) greenway as great amenity for our residents. If we are looking at two equal properties and one had a greenway and the other did not, we would definitely go for the one with the greenway!" (Jecklin, 2006)

Findings from the Trust for Public Land's *Economic Benefits of Parks and Open Space*, and the Rails-to-Trails Conservancy's *Economic Benefits of Trails and Greenways* (listed below) illustrate how the value of trails is realized in property value across the country:

- Apex, NC: The Shepard's Vineyard housing development added \$5,000 to the price of 40 homes adjacent to the regional greenway – and those homes were still the first to sell.³



I RUN THE KIDS TO SCHOOL.
I RUN THE CLOTHES TO THE CLEANERS.
I RUN INTO THE OFFICE.

NOW I AM HOME, RUNNING AT MY OWN PACE.

Developers are taking advantage of the positive impact of trails on property values by marketing their greenways; left and below are examples of two magazine advertisements from North Carolina developers that focus their marketing on greenways.



I WANT
top schools nearby
my kids to get fresh air
my kids to have lots of friends
our TV to be ignored

A place where video games get lonely from lack of use. A place where people are always going somewhere—families hiking on the miles of trails, or kids biking to our onsite top-rated schools. A place with best-in-class amenities, including a huge Aquatic Club. A place with a natural setting and tight-knit neighbors that always seem to be doing something together. All this and beautiful homes to match? That's FishHawk Ranch.





- Front Royal, VA: A developer who donated a 50-foot-wide, seven-mile-long easement along a popular trail sold all 50 parcels bordering the trail in only four months.
- Salem, OR: land adjacent to a greenbelt was found to be worth about \$1,200 and acre more than land only 1000 feet away.
- Oakland, CA: A three-mile greenbelt around Lake Merritt, near the city center, was found to add \$41 million to surrounding property values.
- Seattle, WA: Homes bordering the 12-mile Burke-Gilman trail sold for six percent more than other houses of comparable size.
- Brown County, WI: Lots adjacent to the Mountain Bay Trail sold faster for an average of nine percent more than similar property not located next to the trail.
- Dayton, OH: Five percent of the selling price of homes near the Cox Arboretum and park was attributable to the proximity of that open space.

TRAIL TOURISM CREATES ECONOMIC IMPACTS

Tourism and recreation-related revenues from trails and greenways come in several forms. Trails and greenways create opportunities in construction and maintenance, recreation rentals (such as bicycles, kayaks, and canoes), recreation services (such as shuttle buses and guided tours), historic preservation, restaurants and lodging.

In Cabarrus County, the tourism benefits of trails and greenways are becoming known and quantified, as described by the following:

Testimonial from John Cox, CEO, Cabarrus Regional Partnership: “Cox said he feels a pathway (along the Rocky River in Concord) connecting the golf club with the hotel would be a certain draw for tourists, adding that a walkway encompassing the entire Concord Mills and Lowe’s Motor Speedway area would be ideal for the area.” (Independent Tribune, 2006. In reference to Cabarrus Regional Partnership CEO, John Cox)

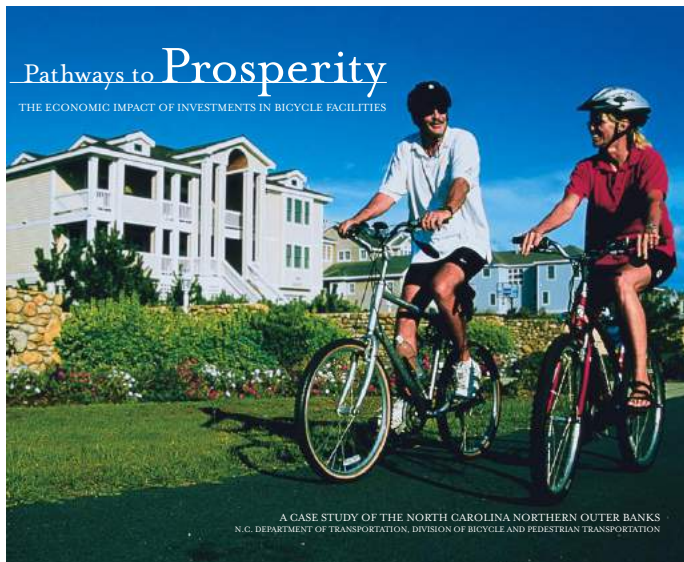
Expected tourism benefits from the fully built-out multi-county trail in the 2007 Potential Economic Impacts of the Proposed Carolina Thread Trail study are \$42-\$84 million in new tourism spending for the local economy and \$3-\$6 million in additional state and local tax revenues.

Other Tourism related benefits include:

- The Outer Banks, NC: Bicycling is estimated to have an annual economic impact of \$60 million and 1,407 jobs supported from the 40,800 visitors for whom bicycling was an important reason for choosing to vacation in the area. The annual return on bicycle facility development in the Outer Banks is approximately nine times higher than the initial investment.⁴
- Damascus, VA: At the Virginia Creeper Trail, a 34-mile trail in southwestern Virginia, locals and non-locals spend approximately \$2.5 million annually related to their recreation visits. Of this amount, non-



Download this full report, "Pathways to Prosperity" from:
http://ncdot.org/transit/bicycle/safety/safety_economicimpact.html



local visitors spend about \$1.2 million directly in the Washington and Grayson County economies.⁵

- Morgantown, WV: The 4.5-mile Mon River trail system is credited by the Convention and Visitors Bureau for revitalizing an entire district of the city, with a reported \$200 million in private investment as a direct result of the trail.⁶
- San Antonio, TX: Riverwalk Park, created for \$425,000, has surpassed the Alamo as the most popular attraction for the city's \$3.5-billion tourism industry.⁷
- Tallahassee, FL: The Florida Department of Environmental Protection Office of Greenways and Trails estimate an economic benefit of \$2.2 million annually from the 16-mile St. Marks Trail.⁸

- Pittsburgh, PA: Mayor Tom Murphy credits trail construction for contributing significantly to a dramatic downtown revitalization.
- Allegheny Passage, PA: The direct economic impact of the trail exceeded \$14 million a year, encouraging the development of several new businesses and a rise in property values in the first trailhead town.
- Leadville, CO: In the months following the opening of the Mineral Belt Trail, the city reported a 19 percent increase in sales tax revenues.
- Dallas, TX: The 20-mile Mineral Wells to Weatherford Trail attracts 300,000 people annually and generates local revenues of two million dollars.

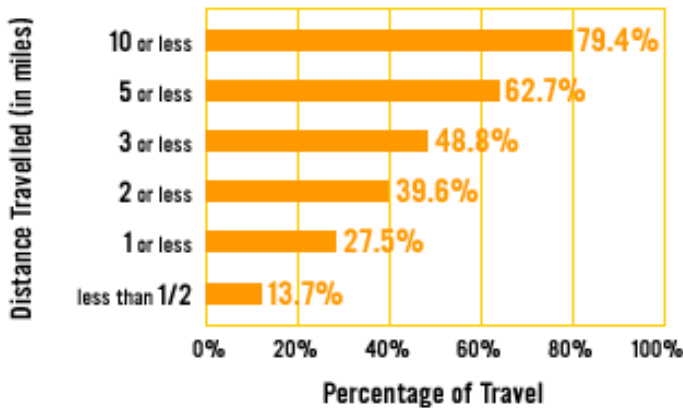
BICYCLE AND PEDESTRIAN TRANSPORTATION

The sprawling nature of many land development patterns often leaves residents and visitors with no choice but to drive, even for short trips. In fact, two-thirds of all trips we make are for a distance of five miles or less. Surveys by the Federal Highway Administration show that Americans are willing to walk as far as two miles to a destination and bicycle as far as five miles. A complete trail network, as part of the local transportation system, will offer effective transportation alternatives by connecting homes, workplaces, schools, parks, downtown, and cultural attractions.

Greenway networks can provide people with alternative transportation links that are currently unavailable. Residents who live in subdivisions outside of downtown areas are able to walk or bicycle downtown for work, or simply for recreation.



'Daily Trip Distances' chart from the Bicycle and Pedestrian Information Center website, www.pedbikeinfo.org



Also, regional connectivity through alternative transportation could be achieved once adjacent trail networks are completed and combined.

Additionally, many people do not have access to a vehicle or are not able to drive. According to the National Household Travel Survey (NHTS), one in 12 U.S. households does not own an automobile and approximately 12 percent of persons 15 or older do not drive.⁹ An improved greenway network provides greater and safer mobility for these residents.

IMPROVING HEALTH THROUGH ACTIVE LIVING

A region's trail network will contribute to the overall health of residents by offering people attractive, safe, accessible places to bike, walk, hike, jog, skate, and possibly places to enjoy water-based trails. In short, the trails network will create better opportunities for active lifestyles. The design of our communities—including towns, subdivisions, transportation systems, parks, trails and other public recreational facilities—affects people's ability to reach the recommended 30 minutes each day of moderately intense physical activity (60 minutes for youth). According to the Centers for Disease Control and

Prevention (CDC), "Physical inactivity causes numerous physical and mental health problems, is responsible for an estimated 200,000 deaths per year, and contributes to the obesity epidemic".¹⁰

In identifying a solution, the CDC determined that by creating and improving places in our communities to be physically active, there could be a 25 percent increase in the percentage of people who exercise at least three times a week.¹¹ This is significant considering that for people who are inactive, even small increases in physical activity can bring measurable health benefits.¹² Additionally, as people become more physically active outdoors, they make connections with their neighbors that contribute to the health of their community.

Many public agencies are teaming up with foundations, universities, and private companies to launch a new kind of health campaign that focuses on improving people's options instead of reforming their behavior. A 2005 Newsweek Magazine feature, *Designing Heart-Healthy Communities*, cites the goals of such programs (*italics added*): "The goals range from updating restaurant menus to restoring mass transit, but the most visible efforts focus on making the built environment more conducive to walking and cycling."¹³ Clearly, the connection between health and trails is becoming common knowledge. The Rails-to-Trails Conservancy puts it simply: "Individuals must choose to exercise, but communities can make that choice easier."

CLEAR SKIES, CLEAN RIVERS, AND PROTECTED WILDLIFE

There are a multitude of environmental benefits from trails, greenways, and open spaces that help to protect the essential functions performed by natural ecosystems. Greenways protect and link fragmented habitat and provide opportunities for protecting plant and animal species. Trails and greenways



reduce air pollution by two significant means: first, they provide enjoyable and safe alternatives to the automobile, which reduces the burning of fossil fuels; second, they protect large areas of plants that create oxygen and filter air pollutants such as ozone, sulfur dioxide, carbon monoxide and airborne particles of heavy metal. Greenways improve water quality by creating a natural buffer zone that protects streams, rivers and lakes, preventing soil erosion and filtering pollution caused by agricultural and road runoff. According to the 2007 *Economic Impact Study: The Potential Economic Impacts of the Proposed Carolina Thread Trail*, 130 tons of air particulate matter would be removed per year with the associated multi-county greenway tree cover.

As an educational tool, trail signage can be designed to inform trail-users about water quality issues particular to each watershed. Such signs could also include tips on how to improve water quality. Similarly, a greenway can serve as a hands-on environmental classroom for people of all ages to experience natural landscapes, furthering environmental awareness.

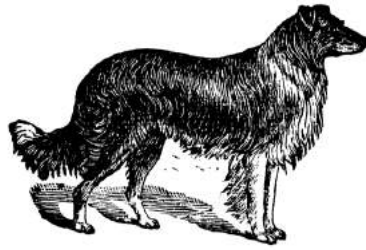
PROTECTING PEOPLE AND PROPERTY FROM FLOOD DAMAGE

The protection of open spaces associated with trail and greenway development often also protects natural floodplains along rivers and streams. According to the Federal Emergency Management Agency (FEMA), the implementation of floodplain ordinances is estimated to prevent \$1.1 billion in flood damages annually. By restoring developed floodplains to their natural state and protecting them as greenways, many riverside communities are preventing potential flood damages and related costs.¹⁴

ENHANCING CULTURAL AWARENESS AND COMMUNITY IDENTITY

Trails, greenways, and open space can serve as connections to local heritage by preserving historic places and by providing access to them. They provide a sense of place and an understanding of the past by drawing greater public attention to historic and cultural resources. Trails often provide access to historic sites such as battlegrounds, bridges, buildings, and canals that otherwise would be difficult to access or interpret. Each community and region has its own unique history, its own features and destinations, and its own landscapes. By recognizing, honoring, and connecting these features, the combined results serve to enhance cultural awareness and community identity, potentially attracting tourism. Being aware of the historical and cultural context when naming parks and trails and designing features will further enhance the overall trail- and park-user experience.

Finally, greenways provide opportunities for people to interact with one another outside of work and their immediate neighborhood. Positive interaction (such as through exercising, strolling, or even just saying 'hello') among people from a wider community helps to build trust and awareness of others, which strengthens the overall sense of community.



CHAPTER 3. EXISTING CONDITIONS

GEOGRAPHY OF THE STUDY AREA/LAND COVER

Cabarrus County is situated in the gently rolling countryside of the Carolina Piedmont nestled between Rowan County to the North, Stanly County to the East, Union County to the South, Mecklenburg County to the West, and Iredell County to the Northwest.

There are no significantly high peaks or points, although the eastern half of the county contains the westernmost foothills of the Uwharrie Mountains. Altitude ranges from approximately 500 to 800 feet above sea level. The longest waterway within the county is Rocky River, which rises in Iredell County and empties into the Pee Dee below Norwood in Stanly County. The land slope is generally toward the southeast. According to the U.S. Census Bureau, the county has a total area of 365 square miles, of which, 364 square miles of it is land and 1 square miles of it (0.16%) is water.

Cabarrus County is divided into twelve townships; Central Cabarrus, Harrisburg, Concord, Poplar Tent, Odell, Kannapolis, New Gilead, Rimertown, Gold Hill, Mount Pleasant, Georgeville, and Midland. A few of the largest cities and towns within Cabarrus County include Concord, Kannapolis, Harrisburg, Mt. Pleasant, and Midland.

Cabarrus County was formed in 1792 in honor of the popular Speaker of the House of Representatives, Stephen Cabarrus of Chowan County. Agriculture and gold mining were the primary trades within the county until it was discovered that the soil was ideal for growing cotton in the late 1800's. This discovery led to several large cotton mills throughout the region which flourished because of the rail road and the mills' nearby location to Charlotte and other large cities. Both Concord and Kannapolis had large textile mills which helped spark the population boom within the area.

POPULATION

As of the 2000 Census, there were 131,063 people and in 2006 the population had increased 19% to 156,395 (2006 American Community Survey). This population increase was among the highest in the region may be attributed, in part, to the economic boom from the I-85 corridor such as Lowe's Motor Speedway and Concord Mills Mall as well as the completion of the western portion of I-485; decreasing availability of affordable land in Mecklenburg County; expansion of the Charlotte Douglas International Airport; and increasing commercial/industrial businesses

Table 1:

A Demographic View of Cabarrus County and the Metropolitan Area

	North Carolina	Cabarrus	Gaston	Lincoln	Mecklenburg	Rowan	Union	York
Population	8,856,505	156,395	199,397	71,894	827,445	136,254	175,272	208,827
Population Growth Since 2000	10.0%	19.0%	5.0%	13.0%	19.0%	5.0%	42.0%	26.0%
Hispanic/Latino	4.7%	8.0%	5.0%	N/A	10.0%	6.1%	9.0%	3.0%
White	72.1%	81.0%	79.0%	N/A	60.0%	77.7%	82.0%	77.0%
Black or African American	21.6%	15.0%	14.0%	N/A	30.0%	15.0%	12.0%	19.0%

Source: US Census Bureau, 2006 American Community Survey



in Cabarrus County. Quality of life draws some who want to live in small towns and gain employment and other opportunities of a nearby city.

As seen below, cities and towns within Cabarrus County also grew at rates greater than 19% from 2000 to 2007. The small towns of Harrisburg and Midland experienced the most growth of over 30% while the larger cities of Concord and Harrisburg had growth greater than 19%.

Table 2:
Population Change of Cabarrus County's Largest Municipalities

	2000	2007	% Increase
Concord	55,977	71,071	26.96
Harrisburg	4,493	5,954	32.52
Kannapolis	27,890	33,448	19.93
Midland	2,375	3,121	31.41
Mount Pleasant	1,259	1,514	20.25

Source: The State Demographer's Office

From 2005-2007 there were 60,000 households in Cabarrus County. The average household size was 2.6 people. Families made up 71 percent of the households in Cabarrus County. The median age was 35.6 years. Twenty-seven percent of the population was under 18 years and 11 percent was 65 years and older.

Cabarrus County had a total of 65,000 housing units, eight percent of which were vacant. Of the total housing units, 76 percent was in single-unit structures, 15 percent was in multi-unit structures, and nine percent was mobile homes. Forty-three percent of the housing units were built since 1990.

Eighty-five percent of people 25 years and over had at least graduated from high school and 22 percent had a bachelor's degree or higher. Fifteen percent were dropouts; they were not enrolled in school and had not graduated from high school. The total school enrollment in Cabarrus County was 39,000.

Eighty-three percent of Cabarrus County workers drove to work alone, 11 percent carpooled, less than 0.5 percent took public transportation, and 2 percent used other means. The remaining four percent worked at home. Among those who commuted to work, it took them on average 26.5 minutes to get to work. (American Community Survey 2005-2007)

ECONOMY

Employment and industry today in Cabarrus County has diversified from relying on textile and agricultural to a more rounded economy. Today the economy relies on manufacturing 12%, trade transportation and utilities 22%, professional and business services 11%, educational and health services 22%, and leisure and hospitality 15%. The top ten largest employers in Cabarrus County are Cabarrus County Schools, Northeast Medical Center, Wal-Mart Assoc (trade transportation and utilities), Cabarrus County, City of Concord, Connexions Inc (professional and business services), Kannapolis City Schools, The Shoe Show of Rocky Mount Inc (trade transportation and utilities), and Food Lion LLC (trade transportation and utilities). (ES NC Labor Market Information—Workforce In Depth)

The Cabarrus County School System services the entire county with the exception of parts of Kannapolis, which operates its own school district. The system is generally regarded as one of the better school districts in the state with high student achievement and low instances of violence and other problems.



The county is also home to Barber-Scotia College, the Cabarrus College of Health Sciences, and a branch of Rowan-Cabarrus Community College. UNC Charlotte, although in Mecklenburg County, is actually located near Harrisburg and is easily accessible to Cabarrus residents via Interstate 85.

As seen below, the unemployment rate as of June 2009 was at 11.1%, which was almost identical to the North Carolina unemployment rate of 11.2%. The median household income was \$51,927 and persons below poverty was at 11.1%.

Table 3:
An Economic View of Cabarrus County and the Metropolitan Area

	<i>Persons Below Poverty Percent</i>	<i>Median Household Income</i>	<i>Unemployment Rate</i>
Cabarrus	11.1%	\$51,927	11.7%
Gaston	14.8%	\$42,292	15%
Lincoln	10.5%	\$49,250	14.6%
Mecklenburg	11.0%	\$56,114	11.5%
Rowan	12.3%	\$46,071	13.1%
Union	7.9%	\$60,612	11.3%

Source: US Census Bureau, 2007 American Community Survey and the Employment Security Commission of North Carolina—June 2009 Unemployment figures

DEVELOPMENT TRENDS

Currently, Cabarrus County population projections indicate a strong growth in the western portions of the county, as nearby metropolitan Charlotte grows northeastward. The Charlotte metropolitan area will continue to grow at a rapid rate, which will continue to impact Cabarrus County. The metropolitan area has been cited by publications such as Fortune and Money magazines as some of the best places to live and do business and is seeing rapid business growth

throughout the County. Due to this high growth, there will be shortages of undeveloped land and increasing traffic congestion. Road improvements will help mitigate these problems in the long term, but pose other problems such as creating physical barriers to citizens trying to access destinations by foot or bicycle.

The University of North Carolina Charlotte Urban Institute, a non-partisan applied research and community outreach center, found that the 15-county region surrounding Charlotte and including Cabarrus County is losing open space at a rate of forty-one acres per day. As of 2006 there was 28% of the land developed within Cabarrus County and by 2025 this is expected to grow to 60%. This study shows that Cabarrus has lost over 60% of its undeveloped land since 1976. With this high amount of growth projected smart land use and transportation planning is critical to preserve open space and provide opportunities for pedestrians and bicyclists for transportation and recreation throughout the County. (<http://www.gis.uncc.edu/OSPC/summary/>)

Therefore, with the current and expected growth throughout the County, it will be important for the County and the various Cities and Towns to actively work together in pursuing planning and constructing parks, open space, greenways/trails, and alternative transportation facilities (pedestrian and bicycle).

EXISTING PARKS AND TRAILS

Cabarrus County Parks and Recreation operates four countywide parks and thirty-nine school park sites. These parks provide more than 400 acres of passive and active recreational space. Several of the towns and cities within Cabarrus County also operate parks. The cities of Concord,



Walkway at Phar Mill Road Park



Kannapolis, and Harrisburg each have city operated parks and the towns of Midland and Mt. Pleasant each have parks operated by the County.

The 2002 Livable Community Blueprint for Cabarrus County provided the County with recommendations for additional park and pedestrian and bicycle transportation facilities. Public input was used to help formulate the recommendations and a few of the major findings from surveys included:

- Residents are concerned about the rapid rate of growth in the county and feel that land acquisition for parkland is critical.
- Residents of Cabarrus County are very interested in visiting passive parks and participating in nature based activities.
- Access to safe Bicycle and Pedestrian Transportation Routes are a high priority for residents.
- There are currently few, safe routes for bicyclists and pedestrians on which to travel to schools, parks or work.
- Residents feel that the community should provide them access to recreation programs and parks.
- The primary reason people do not participate in public recreation is because they do not know what is available.
- A majority of residents would support a property tax increase to fund public recreation.

Additionally the survey also revealed that 48% of the survey respondents wanted more bike paths built and 49% wanted sidewalks on all new roads. This shows a support for the establishment of bicycle and pedestrian routes throughout the Cabarrus South Rowan MPO area. Twenty-two percent of the respondents commuted (one way) between 6-10 miles. It also shows that another 25% of the respondents commuted to work less than 5 miles. Both of these distances are reasonable for a bicycle commute.

The cities and towns current activities as related to parks and greenways are as follows:

The City of Concord has the most city operated parks, ten, and two completed greenways. The parks in Concord include; Lake Fisher, Dorton Park, Rocky River Golf Course, Academy Park, Gibson Field, W.W. Flowe Park, Caldwell Park, Hartsell Park, Les Myers Park, and Beverly Hills Park. The greenways include The Village Greenway and Harold B. McEachern Greenway. Additionally the Rocky River Greenway is being planned and Phase 1 will span from a commercial area along Weddington Road just east of Concord Mills Mall and the popular Lowe's Motor Speedway. This greenway has the potential to connect Concord residents and visitors to the scenic Rocky River, the popular Lowe's Motor Speedway, the Rocky River Golf Club, the Concord Convention Center and restaurants as well as destinations reachable with future greenway development such as the Concord greenway system, Concord Mills Mall and ultimately Charlotte and the Mecklenberg County greenway system. The City of Concord is also expanding the current greenway system by adding a new greenway trail in the downtown area. (City of Concord Online)



The City of Kannapolis operates six parks and two greenways. The parks include; Bakers Creek Park, Veterans Park, Village Park, Walter M Safrit Park, Kannapolis Middle School Athletic Fields, Dale Earnhardt Tribute Plaza, and the Kannapolis Cemetery. The two greenways within Kannapolis include the 8th Street Greenway and the Baker Creek Greenway. The City of Kannapolis is planning to have a 2-mile loop from Bakers Creek Park, along West A Street, up 8th Street to Loop Road and over to Village Park. (City of Kannapolis Online)

The Town of Harrisburg currently operates Harrisburg Park and Stallings Road Park within the city. (City of Harrisburg Online)

The Town of Midland has one park run by the County which is located behind the current Bethel Elementary. (Cabarrus County Online)

The Town of Mt. Pleasant is creating a Parks and Recreation Advisory Board to begin the initial steps of creating parks within the town. Mt. Pleasant is also planning the Mt. Pleasant Greenway which will encircle the southern portion of the town. (Town of Mt. Pleasant Online)

COMMUNITY PLANS

Many of the planning documents from the local municipalities and Cabarrus County share open space, greenway, and alternative transportation (pedestrian and bicycle) goals. Several of these plans mention the need for greenways and their importance to the community with health, economic viability, connectivity, and open space preservation.

Livable Community Blueprint for Cabarrus County (2002)

The Livable Community Blueprint for Cabarrus County provides recommendations to the county and municipalities on how to serve its citizens with convenient parks and recreational services. Providing pedestrian and bicycle networks and facilities is a large part of this plan and was in fact, one of the top needs identified through the public facilitation processes. This plan recommends several major "spines" for off-road facilities as well as eighteen bicycle and pedestrian connector corridors throughout the county. Support for greenways and trails is shown throughout this plan and a few excerpts to highlight this are below:

- Goal: Acquire parkland for future recreation use; Recommendation: Pursue avenues available to preserve designated bicycle and pedestrian corridors for public access. (Page 12 of the 2002 'Blueprint')
- Goal: Develop parks and facilities; Recommendation: Develop parks that are safely accessible by the public from alternative transportation routes (i.e. bike/pedestrian corridors). (Page 13 of the 2002 'Blueprint')
- Goal: Create a transportation plan that will provide for a diverse and safe environment for bicycles and pedestrians to access a variety of destinations and services.

Major recommendations from the 2002 'Blueprint':

- Link residences with major commercial and service centers, health care centers, public facilities, and



outdoor resources via alternative routes of access.

- Recognize that public utilities access virtually all destinations and sites. Develop priorities to include a public access component to all new and existing public utility rights of way.
- Develop routes for pedestrians and cyclists as part of a multi-modal transportation system for the Cabarrus South Rowan MPO area.
- Develop bike trail corridors which link existing and proposed recreation facilities to provide alternative access to parks and historic sites across the county.
- Acquire land and/or easements for public access.
- Promote recreation easements and open space corridors through existing and future development areas for use as linear parks. (Page 14 of the 2002 'Blueprint')

Kannapolis Walkable Community Plan (2006)

The Kannapolis Walkable Community Plan offers suggestions on improvements to the pedestrian network within Kannapolis by indentifying problems with the existing conditions and evaluating solutions. Most of the suggested solutions are street specific but there are several recommendations for off-street greenway connectors throughout the community to connect to the larger pedestrian network.

City of Concord Land Use Plan (2006)

The Concord Land Use Plan was developed to provide goals, guidance, and recommendations for the many various planning realms within the community. This plan set forth

and built upon several recommendations for greenways and bicycle and pedestrian facilities from Cabarrus County plans. Greenways and off-road pedestrian and bicycle facilities are mentioned throughout this plan which demonstrates their importance. Below are some relevant excerpts from the plan:

- Goal 2 – Vehicular and Pedestrian Connectivity: Encourage and promote both vehicular and pedestrian connectivity between residential, employment, commercial, and recreational uses. (Chapter 3 page 6 of the Concord Land Use Plan)
- “Designate the routes identified in the Livable Community Blueprint as priority routes to pursue in the development of safe and user-friendly pedestrian and bicycle corridors.” (Chapter 3 page 7 of the Concord Land Use Plan)
- “Encourage new developments to incorporate off-road facilities for bicycles and pedestrians.” (Chapter 3 pg 7 of the Concord Land Use Plan)
- “On an on-going basis, seek partnerships and funding to develop an interconnected greenway system throughout the community and the region.” (Chapter 3 page 7 of the Concord Land Use Plan)
- “Endorse recommendation of Envision Cabarrus to include sidewalk, bikeways, and greenways that connect neighborhoods and create walkable neighborhoods by revising the UDO as necessary to ensure such facilities are constructed.” (Chapter 3 page 11 of the Concord Land Use Plan)



- “Revise the UDO to include language to facilitate the Develop “green buffers” along key corridors that would include the development of additional open space and landscaping requirements for new development, as well as pedestrian/biking amenities that will help to link up with the greenways.” (Chapte 3 page 11 of the Concord Land Use Plan)
- “Support efforts to promote and establish greenways that can be used for bicycle and pedestrian corridors.” (Chapter 3 page 17 of the Concord Land Use Plan)
- “... strong support should be given to the recommendations provided in the Livable Community Blueprint, which suggests developing a citywide greenway system and nature-based parks while there is still an abundant supply of undeveloped land. In addition, the preservation and enhancement of major corridors into the City can be accomplished through the development of landscaping and buffering incentives or regulations. These scenic “green” corridors can include pedestrian and bike pathways, which can provide linkages to the planned greenway network.” (Chapter 4 page 16 of the Concord Land Use Plan)
- “The Livable Community Blueprint identifies extensive bicycle and pedestrian systems for the City of Concord. The major north-south connectors are designated routes that generally run along creeks and the river. Others connect east-west along roads or off-road through undeveloped land. In rural areas natural connections between larger undeveloped open space areas such as regional, state or national parks have been preserved and termed “greenways.” In urban and suburban areas,

narrower corridors connect natural or man-made features and provide alternative transportation routes and recreational sites accommodating such activities as picnicking, jogging, walking, biking or equestrian paths.” (Chapter 4 pg 21)

Kannapolis Land Use Plan (2004)

The Kannapolis Land Use Plan was developed to provide recommendations for the many various planning realms within the city. This plan concentrated at eight areas of the community and each area has recommendations for greenways and pedestrian corridors within them. Greenways are mentioned throughout this plan which demonstrates their importance.

Harrisburg Area Plan (2001)

The Harrisburg Area Plan, though dated, does realize the importance of pedestrian and bicycle facilities. It notes the inadequate facilities throughout the community and calls for more planning activities focused on these modes of transportation. The plan also mentions two greenway connections to Charlotte and recognizes the need for more greenways throughout the community and county.

Cabarrus County Central Area Plan (2008)

The Cabarrus County Central Area Plan was created to guide and recommend controlled growth and development patterns in this fast growing region of the county. As this area grows, prior planning will be more important. This plan supports greenways and in fact, one of the goals is to “provide greenways and other facilities for enhanced mobility for bicycles and pedestrians.” Below are some relevant excerpts from the plan that show the overall support for greenways within the county:



- “By overlapping the pedestrian attractors, existing routes, and green infrastructure an alternative system of greenways, trails, and on-street bicycle routes were identified. Taken as a group, these non-motorized recommendations represent a strategy to connect people with places in a safe and inviting environment. The simultaneous consideration of existing routes and attractors revealed locations with little to no alternative access which quickly became priorities to seek connections. Where feasible, off street greenway connections were sought in order to be consistent with the rural character of the area.” (Page 33 of the Cabarrus County Central Area Plan)
- “Bicycle and pedestrian amenities will be considered as part of the “green street” concept, with a sidewalk or greenway rather than sidewalks to be environmentally sensitive.” (Page 35 of the Cabarrus County Central Area Plan)

Cabarrus County Trail Design Standards

This document summarizes the different corridor types suitable for trail and greenway development into a tier system. Each tier is then detailed for their various characteristics. The document then describes different situations and scenarios trail development may encounter such as flood plains, easements, rail road corridors, highway corridors, trail types, culverts, bridges, bollards, underpasses, and street and rail crossings.

Concord Parkway /Roberta Church Road Small Area Plan (2005)

This small area plan helped develop a vision for the area in Concord between the Coddle Creek floodplain and the

proposed George W. Liles Parkway extension to Roberta Church Road. Weddington Road and Concord Parkway served as the northern and southern boundaries of the plan area. The plan recommends the extension of a greenway along the Coddle Creek floodplain as well as the preservation of key open spaces throughout the area. The path of the Great Wagon Road is preserved as an active interpretive trail. Additionally, a multi-use path system is recommended along the north side of Concord Parkway.

NCDOT Countywide Bicycle Brochure/Map

This brochure shows a 200 mile system of bicycle routes with three signed routes totaling 155 miles and 45 miles of unsigned connectors within Cabarrus County. These routes link historic districts, shopping, restaurants, hotels, and many points of interest.

DESTINATIONS

Cabarrus County offers many destinations for residents and visitors to travel to. While, all of these destinations can be reached by an automobile few can be reached safely by a pedestrian or bicyclist. Therefore it is important to link these destinations together with county wide pedestrian and bicycle facilities such as greenways and trails. Through public input sessions that were held during this planning process, the following destinations were mentioned most frequently.

Specific Destinations:

- 8th Street Park & Greenway
- Bakers Creek Park
- Camp Spencer Park
- Clarke Creek Rookery
- Concord Mills Mall
- Cox Mill Elementary



Dale Earnhardt Tribute
Downtown Concord
Downtown Harrisburg
Downtown Kannapolis
Downtown Midland
Downtown Mount Pleasant
Frank Liske Park
Great Philadelphia Wagon Road
Harrisburg Town Park
James L. Dorton Park
Kannapolis Recreation Park
Les Meyers Park
Lowe's Motor Speedway
Mount Pleasant Historical Museum
North Cabarrus Park
NC Research Campus
Reed Gold Mine
Safrit Park
Southeast Park
Village Park
W.W. Flowe Park

General Destinations:

Downtowns
Schools
Public parks, and existing trails and greenways
Historic areas
Retail centers/services
Neighborhoods
Museums
Libraries
Waterways
Natural areas
Public transportation connections



Downtown Concord



Frank Liske Park



NC Research Campus (DavidH.MurdockCoreLaboratory)



CHAPTER 4. PROPOSED TRAIL NETWORKS

PLANNING PROCESS

What follows is a description of the planning process for Cabarrus County communities that resulted in the recommended conceptual trail routes.

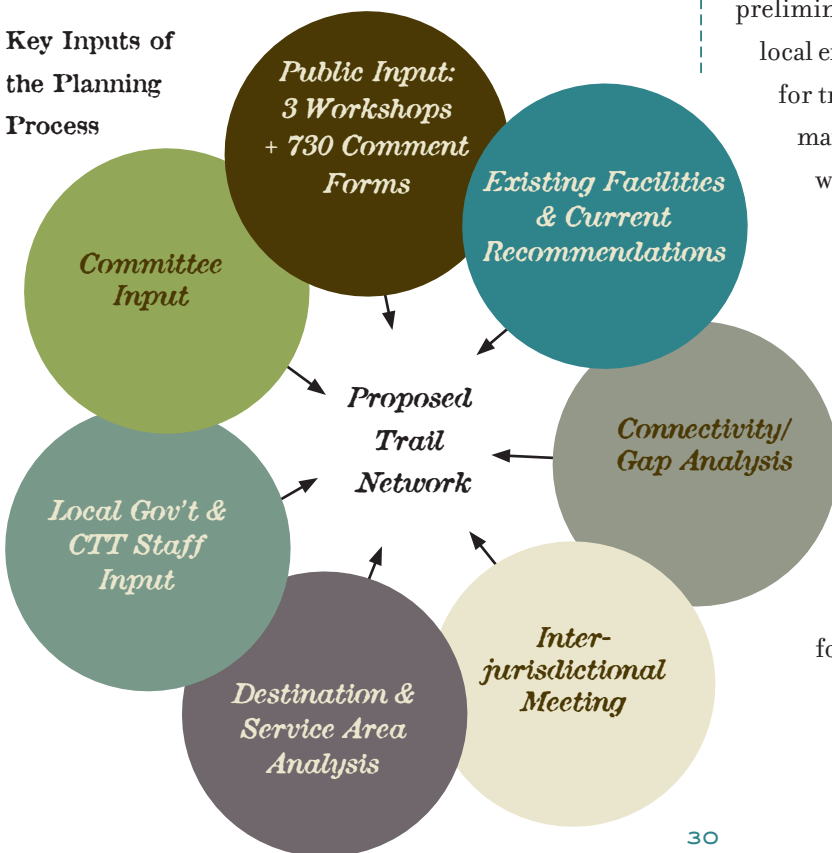
January 2009: This process started with a with a Kick-Off Meeting in January 2009. A steering committee with representation from the county, local communities, and local community organizations met to agree upon a process for developing the proposed trail network, while maximizing community input. The key inputs for the planning process are shown in the diagram below. The committee also established the vision statement, found on page 2 of this plan, during the Kick-Off Meeting.

February 2009: Before making any recommendations about potential trail corridors, local representatives and plan consultants introduced the project at the first of three public open house workshops in February 2009. Participants viewed recommendations from previous planning efforts, and shared their thoughts about trails in Cabarrus County through public input maps, comment forms, and through dialogue with project planners. An online version of the public comment form also began in February, which eventually yielded responses from over 730 area residents .

March 2009: The project committee and a technical sub-committee met several times with planners via teleconference and web-conference to review and develop preliminary draft recommendations. A technical team of local experts used GIS software to map alternative routes for trails. They sought to develop scenarios that would maximize connections to popular destinations, and would build off of existing facilities and current plans. Draft scenarios were based on public input to date, previous plans, gap analysis (making sure recommended trail are linked together), and an analysis of potential destinations and areas served by proposed trails.

April 2009: Representatives from the surrounding counties were invited to an interjurisdictional trails meeting to view alternative scenarios and advise on the best way for trails to cross into neighboring counties.

Key Inputs of the Planning Process





May-June 2009: The second and third public open house workshops featured the draft recommendations to date, building on the work completed in March and April. Also, after receiving input from hundreds of people through the online comment form, a second online public input effort was launched, aimed at introducing the draft plan, and gauging overall support.

July-August 2009: As of mid-July 2009, the second online comment form was coming to a close, concluding all public input from workshops, meetings, and comment forms. Overall public support for the plan was very high, from those who have participated in the planning process (see public input summaries in Appendix I and Appendix II).

After concluding the majority of public input on the draft routes, this planning document was assembled to present all of the information collected throughout the process, including recommendations for implementation.

Fall 2009: The official adoption process for this plan will include presentations to Cabarrus County and its municipalities. Presentations will cover the planning process, the recommendations, and the implementation strategy for this plan.

GREENWAY MASTER PLAN TRAIL ROUTES

Map 4.1 (See page 32) represents the entire proposed trail network. This map features 100 miles of newly proposed regionally significant trails (in purple), supplemented by local county and municipal trails (in green). The regionally significant purple trails qualify for the Carolina Thread Trail designation.

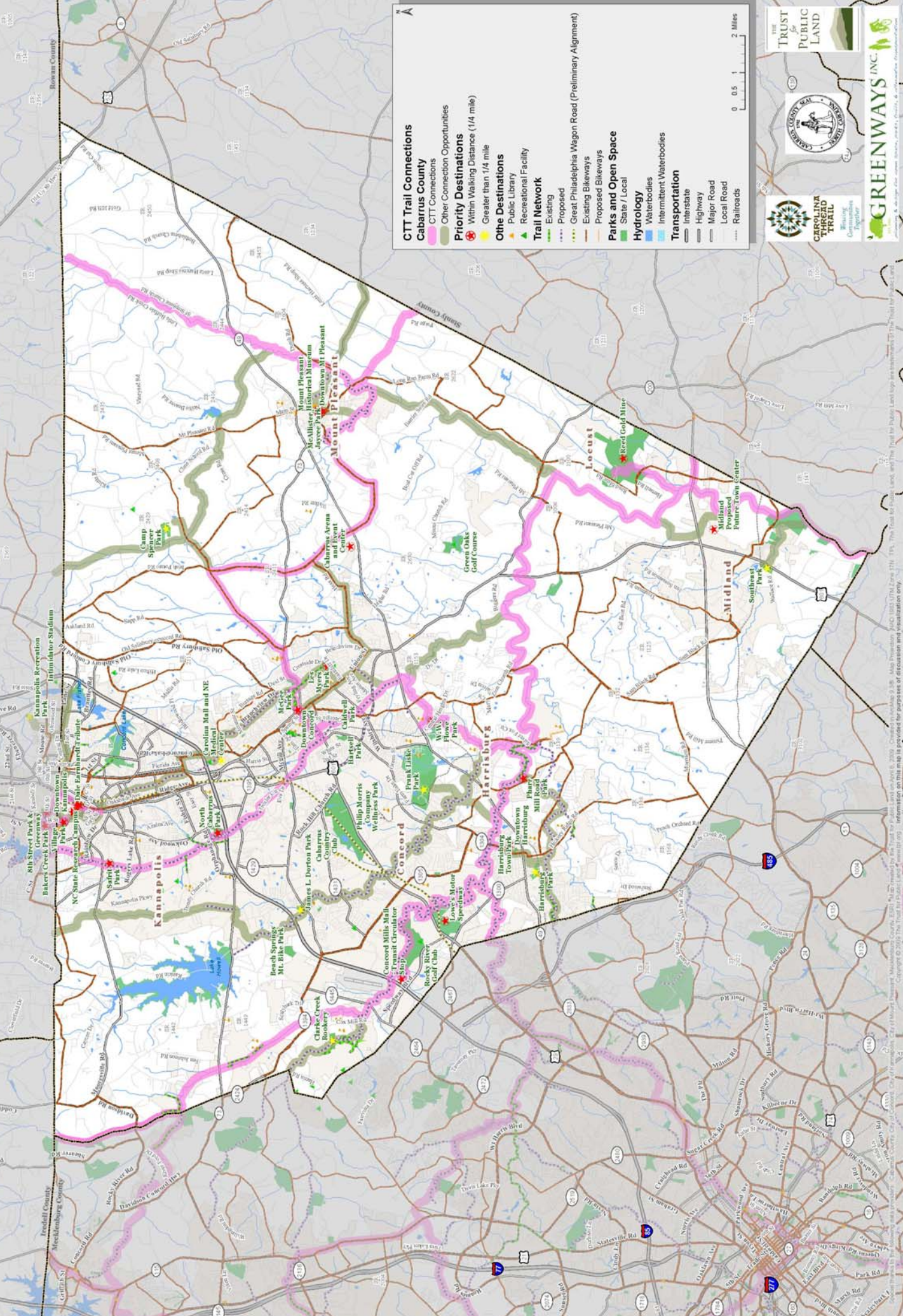
The trail routes in this plan are depicted with ¼ mile wide lines to show the general location of the intended route. The trail itself will be narrower, in recognition that communities will determine the exact location of their segments upon trail design and development.

In sum, the 100-mile Carolina Thread Trail route includes about six miles of existing trails, and it incorporates 77 miles of trails that were already proposed by local governments in Cabarrus County, particularly from the Livable Community Blueprint. About 77% of the Thread in Cabarrus County would be along streams and river corridors, 13% along existing bike routes and sidewalks, and 4% along road rights-of-way.

Thirty-four percent of all county residents live within ½ mile of the proposed trail route (53,428 residents). About 33% of seniors and children live within that service area, and about 38% of low income households (defined as households with combined income of less than \$35,000 per year, based on 2007 census projections).

The towns of Kannapolis, Harrisburg, Concord, Mt. Pleasant and Midland will be connected by the Thread. A zoom-in map is provided for each of these municipalities on pages 33-38.

Carolina Thread Trail Connections Cabarrus County, NC



THE TRUST FOR PUBLIC LAND

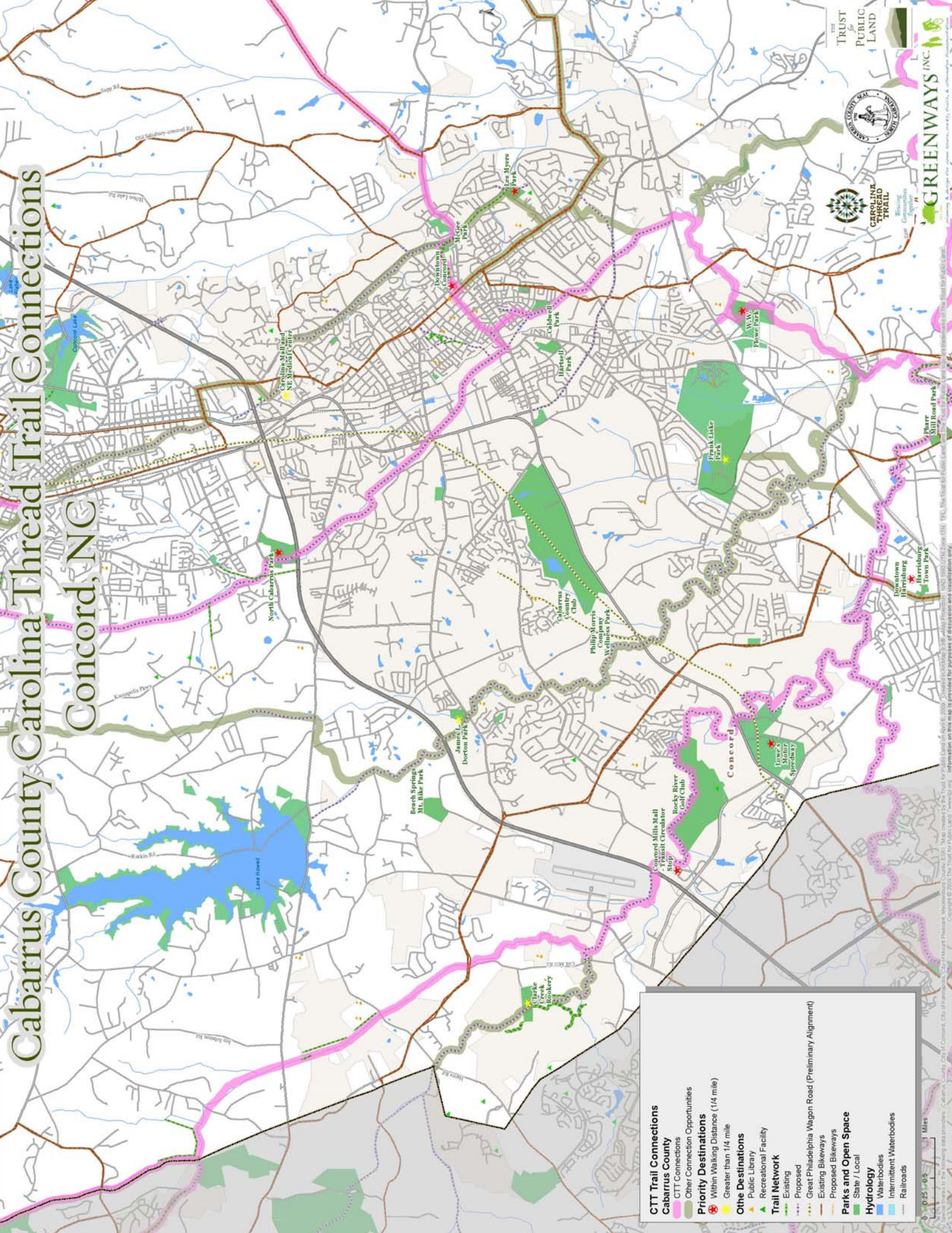
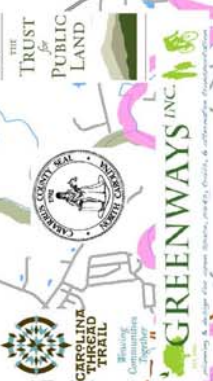
CAROLINA THREAD TRAIL
 Communities Together

GREENWAYS INC.

0 0.5 1 2 Miles

Map prepared by Greensways, Inc. for Cabarrus County, NC. Map Projection: NAD 83 UTM Zone 18N. The map is a work of art and is not intended to be used for navigation. Information on this map is provided for purposes of discussion and visualization only. Copyright © 2010 Greensways, Inc. All rights reserved.

Cabarrus County Carolina Thread Trail Connections Concord, NC



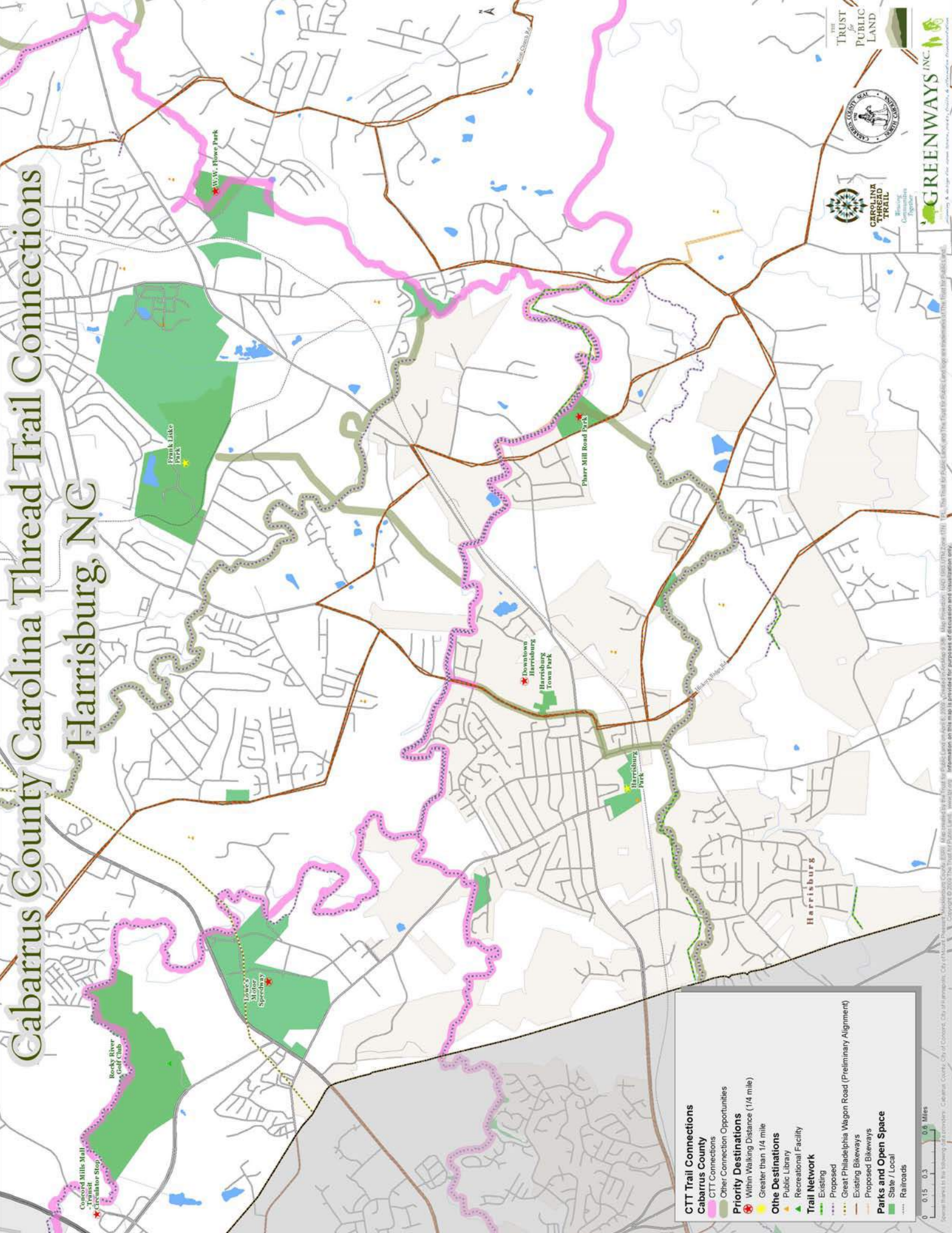
CTT Trail Connections

- Cabarrus County**
 - CTT Connections
 - Other Connection Opportunities
- Priority Destinations**
 - Greater than 1/4 mile
 - Within Walking Distance (1/4 mile)
- Other Destinations**
 - Public Library
 - Recreational Facility
- Trail Network**
 - Existing
 - Proposed
 - Great Philadelphia Wagon Road (Preliminary Alignment)
- Parks and Open Space**
 - State / Local
- Hydrology**
 - Waterbodies
 - Intermittent Waterbodies
 - Railroads

0 0.25 0.5 Miles

© 2019 The Trust for Public Land. All rights reserved. This map is provided for informational purposes only. The Trust for Public Land is not responsible for any errors or omissions on this map. The Trust for Public Land is a 501(c)(3) nonprofit organization. For more information, visit www.thetrust.org.

Cabarrus County Carolina Thread Trail Connections Harrisburg, NC



CTT Trail Connections

- Cabarrus County
- CTT Connections
- Other Connection Opportunities

Priority Destinations

- Within Walking Distance (1/4 mile)
- Greater than 1/4 mile

Other Destinations

- Public Library
- Recreational Facility

Trail Network

- Existing
- Proposed
- Great Philadelphia Wagon Road (Preliminary Alignment)
- Existing Bikeways
- Proposed Bikeways

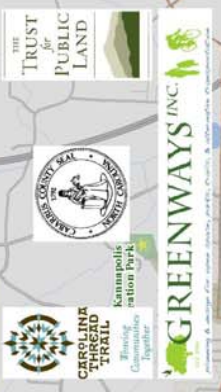
Parks and Open Space

- State / Local
- Railroads



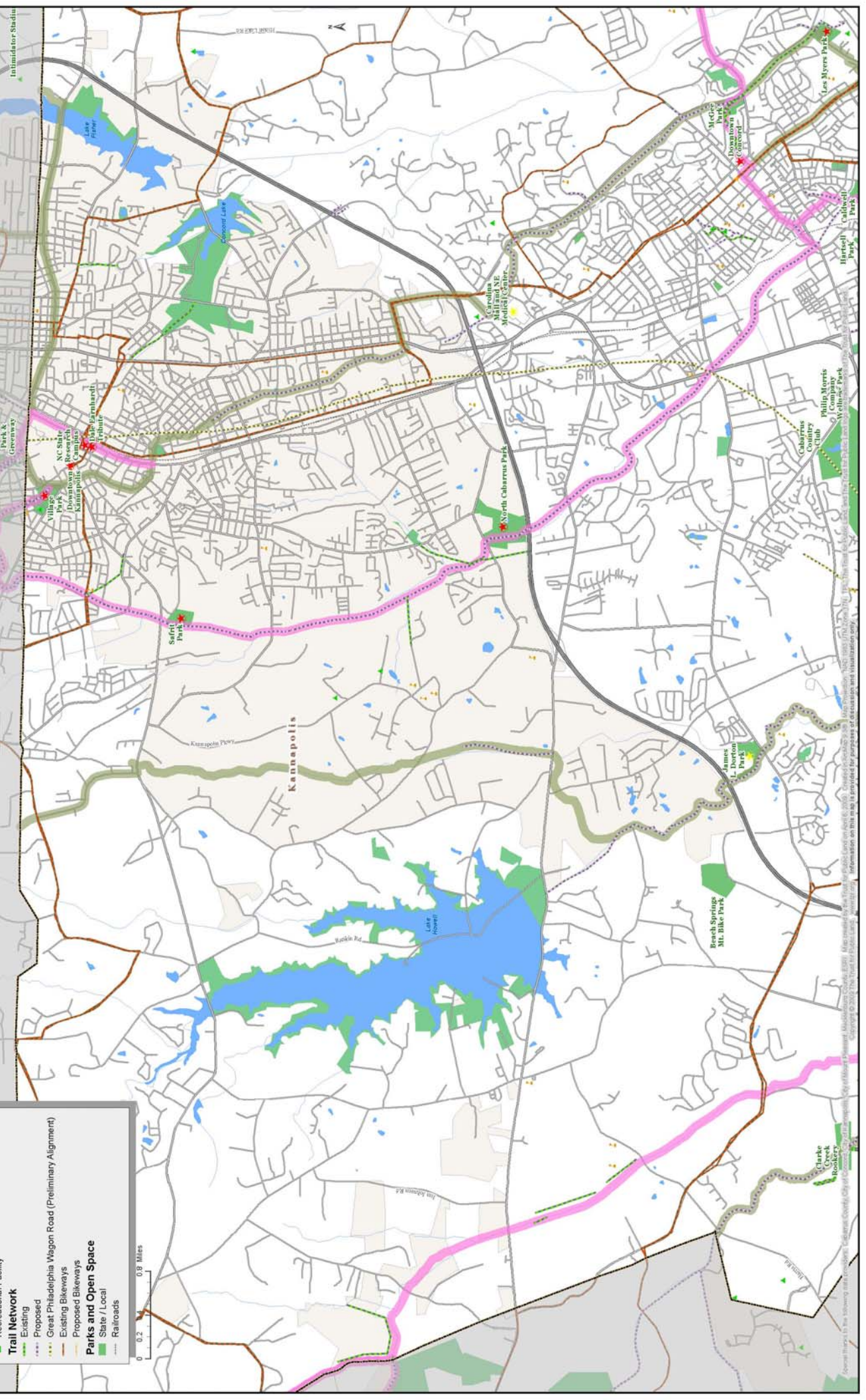
Attribution to the Mapping & Illustration: Cabarrus County, City of Concord, City of Harrisburg, City of Mooresville, City of Pine Bluff, City of Statesville, City of Thomasboro, City of Winterville, City of Yadkinville, City of Zebulon, and the Cabarrus County Planning Department. All other trademarks and registered trademarks are the property of their respective owners. Information on this map is provided for purposes of discussion and visualization only.

Cabarrus County Carolina Thread Trail Connections Kannapolis, NC



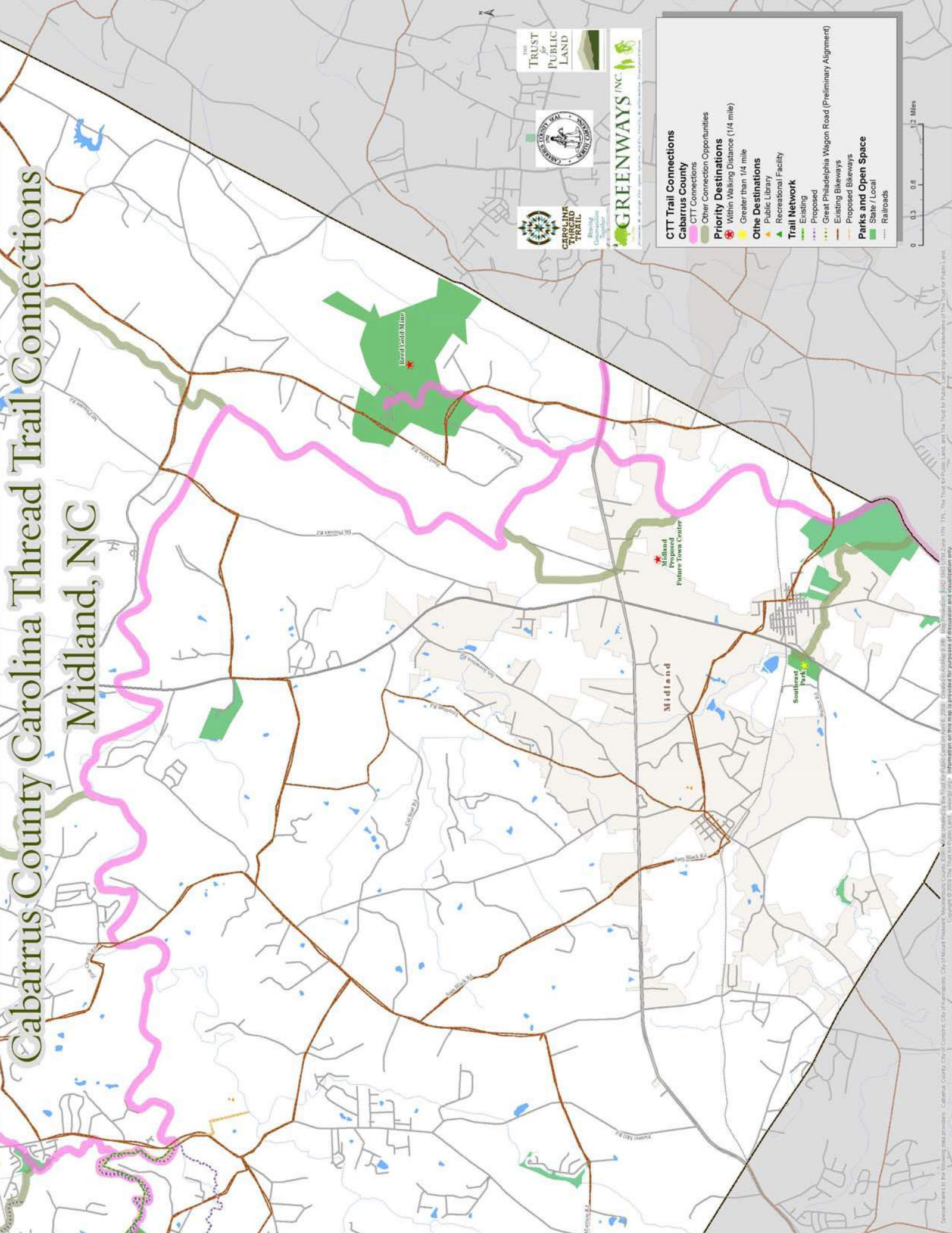
CTT Trail Connections

- Cabarrus County**
 - CTT Connections
 - Other Connection Opportunities
- Priority Destinations**
 - Within Walking Distance (1/4 mile)
 - Greater than 1/4 mile
- Other Destinations**
 - Public Library
 - Recreational Facility
- Trail Network**
 - Proposed
 - Existing
 - Great Philadelphia Wagon Road (Preliminary Alignment)
 - Existing Bikeways
 - Proposed Bikeways
- Parks and Open Space**
 - State / Local
 - Railroads



Approved by the Planning and Zoning Commission on 11/15/2017. All rights reserved. Information on this map is provided for purposes of discussion and visualization only.

Cabarrus County Carolina Thread Trail Connections Midland, NC



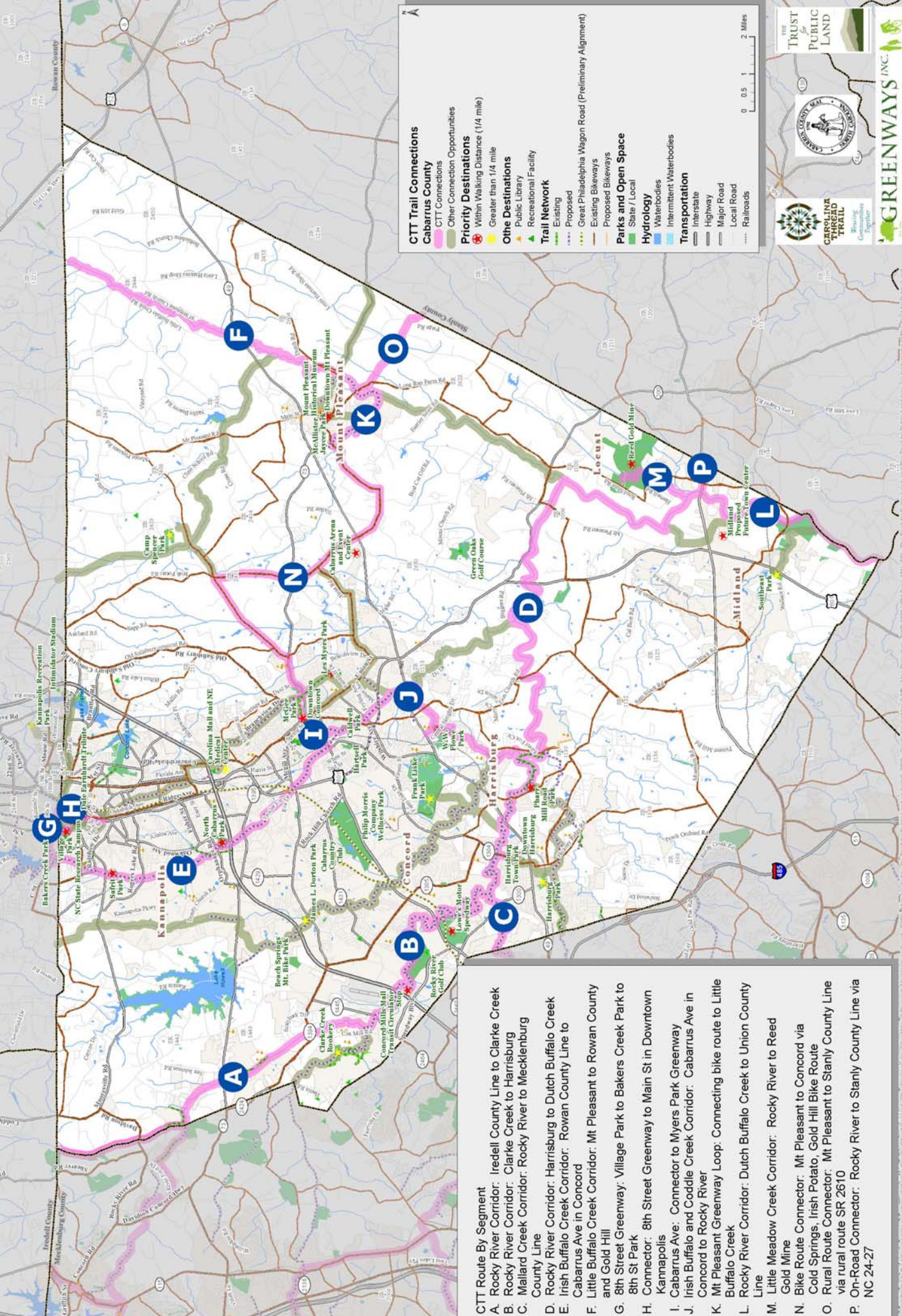
- CTT Trail Connections**
- Cabarrus County
 - CTT Connections
 - Other Connection Opportunities
- Priority Destinations**
- Within Walking Distance (1/4 mile)
 - Greater than 1/4 mile
- Other Destinations**
- Public Library
 - Recreational Facility
- Trail Network**
- Existing
 - Proposed
 - Great Philadelphia Wagon Road (Preliminary Alignment)
- Parks and Open Space**
- Existing Bikeways
 - Proposed Bikeways
 - State / Local
 - Railroads



Approved by the Midland Area Planning Commission, Cabarrus County, on 11/14/2017. The Trust for Public Land and the Trust for Public Land are trademarks of the Trust for Public Land. Copyright © 2017 The Trust for Public Land. All rights reserved. Information on this map is provided for purposes of discussion and visualization only.

Carolina Thread Trail Connections by Segment

Cabarrus County, NC



- CTT Route By Segment**
- A. Rocky River Corridor: Iredell County Line to Clarke Creek
 - B. Rocky River Corridor: Clarke Creek to Harrisburg
 - C. Mallard Creek Corridor: Rocky River to Mecklenburg County Line
 - D. Rocky River Corridor: Harrisburg to Dutch Buffalo Creek
 - E. Irish Buffalo Creek Corridor: Rowan County Line to Cabarrus Ave in Concord
 - F. Little Buffalo Creek Corridor: Mt Pleasant to Rowan County and Gold Hill
 - G. 8th Street Greenway: Village Park to Bakers Creek Park to 8th St Park
 - H. Connector: 8th Street Greenway to Main St in Downtown Kannapolis
 - I. Cabarrus Ave: Connector to Myers Park Greenway
 - J. Irish Buffalo and Coddle Creek Corridor: Cabarrus Ave in Concord to Rocky River
 - K. Mt Pleasant Greenway Loop: Connecting bike route to Little Buffalo Creek
 - L. Rocky River Corridor: Dutch Buffalo Creek to Union County Line
 - M. Little Meadow Creek Corridor: Rocky River to Reed Gold Mine
 - N. Bike Route Connector: Mt Pleasant to Concord via Cold Springs, Irish Potato, Gold Hill Bike Route
 - O. Rural Route Connector: Mt Pleasant to Stanly County Line via rural route SR 2610
 - P. On-Road Connector: Rocky River to Stanly County Line via NC 24-27

CTT Trail Connections

- Cabarrus County
- CTT Connections
- Other Connection Opportunities

Priority Destinations

- Within Walking Distance (1/4 mile)
- Greater than 1/4 mile

Other Destinations

- Public Library
- Recreational Facility

Trail Network

- Existing
- Proposed
- Great Philadelphia Wagon Road (Preliminary Alignment)
- Existing Bikeways
- Proposed Bikeways

Parks and Open Space

- State / Local

Hydrology

- Waterbodies
- Intermittent Waterbodies

Transportation

- Interstate
- Highway
- Major Road
- Local Road
- Railroads

0 0.5 1 2 Miles

THE TRUST FOR PUBLIC LAND

CAROLINA THREAD TRAIL

GREENWAYS INC.



DESCRIPTION OF CTT ROUTE BY SEGMENT:

A. Rocky River Corridor:

Iredell County Line to Clarke Creek

Route Profile:

- 9.7 miles in length
- 9.7 miles river corridor
- Includes 2 miles of existing greenway

Access Opportunities

- Adjacent to CLC easements to the west in Mecklenburg County
- Includes 2 miles of existing greenway

Population within 1/2 mile of proposed segment:

- 2,035 residents
- 210 residents / greenway mile

Cross-County Connections:

- Mecklenburg County - South Prong Rocky River Greenway
- Iredell County – Extend north along Rocky River Corridor

B. Rocky River Corridor:

Clarke Creek to Harrisburg

Route Profile:

- 11.7 miles in length
- 11.7 miles river corridor

Access Opportunities

- Adjacent to Rocky River Golf Club
- Adjacent to County Park

Population within 1/2 mile of proposed segment:

- 7,068 residents
- 604 residents / greenway mile

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

- Concord Mills Mall – Transit Circulator Stop

- Lowe’s Motor Speedway
- Downtown Harrisburg

Issues and Challenges:

- I85 crossing near airport (already working with DOT)
- Sensitive wetlands along Rocky River
- High speed rail crossing
- Concerns about flooding and backyard traffic from local residents

C. Mallard Creek Corridor:

Rocky River to Mecklenburg County Line

Route Profile:

- 2.4 miles in length
- 2.4 miles river corridor

Access Opportunities

- Adjacent to parkland owned by Town of Harrisburg

Population within 1/2 mile of proposed segment:

- 1,907 residents
- 795 residents / greenway mile

Cross-County Connections:

- Mecklenburg County – Mallard Creek Greenway

D. Rocky River Corridor:

Harrisburg to Dutch Buffalo Creek

Route Profile:

- 14.7 miles in length
- 14.7 miles river corridor

Access Opportunities

- Adjacent to Phar Mill Road Park

Population within 1/2 mile of proposed segment:

- 5,366 residents
- 365 residents / greenway mile

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

- Phar Mill Road Park



Issues and Challenges:

- High Speed Rail Crossing at Rocky River
- Hwy 601 Crossing at Rocky River

E. Irish Buffalo Creek Corridor:

Rowan County Line to Cabarrus Ave in Concord

Route Profile:

- 9.9 miles in length
- 9.9 miles river corridor
- Includes 0.2 miles of existing greenway

Access Opportunities

- Adjoins to existing Kannapolis greenway segments
- Includes 0.2 miles of existing greenway
- Adjacent to Barkers Creek Park, Safrit Park, and North Cabarrus Park

Population within 1/2 mile of proposed segment:

- 11,237 residents
- 1135 residents / greenway mile

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

- 8th Street Park & Greenway
- Barkers Creek Park
- Downtown Kannapolis
- North Cabarrus Park
- Safrit Park

Cross-County Connections:

- Rowan County – connecting to envisioned Grant’s Creek Greenway, providing links to Landis, China Grove, Salisbury, Spencer, and the Yadkin River

Issues and Challenges:

- I85 Crossing at Irish Buffalo Creek @ N Cab Park (already working with DOT)
- Mooresville Rd Crossing North of Safrit Park (already working with DOT)

F. Little Buffalo Creek Corridor:

Mt Pleasant to Rowan County and Gold Hill

Route Profile:

- 7.0 miles in length
- 7.0 miles river corridor

Population within 1/2 mile of proposed segment:

- 534 residents
- 76 residents / greenway mile

Cross-County Connections:

- Rowan County – providing connections to Gold Hill, High Rock Lake, and the Gold Hill Rails to Trails project

G. 8th Street Greenway:

Village Park to Barkers Creek Park to 8th St Park

Route Profile:

- 1.4 miles in length
- Includes 1.4 miles of existing greenway

Access Opportunities

- Adjoins to Village Park, Barkers Creek Park, and 8th Street Park
- Includes 1.4 miles of existing greenway

Population within 1/2 mile of proposed segment:

- 726 residents
- 519 residents / greenway mile

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

- 8th Street Park & Greenway
- Barkers Creek Park
- Downtown Kannapolis
- Village Park

Cross-County Connections:

- Rowan County – connecting to envisioned Grant’s Creek Greenway, providing links to Landis, China Grove, Salisbury, Spencer, and the Yadkin River



H. Connector: 8th Street Greenway to Main St in Downtown Kannapolis

Route Profile:

- 1.6 miles in length
- Includes 1.6 miles of existing sidewalk

Access Opportunities

- Adjoins to several City of Kannapolis parks
- Includes 1.6 miles of existing sidewalk

Population within 1/2 mile of proposed segment:

- 2,415 residents
- 1,509 residents / greenway mile

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

- 8th Street Park & Greenway
- Dale Earnhardt Tribute
- Downtown Kannapolis
- NC Research Campus

I. Cabarrus Ave: Connector to Myers Park Greenway

Route Profile:

- 1.7 miles in length
- Includes 0.8 miles of existing greenway
- Includes 0.9 miles of existing sidewalk

Access Opportunities

- Adjacent to McGee Park
- Includes 0.8 miles of existing greenway
- Includes 0.9 miles of existing sidewalk
- Cabarrus Ave sidewalk improvements planned

Population within 1/2 mile of proposed segment:

- 4,649 residents
- 2,734 residents / greenway mile

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

- Downtown Concord

J. Irish Buffalo and Coddle Creek Corridor: Cabarrus Ave in Concord to Rocky River

Route Profile:

- 9.4 miles in length
- 9.4 miles river corridor

Access Opportunities

- Adjacent to Caldwell Park and W.W. Flowe Park

Population within 1/2 mile of proposed segment:

- 11,498 residents
- 1,223 residents / greenway mile

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

- W.W. Flowe Park

Issues and Challenges:

- 601 Crossing at Irish Buffalo Creek

K. Mt Pleasant Greenway Loop: Connecting bike route to Little Buffalo Creek

Route Profile:

- 6.4 miles in length

Population within 1/2 mile of proposed segment:

- 972 residents
- 152 residents / greenway mile

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

- Downtown Mt Pleasant

L. Rocky River Corridor: Dutch Buffalo Creek to Union County Line

Route Profile:

- 12.3 miles in length
- 12.3 miles river corridor

Access Opportunities

- Adjacent to J.B. Farm and Williams Farm conservancy properties



Population within 1/2 mile of proposed segment:

- 1,029 residents
- 84 residents / greenway mile

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

- Midland Proposed Future Town Center

Cross-County Connections:

- Union County – A continuation along the Rocky River along the border between Stanly and Union Counties

M. Little Meadow Creek Corridor:

Rocky River to Reed Gold Mine

Route Profile:

- 2.3 miles river corridor

Access Opportunities

- Connects to Reed Gold Mine

Population within 1/2 mile of proposed segment:

- 165 residents
- 72 residents / greenway mile

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

- Reed Gold Mine

N. Bike Route Connector: Mt Pleasant to Concord via Cold Springs, Irish Potato, Gold Hill Bike Route

Route Profile:

- 11.9 miles in length
- Includes 8.4 miles of designated bike routes

Access Opportunities

- Public road right-of-way
- Includes 8.4 miles of designated bike routes

Population within 1/2 mile of proposed segment:

- 3,304 residents
- 278 residents / greenway mile

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

- Cabarrus Arena and Event Center

O. Rural Route Connector: Mt Pleasant to Stanly County Line via rural route SR 2610

Route Profile:

- 2.9 miles in length

Access Opportunities

- Public road right-of-way

Population within 1/2 mile of proposed segment:

- 466 residents
- 161 residents / greenway mile

Cross-County Connections:

- Stanly County – Providing connection to Albemarle

P. On-Road Connector:

Rocky River to Stanly County Line via NC 24-27

Route Profile:

- 0.8 miles in length

Access Opportunities

- Public road right-of-way

Population within 1/2 mile of proposed segment:

- 57 residents
- 71 residents / greenway mile

Cross-County Connections:

- Stanly County – Provides a connection for Stanly residents to reach Reed Gold Mine. Incorporates the area near Red Bridge Golf Course.



Envisioning a Carolina Thread Trail segment.



CHAPTER 5. RECOMMENDED ACTIONS FOR IMPLEMENTATION

Implementation of this Master Plan will require a commitment and leadership from Cabarrus County to engage its public and private sector partners and follow the recommendations that are provided in this chapter. The following provides key elements of implementation that need to be addressed and resolved.

ADOPT THIS PLAN

Upon completion of the Master Plan, the first order of business will be to have Cabarrus County and all of the partner municipalities in the County adopt this plan and make it an official element of the comprehensive plan. The adoption procedures will vary from community to community. In addition to adopting the Master Plan, some of the municipalities and the County may wish or need to make revisions to zoning ordinances, land development codes and other policies, plans and procedures that enable greenway development to take place. It will be incumbent upon each local government to properly assess the changes that are needed and to make these changes, amendments and policy decisions as soon as practically possible.

Phase I - Plan Adoption

	<i>Priority</i>
Review and take action: municipal advisory boards	High
Review and adopt Greenway Master Plan	High
Review and amend zoning and land development codes	Medium
Review and amend floodplain ordinances to limit construction in floodprone landscapes	Medium
Review and amend zoning and land development codes to protect riparian zones	Medium
Review and amend current open space and park land dedication requirements along with fee-in-lieu programs	Medium

High Priority- Within 1 Year

Medium Priority- Within 2-5 Years

Low Priority- Within 6-10 Years

BUILD PUBLIC SUPPORT

One of the most important implementation steps that will need to be taken by Cabarrus County is the continued involvement of residents in the future greenway development. It is recommended that the County constitute a Greenways and Trails Advisory Committee, either as a component of the County Parks and Recreation Department or as a stand alone advisory group to the Board of County Commissioners. This advisory group can become the citizens champion for this master plan and provide valuable assistance, feedback, support and coordination on all aspects of implementation.

The advisory group should be encouraged to file an annual report regarding its activities and to also report on the progress made with the countywide greenway master plan. This group should work with county and municipal governments to promote, market and inform fellow residents about the greenway program. The group should also look into hosting an annual "Greenway Day" event on an existing greenway segment within the county, to showcase completed projects and further engage citizens in the implementation process.

The County should also form partnerships with other local non-profits and consider convening a partnership among local governments, in particular park and recreation providers, to coordinate future greenway implementation. One of the goals with non-profits would be to work together to secure land and/or rights-of-way for greenway corridors.



Phase II - Build Public Support	Priority
Establish a county citizens Greenways and Trails Advisory Committee to champion this plan	High
GTAC implements a marketing, promotion and information campaign to engage citizens	High
Host an annual Greenway Day Event	Medium
Form partnerships with regional non-profits to secure land for greenway corridors	Medium
Form partnership among local government parks and recreation providers to coordinate implementation	Medium
High Priority- Within 1 Year	
Medium Priority- Within 2-5 Years	
Low Priority- Within 6-10 Years	

COMPLETE PRIORITY GREENWAY SEGMENTS

This master plan has identified some top priority greenway corridors and projects that should be developed by the Cabarrus County and its partners. The Carolina Thread Trail staff stands ready to assist the county and its partners with implementation, including providing catalytic grants that can jump start acquisition and trail development.

In order to develop the future greenway system in an orderly and systematic manner, the entire network needs to be evaluated and prioritized for development. The following criteria is used to select segments of the Cabarrus County Greenway system and Carolina Thread Trail for future phased development.

1) Near Population: Candidate segments of greenway need to be near or within populated areas. Greenways provide numerous benefits to the residents in the form of health and wellness activities, recreation and transportation. The County should build trail segments where the majority of people live.

2) Available Land/Right-of-Way: An assessment should be made for segments of each greenway corridor to determine where land or right-of-way is contiguous and capable of supporting future trail development.

3) Functional Segment: Each greenway should have an “anchor” or destination landscape on each end, such as a park, neighborhood, school, shopping area, or other popular destination (such as a YMCA).

4) Ease of Development: Candidate segments should be studied to better understand obstacles to future facility development, such as environmental permits.

5) Available Funding: An assessment should be made as to how each individual segment will be funded. For example, if a project presents a strong case for transportation funding, NCDOT would be the logical choice for a matching grant.

Based on this criteria, the following segments of Carolina Thread Trail are recommended as priorities:

- Irish Buffalo Creek Corridor: Rowan County Line (Research campus) to North Cabarrus Park
- Cabarrus Ave: Connector to Myers Park Greenway
- Rocky River Corridor: Clarke Creek to Harrisburg

This evaluation and prioritization of projects will need to be completed on an annual basis by the County, the Greenway and Trails Advisory Committee, its municipal partners and non-profit partners. With all of this in mind, a flexible and pragmatic approach is needed that focuses on opportunities throughout the county, occurring on an annual basis, where greenway development can most likely occur.



Phase III - Prioritization

	<i>Priority</i>
Review the phase one priority segments listed in this Plan and begin implementation steps	High
Identify future phases of greenway implementation using the criteria presented in this plan	Medium
Review current and future utility corridors and easements for greenway opportunity	Medium
Consider a multi-year, dedicated funding source for greenway acquisition, development & stewardship	Medium
Prepare an acquisition plan that is based on priority segments and work with local non-profits to implement	Medium
High Priority- Within 1 Year	
Medium Priority- Within 2-5 Years	
Low Priority- Within 6-10 Years	

DEFINE FUNDING AND FINANCING

It is recommended that a funding quilt be used by Cabarrus County to fund future acquisition, development and stewardship of greenway lands and facilities. A funding quilt combines local, state and federal funding to achieve implementation objectives. The following offers a summary of possible funding sources for use in developing the Cabarrus County Greenway System, and elements of the Carolina Thread Trail.

1. Private Funding

Private funding from citizens, philanthropic organizations, non-profits and businesses can and should be used to build segments of the Cabarrus County Greenway system and the Carolina Thread Trail. The Catawba Lands Conservancy (GLC) currently serves as home for the Carolina Thread Trail operations, and is spearheading a private fund raising effort to make available seed dollars to local governments and communities that plan for and adopt greenway master plans. These private dollars are available in the form of grants that can

be used to fund trail planning, design, land acquisition, and construction. These grant funds can be supplemented with other local, private sector monies to support future implementation of this master plan. Gaston County, NC and York County, SC are currently available for these matching grant funds having adopted countywide plans in 2009.

2. Public Funding

A variety of public funding dollars are available to support future development of the Cabarrus County Greenway system.

a. Federal Funding:

Federal funding programs are more thoroughly described in the Appendix of this plan. Trail related funding programs appear at the top of this list, while other programs that may not directly fund trail development, but could be used to fund greenway development follow. Federal funding is administered in different ways. Some federal funds are direct appropriations to States and are therefore distributed and managed by a state agency. Other funds are distributed directly from the federal program. The United States Congress also earmarks funds for project development. The descriptions in the Appendix are intended to provide a broad overview of funding potential.

b. State of North Carolina Funding:

A majority of state funding for greenway acquisition and development in North Carolina comes from four large trust funds and through NCDOT. These programs are covered in depth within the Appendix of this plan. Cabarrus County and municipal governments Kannapolis, Concord and Harrisburg have had success applying for and receiving funding from these trust funds and NCDOT. One of the keys to continue



receiving state funding is for the local governments to have matching funds, therefore consideration should be given to establishing a dedicated, recurring source of revenue for greenway acquisition and development.

a. Local Funding Options:

Generally, there are three types of revenue sources that local governments can use to fund parks and trail development in North Carolina: discretionary annual spending (General Fund); dedicated funding; and debt financing. Funding will vary by community dependent on taxing capacity, budgetary resources, voter preference, and political will. The ability to establish dedicated funding sources may also depend on enabling authority. North

Carolina has given local governments a limited number of options to fund land conservation and trail projects. Table 5 provides a summary of these options.

Cabarrus County and municipalities have supported park, recreation, open space and greenway project on a fairly consistent basis for the past decade. Kannapolis has utilized the “funding quilt” approach to developing several segments of greenway. Concord is looking to partner with public and private sector interests to expand its greenway system. So there is success to build upon. The majority of matching funds come from the general funds of local governments. Some consideration should be given to a countywide fund for greenway acquisition and development. Mecklenburg County, for example, recently passed a bond referendum to

Table 4:
Local Conservation Financing Options in North Carolina

<i>Method</i>	<i>Definition</i>	<i>Pros</i>	<i>Cons</i>
General Obligation Bond	Loan taken out by a city against the value of the taxable property	<ul style="list-style-type: none"> •Allows for immediate purchase of open space, locking in land at current prices •Distributes the cost of acquisition 	<ul style="list-style-type: none"> •Extra interest costs of borrowing •Funds may be used only for capital projects and improvements •Voter approval required
Property Tax	Tax on real property paid for by commercial and residential property owners	<ul style="list-style-type: none"> •Steady source of revenue •Relatively easily administered •Tax burden fairly broadly distributed •Small increases create substantial funding 	<ul style="list-style-type: none"> •Competition for other public purposes •Overall concern among taxpayers about high rates •Cannot be permanently dedicated
Impact Fee	One-time fee paid by developer to off-set costs of infrastructure caused by new development	<ul style="list-style-type: none"> •Nexus between taxing new development and protecting remaining open spaces 	<ul style="list-style-type: none"> •Projects must be directly linked to new development
Real Estate Transfer Tax	Tax that may be imposed on the privilege of transferring real property	<ul style="list-style-type: none"> •Is a familiar tool for land conservation 	<ul style="list-style-type: none"> •Unpredictable source of revenue •May have opposition from Realtor community •Revenues may not be restricted
Local Sales Tax	Tax levied on the retail price of an item	<ul style="list-style-type: none"> •Distributes the cost of acquisitions 	<ul style="list-style-type: none"> •Unpredictable source of revenue •Relies on the strength of the local economy •Revenues may not be restricted



Phase IV Funding Sources

	<i>Priority</i>
Identify and pursue public and private grants to fund greenway acquisition, development and stewardship	High
Consider local bonds to fund greenway acquisition, development and stewardship	Medium
Create a local, dedicated, recurring source of revenue to be used in support of federal and state grants	Medium
Consider a countywide funding source for greenways, such as a bond referendum	Medium
High Priority- Within 1 Year	
Medium Priority- Within 2-5 Years	
Low Priority- Within 6-10 Years	

EVALUATE LAND OR RIGHT-OF-WAY ACQUISITION OPTIONS

Acquiring land and/or right of way for the countywide greenway system will be one of the most important objectives for the County and its partners. Methods of land acquisition can include the following, more detailed descriptions are provided in the Appendix of this plan:

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. In North Carolina, landowners that dedicate land for greenways are eligible for a tax credit. Details of donations should be confirmed with a qualified tax advisor.

Purchase – this method is commonly used to acquire land for greenways, and land trusts can often help acquire land at less than fair market value by working with a landowner to offset the purchase price with other incentives beneficial to the landowner.

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, flood plain development restrictions and open space/trail dedication requirements.

Developer Contributions – Once a conceptual route 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 request, require and/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 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. This sets up a win – win situation for everyone involved.

Abandoned Rail Corridors – Discussions will need to be held with the rail corridor owners as well as NCDOT Rails Division. The cost of trail construction is typically lower along abandoned rail corridors because a graded corridor with gradual slopes is already established.



Phase V Acquisition

Priority

Work with landowners and discuss the possibility of acquiring voluntary easements or property donations	High
Through the land development process, work with land owners and developers to have right-of-way and land donated or set aside for greenways	High
High Priority- Within 1 Year Medium Priority- Within 2-5 Years Low Priority- Within 6-10 Years	

DESIGN, CONSTRUCT AND MAINTAIN TRAILS

Once a segment of the Cabarrus County greenway system is selected and the land or public access right-of-way has been acquired, trail design and development will follow. It will be important for communities to determine the intended use(s) of a particular segment and design the trail facility with that in mind. Designing for safety and for affordable maintenance is also required. Intended uses of the trail will dictate the tread width and surface material to be used and have a direct bearing on the construction and maintenance costs. The Cabarrus County greenway planning process revealed that in general, people are most interested in walking, biking, hiking, seeing historic sites, and enjoying quiet time (in that order). A subset of folks who participated were also very interested in equestrian-friendly trails. So, if the trail segment were going to be a multi-purpose trail for walkers, bikers, and horseback riders, then a surface material of either crushed limestone or granite screening would be the preferred choice.

Trail construction costs will vary, and until a project is put out for competitive bid, there is no way to accurately determine local prices. The three most common trail construction surfaces are granite screening, asphalt, and concrete. The trail design process should accurately describe the intended final use in order to fully understand the costs and potential savings when making a decision between one

surface material over another.

Preliminary site plans should be reviewed by community or county staff, including emergency service personnel, so they can offer suggestions, guidance. Historically, there has been a disconnect, at times, between the design process and operations. Designs that are pleasing to the eye are not always conducive to good and inexpensive maintenance. Therefore, it is imperative that cost saving should be a part of any design with a thorough review of the plans while they are still in a preliminary stage.

Security starts in the design phase as well. There is much that can be done in designing a trail system that greatly reduces the risk of crime. All designs should utilize Crime Prevention through Environmental Design (CPTED). Security experts such as the local police chief or county sheriff 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 VI Design and Construction of Trails

Priority

Prepare construction documents for trails and work with law enforcement and maintenance staff	High
Develop a maintenance and operations plan	High
Upon acquisition of corridor complete design checklist	Medium
Complete operations and management of new trails	Medium

High Priority- Within 1 Year
Medium Priority- Within 2-5 Years
Low Priority- Within 6-10 Years



CHAPTER 6. CONCLUSION

Through a collaborative planning process community members in Cabarrus County articulated a vision for a community greenway system and put forth much time and effort developing thoughtful recommendations for how best to connect people and places with trails throughout the county. This report outlines an ambitious plan for developing a comprehensive network of trails across Cabarrus County. The many community partners who have been involved in the planning process recognize the

urgency of starting a county-wide and region-wide linear park system now, while opportunities still exist for making connections and linking important places. They also recognize that this plan will not be implemented overnight, and that while segments should begin appearing soon, it will take years, if not decades, to link them all together. The time to start is now.



Hiking near Reed Gold Mine



Boardwalk at North Cabarrus Park



Dale Earnhardt statue in Kannapolis



APPENDIX I: CAROLINA THREAD TRAIL PUBLIC MEETING SUMMARY

Cabarrus County public workshops for the Carolina Thread Trail were held at the Concord Public Library on February 26, 2009, the Harrisburg Town Hall on May 6, 2009, and at Village Park in Kannapolis on June 23, 2009.

These meetings served as an opportunity for the residents of Cabarrus County and the local municipalities to learn about the project and provide their input. All three workshops had the same basic set-up, including CTT display boards, a display map of the existing conditions/draft recommendations, a public input map, and comment

forms. Participants talked directly with project staff and were encouraged to share their ideas by writing and drawing their comment on the input maps.

Feedback from these meetings was overall very positive. Questions from the 50+ participants were focused mainly on the overall concept of The Thread, the steps in the planning process, and the timeline for implementation. Public comments taken through paper comment forms were entered online, and the results start on page 52.

FEB. 26, 2009
5:00-7:30 PM
Help shape the future of your community!

PUBLIC WORKSHOP for TRAIL PLANNING IN CABARRUS COUNTY

MAY 6, 2009
5:00-7:30 PM
Help shape the future of your community!

HOUSE for CABARRUS COUNTY

JUNE 23, 2009
5:00-7:30 PM
Help shape the future of your community!

HOUSE for CABARRUS COUNTY

Concord Public Library Auditorium
27 Union Street N, Concord, NC

Harrisburg Town Hall, Council Chambers
Harrisburg, NC 28075

• Drop in anytime during the workshop to talk with your neighbors, county staff, and project consultants about how to best connect people and places with trails in Cabarrus County.

• Provide input and learn about the Cabarrus County Greenway Master Plan and the Carolina Thread Trail.

• Getting there: from I-85, take exit 58, go south on NC-73/Church St. N, Turn Right on Killarney St., and left to 27 Union St N.

Contact Info: Londa Strong, Cabarrus Co. Parks Director
704-920-3354; e-mail: L.AStrong@cabarruscounty.us

For more info: Londa Strong, Cabarrus Co. Parks Director
704-920-3354; e-mail: L.AStrong@cabarruscounty.us
www.carolinathreadtrail.org

Public Workshop Flyers



PROJECT NEWSLETTER for the CABARRUS COUNTY CAROLINA THREAD TRAIL PROJECT

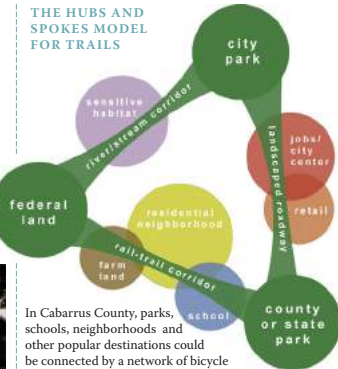
PROJECT DESCRIPTION

Cabarrus County, local communities, and other project stakeholders are working together to develop a greenway plan that will feature a core segment of the Carolina Thread Trail, a 15-county regional network of trails. Several counties in the region have already completed and are adopting similar trail plans. The project in Cabarrus County has just begun, starting with a Kick-off Meeting (January 2009) and a Public Workshop (February 2009). Before making any recommendations about potential trail corridors, the project partners are introducing the project at the Public Workshop, displaying proposed trails from separate planning efforts, and gathering input through an online comment form (see bottom right).



Above: Downtown Concord, an example bicycle and pedestrian trail, and the Rocky River.

THE HUBS AND SPOKES MODEL FOR TRAILS



In Cabarrus County, parks, schools, neighborhoods and other popular destinations could be connected by a network of bicycle and pedestrian trails. In the 'Hubs and Spokes Model' such destinations serve as the 'hubs' of the network, while the 'spokes' consist of trails, sidewalks, and bicycle-friendly roadways.

A key part of this early stage in planning is to gather public input on what Cabarrus County residents feel are the most important destinations for their future trail network. Visit www.greenways.com/cabarrus to provide your input on key destinations and other important aspects of this project.



PROJECT CONTACT INFO:
Londa Strong, Cabarrus Co. Parks Director
704-920-3354; e-mail:
L.A.Strong@cabarruscounty.us

ONLINE COMMENT FORM:
WWW.GREENWAYS.COM/CABARRUS

1

DRAFT VISION STATEMENT

A network of bicycle and pedestrian trails will connect the communities, businesses, schools, parks and other attractions of Cabarrus County, offering valuable opportunities for recreation, transportation, and economic development. This network of trails will also contribute to the future viability of the County through the conservation of open space along trail corridors, protecting natural habitats, water resources, and cultural resources. The trails will be open to all, providing positive opportunities for active living among neighbors, coworkers, families, visitors, and friends. In addition, Cabarrus County will feature its own portion of the Carolina Thread Trail, linking the local trail network to people and places throughout the 15-county region.



GUIDING PRINCIPLES for the CAROLINA THREAD TRAIL (THE THREAD):

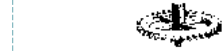
There are a few guiding principles that are fundamental to the philosophy of the Carolina Thread Trail and guide the work of its Governing Board, volunteers, staff and partners:

Connectivity and collaboration
- By getting municipalities working with their county, and counties working with each other in a collaborative way, we can achieve our goal of connectivity.

Inclusiveness and free accessibility to all
- The Thread will be an asset available for the use of all of our citizens in urban, suburban and rural settings. The process by which it is built needs to include many different voices.

Leverage
- Carolina Thread Trail grants can provide catalytic funding for segments of The Thread. Private capital will only go so far, but it can help stimulate activity and attract state and federal sources that require match funds and value initiatives that are regional in scope.

Respect for the land and respect for the landowner
- It is critical to inform landowners about the project and include them in the process. By doing so, opportunities to develop trails with willing landowners will be identified.



TASKS for the CABARRUS COUNTY THREAD PROJECT:

As of February 2009, the project partners are completing the first three tasks. The project will continue through August 2009, when the CTT Kick Off Celebration is expected to take place.

- Task 1: Background/Data Collection
- Task 2: Base Mapping
- Task 3: Community Engagement
- Task 4: Identify CTT Segments
- Task 5: Inter-Jurisdictional Discussions
- Task 6: Creating GIS-based Trail Maps
- Task 7: Mapping
- Task 8: Ground-Truthing Consultation
- Task 9: Public Open House Review
- Task 10: Staff Review
- Task 11: Plan / Implementation Strategy
- Task 12: Adoption of Plan
- Task 13: Cabarrus Co. CTT Brochure
- Task 14: Celebration of CTT Kick-Off

2

PROJECT NEWSLETTER for the CABARRUS COUNTY CAROLINA THREAD TRAIL PROJECT

PROJECT BACKGROUND

Cabarrus County, local communities, and other project stakeholders are working together to develop a greenway plan that will feature a core segment of the Carolina Thread Trail, a 15-county regional network of trails. Several counties in the region have already completed and are adopting similar trail plans. The project in Cabarrus County started with a with a Kick-off Meeting in January 2009 and a Public Workshop in February 2009.

PUBLIC INPUT

As of June 2009, over 625 people have participated in the planning process for Cabarrus County! Over 90% of the participants indicated that the goal of creating more trails is important. Local residents primarily want trails for fitness & recreation, and connectivity to parks & downtown areas. **Please take part 2 of the comment form online** (link at bottom right) to review the draft plan and let us know what you think.

Also, two public workshops have been held with a total of about 50 attendees from a variety of organizations and backgrounds (with the third workshop on June 23rd in Kannapolis). The workshops feature display maps and informational boards about the CTT, and offer opportunities for public comment on draft maps and comment forms.



Above: Participants provide input at the first public workshop.

THE DRAFT MAP (on reverse side)

The draft map was created through a combination of public input, existing conditions analysis, and existing plans analysis. Project stakeholders and staff from local communities also provided guidance. This is a draft only.

Below is a list of some, but not all, factors that influenced the development of draft routes:

Connections and Destinations

- Town Connections
 - Cross-County Connections
 - Primary Destinations¹ within Walking Distance²
 - Schools within Walking Distance²
 - Libraries within Walking Distance²
 - Recreational Facilities within Walking Distance²
 - Parks within Walking Distance²
 - Historic Districts within Walking Distance²
 - Cemeteries within Walking Distance²
 - Transit Stops within Walking Distance²
 - Major Shopping Venues within Walking Distance²
 - Regional Services within Walking Distance³
 - Through Natural Landcover (mi)
 - Along Streams/River Corridors (mi)
- Access⁴**
- Children within Service Area⁵
 - Seniors within Service Area⁵
 - Total Residents within Service Area⁵
 - Low Income Households within Service Area⁵

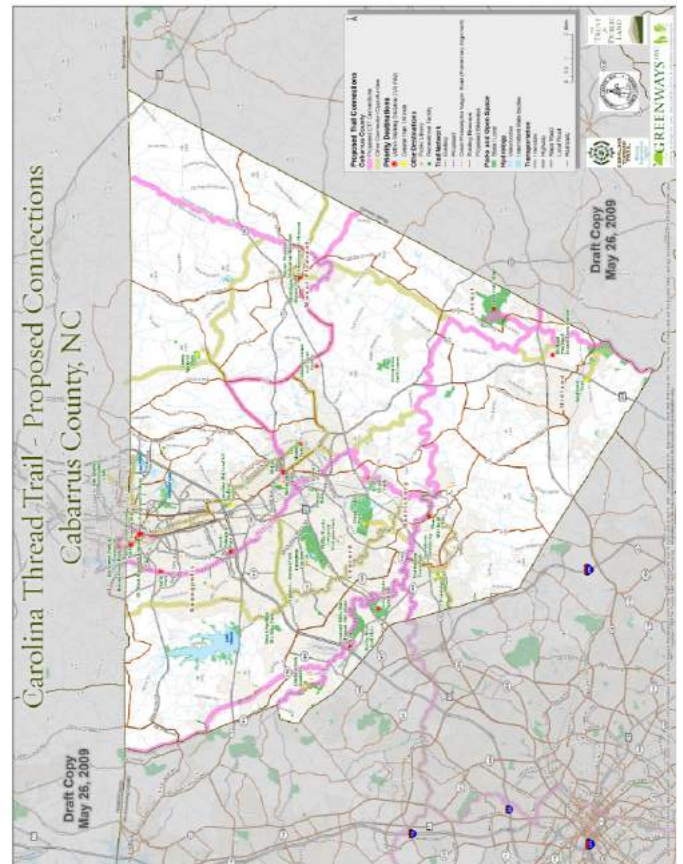
¹ Primary destinations: places mentioned almost universally in the community meetings.
² Walking distance assumed at 1/4 mile.
³ Regional Services include airports, hospitals, & race tracks.
⁴ Service area assumed at 1/2 mile.
⁵ Based on 2007 census projections (Claritas data).



PROJECT CONTACT INFO:
Londa Strong, Cabarrus Co. Parks Director
704-920-3354; e-mail:
L.A.Strong@cabarruscounty.us

COMMENT FORM + WORKSHOP INFO:
WWW.GREENWAYS.COM/CABARRUS

1

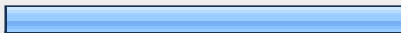
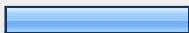



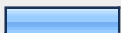
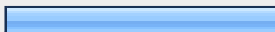
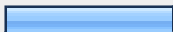

Above: Project Newsletters #1 (top) and #2 (bottom)



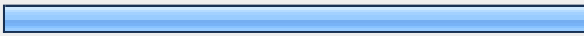

**APPENDIX II:
PUBLIC COMMENT FORM SUMMARY**

Two separate online public comment forms were developed for this plan. The first survey was utilized early in the process to gain an understanding of the trail needs and priorities of residents. The second asked people to respond to the draft proposed routes and the plan overall. More than 730 people responded to the surveys. This information helped project planners identify peoples’ perceptions about trails, destinations to connect with trails, and obstacles to using trails today. The answers to most questions have been tabulated and are shown in the form of a graph or pie chart. However, some questions were open-ended and those responses have been tallied to show the most common answer subjects.

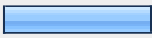
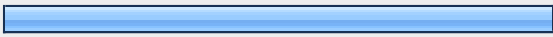
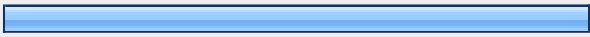

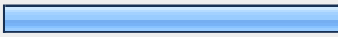


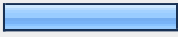
1. How important to you is the goal of creating more trails? (select one)			
		Response Percent	Response Count
very important		63.1%	396
somewhat important		28.8%	181
not important		8.1%	51
<i>answered question</i>			628

2. How often do you use trails now? (select one)			
		Response Percent	Response Count
never		17.9%	112
few times per year		43.1%	270
few times per month		26.3%	165
few times per week		12.8%	80
<i>answered question</i>			627



3. Would you use trails more often if you could easily bike or walk to one?				
			Response Percent	Response Count
Yes			93.0%	582
No			7.0%	44
<i>answered question</i>				626

4. For what purposes do you walk or bike most often? (Or for what purposes would you use trails in the future?). (Rank Top 3).					
	#1	#2	#3	Rating Average	Response Count
Fitness or recreation	84.8% (479)	10.1% (57)	5.1% (29)	1.20	565
Transportation to some destination	5.3% (10)	48.9% (93)	45.8% (87)	2.41	190
Social visits	5.0% (16)	39.6% (128)	55.4% (179)	2.50	323
Walking the dog	18.3% (54)	53.9% (159)	27.8% (82)	2.09	295
Walking with a baby/stroller	16.4% (26)	39.6% (63)	44.0% (70)	2.28	159
<i>answered question</i>					598

5. What are the most important benefits and uses of a trail system? Select all that apply.				
			Response Percent	Response Count
Transportation			23.3%	139
Recreation			87.4%	522
Exercise			93.3%	557
Community-building and events			32.0%	191
Connectivity to surrounding area			53.4%	319
Environmental improvements			51.1%	305
Tourism			17.9%	107
Education and interpretation			27.5%	164
<i>answered question</i>				597



6. What destinations would you most like to get to by trail? (Rank Top 3)

	#1	#2	#3	Rating Average	Response Count
8th Street Park & Greenway	46.2% (12)	23.1% (6)	30.8% (8)	1.85	26
Bakers Creek Park	50.0% (26)	21.2% (11)	28.8% (15)	1.79	52
Camp Spencer Park	34.9% (15)	30.2% (13)	34.9% (15)	2.00	43
Clarke Creek Rookery	62.5% (5)	25.0% (2)	12.5% (1)	1.50	8
Concord Mills Mall	24.4% (21)	30.2% (26)	45.3% (39)	2.21	86
Cox Mill Elementary	33.3% (3)	22.2% (2)	44.4% (4)	2.11	9
Dale Earnhardt Tribute	15.4% (2)	38.5% (5)	46.2% (6)	2.31	13
Downtown Concord	46.2% (67)	28.3% (41)	25.5% (37)	1.79	145
Downtown Harrisburg	52.4% (86)	37.2% (61)	10.4% (17)	1.58	164
Downtown Kannapolis	40.7% (33)	37.0% (30)	22.2% (18)	1.81	81
Downtown Midland	42.1% (8)	26.3% (5)	31.6% (6)	1.89	19
Downtown Mount Pleasant	57.1% (28)	20.4% (10)	22.4% (11)	1.65	49
Frank Liske Park	25.7% (39)	36.2% (55)	38.2% (58)	2.13	152
Great Philadelphia Wagon Road	25.0% (4)	37.5% (6)	37.5% (6)	2.13	16
Harrisburg Town Park	44.9% (66)	36.1% (53)	19.0% (28)	1.74	147
James L. Dorton Park	51.2% (22)	32.6% (14)	16.3% (7)	1.65	43
Kannapolis Recreation Park	10.7% (3)	14.3% (4)	75.0% (21)	2.64	28
Les Meyers Park	19.2% (10)	48.1% (25)	32.7% (17)	2.13	52
Lowe's Motor Speedway	19.4% (13)	20.9% (14)	59.7% (40)	2.40	67
Mount Pleasant Historical Museum	16.7% (4)	62.5% (15)	20.8% (5)	2.04	24
North Cabarrus Park	35.8% (19)	37.7% (20)	26.4% (14)	1.91	53
NC Research Campus	30.4% (21)	39.1% (27)	30.4% (21)	2.00	69
Reed Gold Mine	20.5% (9)	31.8% (14)	47.7% (21)	2.27	44
Safrit Park	13.3% (2)	46.7% (7)	40.0% (6)	2.27	15



Southeast Park	20.0% (1)	20.0% (1)	60.0% (3)	2.40	5
Village Park	28.6% (12)	31.0% (13)	40.5% (17)	2.12	42
W.W. Flowe Park	23.1% (6)	30.8% (8)	46.2% (12)	2.23	26
<i>answered question</i>					542

7. What do you think are the biggest factors that discourage trail, sidewalk, or bicycle facility use? Rank Top 3.					
	#1	#2	#3	Rating Average	Response Count
Lack of information about local trails	50.6% (164)	26.2% (85)	23.1% (75)	1.73	324
Unsafe street crossings	27.9% (43)	37.0% (57)	35.1% (54)	2.07	154
High traffic volume	31.3% (35)	42.0% (47)	26.8% (30)	1.96	112
Lack of interest	26.8% (15)	41.1% (23)	32.1% (18)	2.05	56
Lack of time	23.0% (23)	44.0% (44)	33.0% (33)	2.10	100
Personal safety concerns	40.1% (103)	32.3% (83)	27.6% (71)	1.88	257
Aggressive motorist behavior	30.1% (28)	31.2% (29)	38.7% (36)	2.09	93
Deficient sidewalks	34.7% (87)	35.5% (89)	29.9% (75)	1.95	251
Lack of nearby destinations	24.2% (57)	27.1% (64)	48.7% (115)	2.25	236
<i>answered question</i>					564

8. Are there other specific destinations in Cabarrus County that you believe should be connected by trails?		
<i>The most common tallied responses are:</i>		Response Count
Parks	32	
Schools	29	
Downtowns	22	
Rocky River	10	
Carolina Mall	7	154
<i>answered question</i>		154






9. What other trail-related improvements do you consider priorities?		
<i>Summary to be included in final draft.</i>		Response Count
		146
	<i>answered question</i>	146

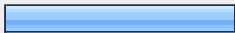
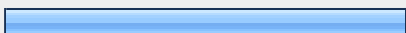
10. Do you have any other comments?		
<i>Summary to be included in final draft.</i>		Response Count
		136
	<i>answered question</i>	136

11. What is your zip code?					
<i>Zip Code</i>	<i>Number</i>	<i>Zip Code</i>	<i>Number</i>	Response Count	
28075	160	28081	55		
28025	112	28124	21	539	
28027	86	28107	10		
28083	57	Other	33		
				<i>answered question</i>	539



RESULTS FROM PUBLIC COMMENT FORM #2

1. Do you support this plan for Cabarrus County and its communities?			
		Response Percent	Response Count
Yes.		91.7%	88
No.		3.1%	3
Maybe with the following changes...		5.2%	5
<i>answered question</i>			96

2. Would you like to receive an e-mail announcement when this plan is up for official adoption? [your address will be held strictly confidential and you will receive one (1) announcement for each community you select]			
		Response Percent	Response Count
No		36.2%	34
Yes, and here is my e-mail address...		63.8%	60
<i>answered question</i>			94



APPENDIX III: FUNDING AND FINANCING

The purpose of this appendix is to define and describe possible funding sources that could be used to support the planning, design and development of greenway improvements.

Implementing the recommendations of this plan will require a strong level of local support and commitment through a variety of local funding mechanisms. Perhaps most important is the addition of bicycle and greenway recommendations from this Plan into the Cabarrus County and its municipalities' annual budgets. These improvements should become a high priority and be supported through portions of the funding currently used for public safety, streets, parks and recreation, planning, Powell Bill funds, community development, travel and tourism, downtown, and local bonds.

Cabarrus County and its municipalities should also seek a combination of funding sources that include local, state, federal, and private money. Fortunately, the benefits of protected greenways are many and varied. This allows programs in Cabarrus County to access money earmarked for a variety of purposes including water quality, hazard mitigation, recreation, air quality, alternate transportation, wildlife protection, community health, and economic development. Competition is almost always stiff for state and federal funds, so it becomes imperative that local governments work together to create multi-jurisdictional partnerships and to develop their own local sources of funding. These sources can then be used to leverage outside assistance.

For the past two decades, a variety of funding has been used throughout North Carolina to support the planning, design and construction of urban and rural bicycle and greenway projects. The largest single source of funding for these projects has come from the Surface Transportation Act, first the Intermodal Surface Transportation Efficiency Act (ISTEA) in the early to mid 1990's; then its successor, Transportation Equity Act for the Twenty-First Century (TEA-21) through the early part of

2002; and now the Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU). The North Carolina Department of Transportation manages and distributes the majority of federal funds that are derived from the Act to support the development of bicycle/trail development.

The majority of federal funding is distributed to states in the form of block grants and is then distributed throughout a given state for specific projects. State funding programs in North Carolina also support the creation of greenways. North Carolina has developed a broad array of funding sources that address land acquisition, green infrastructure development, and trail facility development.

Additionally, there are many things Cabarrus County and its municipalities can do to establish their own funding for greenway initiatives. For the most part, it takes money to get money. For Cabarrus County and its municipalities, it will be necessary to create a local funding program through one of the methods that is defined within this report. Financing will be needed to administer the continued planning and implementation process, acquire parcels or easements, and manage and maintain facilities.

This appendix is organized by first addressing the state sources of funding, then addresses separate federal and local government funding sources. It is by no means an exhaustive list as there are many other funding sources available that should be researched and pursued as well. Creative planning and consistent monitoring of funding options will likely turn up new opportunities not listed here.

HIGH PRIORITY FUNDING OPTIONS

While there are a number of funding sources provided in the following pages, these sources should be the highest priority in order to achieve successful implementation. It is critical



for local government to step up given the competitiveness and finite availability associated with most funding sources. Details about the following sources are found later in this appendix.

- Local Capital Improvements Program (CIP)
- Local Bond
- Local Fees
- Cabarrus-Rowan Metropolitan Planning Organization
- NCDOT Division of Bicycle and Pedestrian Transportation
- State Transportation Improvements Program (STIP)
- State Powell Bill Funds
- State Safe Routes to School Program
- State Parks and Recreation Trust Fund (PARTF)
- State Health and Wellness Trust Fund (HWTF)
- Private Sources
- Stimulus funding (potential for second round of stimulus funding)

STATE FUNDING SOURCES

The most direct source of public-sector funding for Cabarrus County and its municipalities will come from state agencies in North Carolina. Generally, these funds are made available to local governments based on grant-in-aid formulas. The single most important key to obtaining state grant funding is for local governments to have adopted plans for greenway, open space, bicycle, pedestrian or trail systems in place prior to making an application for funding. Unfortunately, there is no direct correlation between any of the programs listed and a constant stream of funding for greenway or trail projects and all projects are funded on the basis of grant applications. There is no specific set aside amount that is allocated for greenway and trail development within a given program. Funding is based solely on need and the need has to be expressed and submitted in the form of a grant application. Finally, all of these programs

are geared to address needs across the entire state, so all of the programs are competitive and must allocate funding with the needs of the entire state in mind.

The Powell Bill Program is an annual state allocation to municipalities for use in street system maintenance and construction activities. There is considerable local control over Powell Bill Funds (it is not a grant application process). In the past, the State allocated a considerable portion of these revenues for construction purposes. However, budgetary constraints since 2001 have led to a shift of new Powell Bill funds to cover maintenance and operations activities. Both the Powell Bill reserves and the 2000 Transportation Bond funds are limited funding sources that will eventually be depleted.

In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) has been the single largest source of funding for bicycle and greenway projects, including non-construction projects such as brochures, maps, and public safety information for more than a decade. DBPT offers several programs in support of bicycle facility development. The following information is from NCDOT's interactive web site (www.ncdot.org). Contact the NCDOT, Division of Bicycle and Pedestrian Transportation at (919) 807-2804 for more information.

North Carolina programs are listed below. A good starting website with links to many of the following programs is www.enr.state.nc.us/html/tax_credits.html.

FUNDING OPPORTUNITIES THROUGH NCDOT

Bicycle and Pedestrian Independent Projects Funded Through the Transportation Improvement Program (TIP):

In North Carolina, the Department of Transportation, Division of Bicycle and Pedestrian Transportation (DBPT) manages the Transportation Improvement Program (TIP) selection process for bicycle, pedestrian, and greenway projects.



Projects programmed into the TIP by the DBPT are independent projects – those which are not related to a scheduled highway project. Incidental projects – those related to a scheduled highway project – are handled through other funding sources described in this section.

DBPT has an annual budget of \$6 million. Eighty percent of these funds are from STP-Enhancement funds, while the State Highway Trust provides the remaining 20 percent of the funding. Prospective applicants are encouraged to contact the DBPT regarding funding assistance for bicycle projects. For a detailed description of the TIP project selection process, visit www.ncdot.org/transit/bicycle/funding/funding_TIP.html. Another \$500,000 of the division's funding is available for miscellaneous projects.

Incidental Projects

Bicycle accommodations such as bike lanes, widened paved shoulders, and bicycle-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most bicycle safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of National Highway System funds and State Highway Trust Funds.

Governor's Highway Safety Program (GHSP)

The mission of the GHSP is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance

highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required. For information on applying for GHSP funding, visit www.ncdot.org/programs/ghsp/.

FUNDING AVAILABLE THROUGH NORTH CAROLINA METROPOLITAN PLANNING ORGANIZATIONS (MPOS)

The first step of Cabarrus County and its municipalities would be to contact the Cabarrus-Rowan MPO with priority greenway projects for the TIP list. Ensuring that greenway projects are on this TIP list will allow the possibility of being funded from the statewide TIP.

MPOs in North Carolina which are located in air quality nonattainment or maintenance areas also have the authority to program Congestion Mitigation Air Quality (CMAQ) funds. CMAQ funding is intended for projects that reduce transportation related emissions. Some NC MPOs have chosen to use the CMAQ funding for bicycle/pedestrian projects. Local governments in air quality nonattainment or maintenance area should contact their MPO for information on CMAQ funding opportunities for greenway facilities.

TRANSPORTATION ENHANCEMENT CALL FOR PROJECTS, EU, NCDOT

The Enhancement Unit administers a portion of the enhancement funding set-aside through the Call for Projects process. In North Carolina the Enhancement Program is a federally funded cost reimbursement program with a focus upon improving the transportation experience in and through local North Carolina communities either culturally, aesthetically, or environmentally. The program seeks to encourage diverse modes of travel, increase benefits to communities and to encourage citizen involvement. This is accomplished through



the following twelve qualifying activities:

- Bicycle and Pedestrian Facilities
- Bicycle and Pedestrian Safety
- Acquisition of Scenic Easements, Scenic or Historic Sites
- Scenic or Historic Highway Programs (including tourist or welcome centers)
- Landscaping and other Scenic Beautification
- Historic Preservation
- Rehabilitation of Historic Transportation Facilities
- Preservation of Abandoned Rail Corridors
- Control of Outdoor Advertising
- Archaeological Planning and Research
- Environmental Mitigation
- Transportation Museums

Funds are allocated based on an equity formula approved by the Board of Transportation. The formula is applied at the county level and aggregated to the regional level. Available fund amount varies. In previous Calls, the funds available ranged from \$10 million to \$22 million.

The Call process takes place on even numbered years or as specified by the Secretary of Transportation. For more information, visit www.ncdot.org/financial/fiscal/Enhancement/

BICYCLE AND PEDESTRIAN PLANNING GRANT INITIATIVE, MANAGED BY NCDOT, DBPT

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved

by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT and the Institute for Transportation Research and Education (ITRE) at NC State University. Over the first six grant cycles, 92 municipal plans have been selected and funded. A total of \$ 2,270,168 has been allocated. Funding was secured in 2009 for \$315,850. Additional annual allocations will be sought for subsequent years. For more information, visit www.itre.ncsu.edu/ptg/bikeped/ncdot/index.html

SAFE ROUTES TO SCHOOL PROGRAM, MANAGED BY NCDOT, DBPT

The NCDOT Safe Routes to School Program is a federally funded program that was initiated by the passing of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) in 2005, which establishes a national SRTS program to distribute funding and institutional support to implement SRTS programs in states and communities across the country. SRTS programs facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools. The Division of Bicycle and Pedestrian Transportation at NCDOT is charged with disseminating SRTS funding.

In its first funding cycle (2008), the state of North Carolina allocated \$1.46 million for six infrastructure projects, \$135,450 for non-infrastructure projects, and \$315,000 for action planning. All proposed projects must relate to increasing walking or biking to and from an elementary or middle school. An example of a non-infrastructure project is an education or encouragement program to improve rates of walking and biking to school. An example of an infrastructure project is



construction of sidewalks around a school. Infrastructure improvements under this program must be made within 2 miles of an elementary or middle school. The state requires the completion of a competitive application to apply for funding. For more information, visit www.ncdot.org/programs/safeRoutes/ or contact NCDOT's Division of Bicycle and Pedestrian Transportation at (919) 807-0774.

THE NORTH CAROLINA CONSERVATION TAX CREDIT, MANAGED BY NCDENR

This program, managed by the North Carolina Department of Environment and Natural Resources, provides an incentive (in the form of an income tax credit) for landowners that donate interests in real property for conservation purposes. Property donations can be fee simple or in the form of conservation easements or bargain sale. The goal of this program is to manage stormwater, protect water supply watersheds, retain working farms and forests, and set-aside greenways for ecological communities, public trails, and wildlife corridors. For more information, visit www.enr.state.nc.us/conservationtaxcredit/.

LAND AND WATER CONSERVATION FUND (LWCF)

The Land and Water Conservation Fund (LWCF) program is a reimbursable, 50/50 matching grants program to states for conservation and recreation purposes, and through the states to local governments to address "close to home" outdoor recreation needs. LWCF grants can be used by communities to build a trail within one park site, if the local government has fee-simple title to the park site. Grants for a maximum of \$250,000 in LWCF assistance are awarded yearly to county governments, incorporated municipalities, public authorities and federally recognized Indian tribes. The local match may be provided with in-kind services or cash. The program's funding comes primarily from offshore oil and gas drilling receipts, with

an authorized expenditure of \$900 million each year. However, Congress generally appropriates only a small fraction of this amount. The allotted money for the year 2007 is \$632,846.

The Land and Water Conservation Fund (LWCF) has historically been a primary funding source of the US Department of the Interior for outdoor recreation development and land acquisition by local governments and state agencies. In North Carolina, the program is administered by the Department of Environment and Natural Resources. Since 1965, the LWCF program has built a permanent park legacy for present and future generations. In North Carolina alone, the LWCF program has provided more than \$63 million in matching grants to protect land and support more than 800 state and local park projects. More than 37,000 acres have been acquired with LWCF assistance to establish a park legacy in our state. For more information, visit <http://ils.unc.edu/parkproject/lwcf/home1.html>

NC ADOPT-A-TRAIL GRANT PROGRAM

This program, operated by the Trails Section of the NC Division of State Parks, offers annual grants to local governments to build, renovate, maintain, sign and map and create brochures for pedestrian trails. Grants are generally capped at about \$5,000 per project and do not require a match. A total of \$108,000 in Adopt-A-Trail money is awarded annually to government agencies. Applications are due during the month of February. For more information, visit <http://ils.unc.edu/parkproject/trails/grant.html>.

RECREATIONAL TRAILS PROGRAM

The Recreational Trails Program (RTP) is a grant program funded by Congress with money from the federal gas taxes paid on fuel used by off-highway vehicles. This program's intent is to meet the trail and trail-related recreational needs identified by



the Statewide Comprehensive Outdoor Recreation Plan. Grant applicants must be able contribute 20% of the project cost with cash or in-kind contributions. The program is managed by the State Trails Program, which is a section of the N.C. Division of Parks and Recreation.

The grant application is available and instruction handbook is available through the State Trails Program website at <http://ils.unc.edu/parkproject/trails/home.html>. Applications are due during the month of February. For more information, call (919) 715-8699.

NORTH CAROLINA PARKS AND RECREATION TRUST FUND (PARTF)

The fund was established in 1994 by the North Carolina General Assembly and is administered by the Parks and Recreation Authority. Through this program, several million dollars each year are available to local governments to fund the acquisition, development and renovation of recreational areas. Applicable projects require a 50/50 match from the local government. Grants for a maximum of \$500,000 are awarded yearly to county governments or incorporated municipalities. The fund is fueled by money from the state's portion of the real estate deed transfer tax for property sold in North Carolina.

The trust fund is allocated three ways:

- 65 percent to the state parks through the N.C. Division of Parks and Recreation.
- 30 percent as dollar-for dollar matching grants to local governments for park and recreation purposes.
- 5 percent for the Coastal and Estuarine Water Access Program.

For information on how to apply, visit www.partf.net/learn.html

POWELL BILL PROGRAM

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by statute. This program is a state grant to municipalities for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Amount of funds are based on population and mileage of town-maintained streets. For more information, visit www.ncdot.org/financial/fiscal/ExtAditBranch/Powell_Bill/powellbill.html.

CLEAN WATER MANAGEMENT TRUST FUND

This fund was established in 1996 and has become one of the largest sources of money in North Carolina for land and water protection. At the end of each fiscal year, 6.5 percent of the unreserved credit balance in North Carolina's General Fund, or a minimum of \$30 million, is placed in the CWMTF. The revenue of this fund is allocated as grants to local governments, state agencies and conservation non-profits to help finance projects that specifically address water pollution problems. CWMTF funds may be used to establish a network of riparian buffers and greenways for environmental, educational, and recreational benefits. The fund has provided funding for land acquisition of numerous greenway projects featuring trails, both paved and unpaved. For a history of awarded grants in North Carolina and more information about this fund and applications, visit www.cwmtf.net/.

NATURAL HERITAGE TRUST FUND

This trust fund, managed by the NC Natural Heritage Program, has contributed millions of dollars to support the



conservation of North Carolina's most significant natural areas and cultural heritage sites. The NHTF is used to acquire and protect land that has significant habitat value. Some large wetland areas may also qualify, depending on their biological integrity and characteristics. Only certain state agencies are eligible to apply for this fund, including the Department of Environment and Natural Resources, the Wildlife Resources Commission, the Department of Cultural Resources and the Department of Agriculture and Consumer Services. As such, municipalities must work with State level partners to access this fund. Additional information is available from the NC Natural Heritage Program. For more information and grant application information, visit www.ncnhtf.org/.

NORTH CAROLINA CONSERVATION TAX CREDIT PROGRAM

North Carolina has a unique incentive program to assist land-owners to protect the environment and the quality of life. A credit is allowed against individual and corporate income taxes when real property is donated for conservation purposes. Interests in property that promote specific public benefits may be donated to a qualified recipient. Such conservation donations qualify for a substantial tax credit. For more information, visit www.enr.state.nc.us/conservationtaxcredit/.

URBAN AND COMMUNITY FORESTRY ASSISTANCE PROGRAM

This program offers small grants that can be used to plant urban trees, establish a community arboretum, or other programs that promote tree canopy in urban areas. The program operates as a cooperative partnership between the NC Division of Forest Resources and the USDA Forest Service, Southern Region. To qualify for this program, a community must pledge to develop a street-tree inventory, a municipal tree ordinance,

a tree commission, and an urban forestry-management plan. All of these can be funded through the program. For more information, contact the NC Division of Forest Resources. For more information and a grant application, contact the NC Division of Forest Resources and/or visit www.dfr.state.nc.us/urban/urban_grantprogram.htm.

ECOSYSTEM ENHANCEMENT PROGRAM

Developed in 2003 as a new mechanism to facilitate improved mitigation projects for NC highways, this program offers funding for restoration projects and for protection projects that serve to enhance water quality and wildlife habitat in NC. Information on the program is available by contacting the Natural Heritage Program in the NC Department of Environment and Natural Resources (NCDENR). For more information, visit www.nceep.net/pages/partners.html or call 919-715-0476.

CONSERVATION RESERVE ENHANCEMENT PROGRAM (CREP)

This program is a joint effort of the North Carolina Division of Soil and Water Conservation, the NC Clean Water Management Trust Fund, the Ecosystem Enhancement Program (EEP), and the Farm Service Agency - United States Department of Agriculture (USDA) to address water quality problems of the Neuse, Tar-Pamlico and Chowan river basins as well as the Jordan Lake watershed area.

CREP is a voluntary program that seeks to protect land along watercourses that is currently in agricultural production. The objectives of the program include: installing 100,000 acres of forested riparian buffers, grassed filter strips and wetlands; reducing the impacts of sediment and nutrients within the targeted area; and providing substantial ecological benefits for many wildlife species that are declining in part



as a result of habitat loss. Program funding will combine the Federal Conservation Reserve Program (CRP) funding with State funding from the Clean Water Management Trust Fund, Agriculture Cost Share Program, and North Carolina Wetlands Restoration Program.

The program is managed by the NC Division of Soil and Water Conservation. For more information, visit www.enr.state.nc.us/dswc/pages/crep.html

AGRICULTURE COST SHARE PROGRAM

Established in 1984, this program assists farmers with the cost of installing best management practices (BMPs) that benefit water quality. The program covers as much as 75 percent of the costs to implement BMPs. The NC Division of Soil and Water Conservation within the NC Department of Environment and Natural Resources administers this program through local Soil and Water Conservation Districts (SWCD). For more information, visit www.enr.state.nc.us/DSWC/pages/agcostshareprogram.html or call 919-733-2302.

WATER RESOURCES DEVELOPMENT GRANT PROGRAM

The NC Division of Water Resources offers cost-sharing grants to local governments on projects related to water resources. Of the seven project application categories available, the category which relates to the establishment of greenways is "Land Acquisition and Facility Development for Water-Based Recreation Projects." Applicants may apply for funding for a greenway as long as the greenway is in close proximity to a water body. For more information, see www.ncwater.org/Financial_Assistance or call 919-733-4064.

SMALL CITIES COMMUNITY DEVELOPMENT BLOCK GRANTS

State level funds are allocated through the NC Department of Commerce, Division of Community Assistance to be used to promote economic development and to serve low-income and moderate-income neighborhoods. Greenways that are part of a community's economic development plans may qualify for assistance under this program. Recreational areas that serve to improve the quality of life in lower income areas may also qualify. Approximately \$50 million is available statewide to fund a variety of projects. For more information, visit

www.hud.gov/offices/cpd/communitydevelopment/programs/stateadmin/ or call 919-733-2853.

NORTH CAROLINA HEALTH AND WELLNESS TRUST FUND

The NC Health and Wellness Trust Fund was created by the General Assembly as one of 3 entities to invest North Carolina's portion of the Tobacco Master Settlement Agreement. HWTF receives one-fourth of the state's tobacco settlement funds, which are paid in annual installments over a 25-year period.

Fit Together, a partnership of the NC Health and Wellness Trust Fund (HWTF) and Blue Cross and Blue Shield of North Carolina (BCBSNC) announces the establishment of Fit Community, a designation and grant program that recognizes and rewards North Carolina communities' efforts to support physical activity and healthy eating initiatives, as well as tobacco-free school environments. Fit Community is one component of the jointly sponsored Fit Together initiative, a statewide prevention campaign designed to raise awareness about obesity and to equip individuals, families and communities with the tools they need to address this important issue.

All North Carolina municipalities and counties are eligible to apply for a Fit Community designation, which will be awarded



to those that have excelled in supporting the following:

- physical activity in the community, schools, and workplaces
- healthy eating in the community, schools, workplaces
- tobacco use prevention efforts in schools

Designations will be valid for two years, and designated communities may have the opportunity to reapply for subsequent two-year extensions. The benefits of being a Fit Community include:

- Heightened statewide attention that can help bolster local community development and/or economic investment initiatives (highway signage and a plaque for the Mayor's or County Commission Chair's office will be provided)
- Reinvigoration of a community's sense of civic pride (each Fit Community will serve as a model for other communities that are trying to achieve similar goals)
- Use of the Fit Community designation logo for promotional and communication purposes. The application for Fit Community designation is available on the Fit Together Web site: www.FitTogetherNC.org/FitCommunity.aspx.

Fit Community grants are designed to support innovative strategies that help a community meet its goal to becoming a Fit Community. Eight to nine, two-year grants of up to \$30,000 annually will be awarded to applicants that have a demonstrated need, proven capacity, and opportunity for positive change in addressing physical activity and/or healthy eating. For more information, visit www.healthwellnc.com/

EAT SMART, MOVE MORE NC COMMUNITY GRANTS

The Eat Smart, Move More (ESMM) NC Community Grants program provides funding to local communities to implement strategies that advance the goals and objectives of the ESMM NC Plan. These goals include increasing physical activity opportunities and increasing the number of citizens who get the recommended amount of physical activity. Administered by the Physical Activity and Nutrition branch of the Division of Public Health, the program awards \$10,000 - 20,000 to local communities each year. Interested applicants must submit a letter of intent in late June and an application in mid-July. For more information, visit www.eatsmartmovemorenc.com/funding/index.html.

THE NORTH CAROLINA DIVISION OF FOREST RESOURCES

Urban and Community Forestry Grant can provide funding for a variety of projects that will help toward planning and establishing street trees as well as trees for urban open space. See www.dfr.state.nc.us/urban/urban_ideas.htm

IV. FUNDING ALLOCATED BY FEDERAL AGENCIES

WETLANDS RESERVE PROGRAM

This federal funding source is a voluntary program offering technical and financial assistance to landowners who want to restore and protect wetland areas for water quality and wildlife habitat. The US Department of Agriculture's Natural Resource Conservation Service (USDA-NRCS) administers the program and provides direct payments to private landowners who agree to place sensitive wetlands under permanent easements. This program can be used to fund the protection of open space and



greenways within riparian corridors. For more information, visit <http://www.nrcs.usda.gov/PROGRAMS/wrp/>.

THE COMMUNITY DEVELOPMENT BLOCK GRANT (HUD-CDBG)

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate income areas. Several communities have used HUD funds to develop greenways, including the Boulding Branch Greenway in High Point, North Carolina. Grants from this program range from \$50,000 to \$200,000 and are either made to municipalities or non-profits. There is no formal application process. For more information, visit www.hud.gov/offices/cpd/communitydevelopment/programs/.

USDA RURAL BUSINESS ENTERPRISE GRANTS

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment. \$1 million is available for North Carolina on an annual basis and may be used for sidewalk and other community facilities. For more information from the local USDA Service Center, visit www.rurdev.usda.gov/rbs/busp/rbeg.htm

RIVERS TRAILS AND CONSERVATION ASSISTANCE PROGRAM (RTCA)

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provide technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails

and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America.

PUBLIC LANDS HIGHWAYS DISCRETIONARY FUND

The Federal Highway Administration administers discretionary funding for projects that will reduce congestion and improve air quality. The FHWA issues a call for projects to disseminate this funding. The FHWA estimates that the PLHD funding for the 2007 call will be \$85 million. In the past, Congress has earmarked a portion of the total available funding for projects. For information on how to apply, visit <http://www.fhwa.dot.gov/discretionary/>

DEPARTMENT OF ENERGY

The Department of Energy's Energy Efficiency and Conservation Block Grants (EECBG) grants may be used to reduce energy use and fossil fuel emissions and for improvements in energy efficiency. Section 7 of the funding announcement states that these grants provide opportunities for the development and implementation of transportation programs to conserve energy used in transportation including development of infrastructure such as bike lanes and pathways and pedestrian walkways. North Carolina was allocated \$20,925,300 in 2009. More information can be found at <http://www.eecbg.energy.gov/>

V. LOCAL FUNDING SOURCES

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the



greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories are described below.

CAPITAL RESERVE FUND

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.

CAPITAL PROJECT ORDINANCES

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

MUNICIPAL SERVICE DISTRICT

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.

TAX INCREMENT FINANCING

Tax increment financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project, such as the construction of a greenway, is carried out, there is an increase in the value of surrounding real estate. Oftentimes, new investment in the area follows such a project. This increase in value and investment creates more taxable property, which increases tax revenues. These increased revenues can be referred to as the "tax increment." Tax Increment Financing dedicates that increased revenue to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur. TIF creates funding for public projects that may otherwise be unaffordable to localities. The large majority of states have enabling legislation for tax increment financing.

INSTALLMENT PURCHASE FINANCING

As an alternative to debt financing of capital improvements, communities can execute installment/lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.



TAXES

Many communities have raised money through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional \$5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:

Sales Tax

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even if applying to a single county, must gain approval of the state legislature.

Property Tax

Property taxes generally support a significant portion of a municipality's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance greenway system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund greenways could limit the municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

Excise Taxes

Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging, food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

Occupancy Tax

The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

FEES

Three fee options that have been used by local governments to assist in funding pedestrian and bicycle facilities are listed here:

Stormwater Utility Fees

Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and creates a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs



that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules.

Streetscape Utility Fees

Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled citizens. Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

Impact Fees

Developers can be required to provide greenway impact fees through local enabling legislation. Impact fees, which are also known as capital contributions, facilities fees, or system development charges, are typically collected from developers or property owners at the time of building permit issuance to pay for capital improvements that provide capacity to serve new growth. The intent of these fees is to avoid burdening existing customers with the costs of providing capacity to serve new growth (“growth pays its own way”). Greenway impact fees are designed to reflect the costs incurred to provide sufficient capacity in the system to meet the additional needs of a growing community. These charges are set in a fee schedule applied uniformly to all new development. Communities that institute impact fees must develop a sound financial model that enables policy makers to justify fee levels for different user groups, and

to ensure that revenues generated meet (but do not exceed) the needs of development. Factors used to determine an appropriate impact fee amount can include: lot size, number of occupants, and types of subdivision improvements. If a Cabarrus County municipality is interested in pursuing open space impact fees, it will require enabling legislation to authorize the collection of the fees.

Exactions

Exactions are similar to impact fees in that they provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.

In-Lieu-Of Fees

As an alternative to requiring developers to dedicate on-site greenway sections that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development’s proportionate share of the cost of a regional facility serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

BONDS AND LOANS

Bonds have been a very popular way for communities across the country to finance their pedestrian and greenway projects. A number of bond options are listed below. Contracting with a



private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount of \$599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of their bicycle and trail system.

Revenue Bonds

Revenue bonds are bonds that are secured by a pledge of the revenues from a certain local government activity. The entity issuing bonds, pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

General Obligation Bonds

Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of

revenue to make the payments. G.O. bonds distribute the costs of land acquisition and greenway development and make funds available for immediate purchases and projects. Voter approval is required.

Special Assessment Bonds

Special assessment bonds are secured by a lien on the property that benefits by the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

State Revolving Fund (SRF) Loans

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

VI. OTHER LOCAL OPTIONS

FACILITY MAINTENANCE DISTRICTS

Facility Maintenance Districts (FMDs) can be created to pay for the costs of on-going maintenance of public facilities and landscaping within the areas of the Town where improvements have been concentrated and where their benefits most directly benefit business and institutional property owners. An FMD is needed in order to assure a sustainable maintenance program. Fees may be based upon the length of lot frontage along streets where improvements have been installed, or upon other factors such as the size of the parcel. The program supported by the



FMD should include regular maintenance of streetscape of off road trail improvements. The municipality can initiate public outreach efforts to merchants, the Chamber of Commerce, and property owners. In these meetings, Town staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies.

The municipality can manage maintenance responsibilities either through its own staff or through private contractors.

PARTNERSHIPS

Another method of funding facilities is to partner with public agencies and private companies and organizations. Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Very specific routes that make critical connections to place of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers which are located along or accessible to pedestrian facilities such as multi-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

LOCAL TRAIL SPONSORS

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with

the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

VOLUNTEER WORK

It is expected that many citizens will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers from church groups, civic groups, scout troops and environmental groups to work on greenway development on special community work days. Volunteers can also be used for fund-raising, maintenance, and programming needs.

VII. PRIVATE FOUNDATIONS AND ORGANIZATIONS

Many communities have solicited greenway funding assistance from private foundations and other conservation-minded benefactors. Below are a few examples of private funding opportunities available in North Carolina and locally to Cabarrus County.

CANNON FOUNDATION, INC

The Cannon Foundation gives grants across the State, with its highest priority in Cabarrus County and related communities. Preference is given to rural communities. Grants have been provided in the fields of health, environment, cultural/historic, human services, and education. The majority of the grants go to capital improvements (75%) while 25% goes to project support and programs. The foundation has given millions of dollars in grant money over the years, making it the leading foundation



giver in Cabarrus County.

LAND FOR TOMORROW CAMPAIGN

Land for Tomorrow is a diverse partnership of businesses, conservationists, farmers, environmental groups, health professionals and community groups committed to securing support from the public and General Assembly for protecting land, water and historic places. The campaign is asking the North Carolina General Assembly to support issuance of a bond for \$200 million a year for five years to preserve and protect its special land and water resources. Land for Tomorrow will enable North Carolina to reach a goal of ensuring that working farms and forests; sanctuaries for wildlife; land bordering streams, parks and greenways; land that helps strengthen communities and promotes job growth; historic downtowns and neighborhoods; and more, will be there to enhance the quality of life for generations to come. For more information, visit www.landfortomorrow.org/

THE TRUST FOR PUBLIC LAND

Land conservation is central to the mission of the Trust for Public Land (TPL). Founded in 1972, the Trust for Public Land is the only national nonprofit working exclusively to protect land for human enjoyment and well being. TPL helps conserve land for recreation and spiritual nourishment and to improve the health and quality of life of American communities. TPL's legal and real estate specialists work with landowners, government agencies, and community groups to:

- Create urban parks, gardens, greenways, riverways
- Build livable communities by setting aside open space in the path of growth
- Conserve land for watershed protection, scenic beauty, and close-to home recreation safeguard the character

of communities by preserving historic landmarks and landscapes.

The following are TPL's Conservation Services:

- Conservation Vision: TPL helps agencies and communities define conservation priorities, identify lands to be protected, and plan networks of conserved land that meet public need.
- Conservation Finance: TPL helps agencies and communities identify and raise funds for conservation from federal, state, local, and philanthropic sources.
- Conservation Transactions: TPL helps structure, negotiate, and complete land transactions that create parks, playgrounds, and protected natural areas.
- Research and Education: TPL acquires and shares knowledge of conservation issues and techniques to improve the practice of conservation and promote its public benefits.

Since 1972, TPL has worked with willing landowners, community groups, and national, state, and local agencies to complete more than 3,000 land conservation projects in 46 states, protecting more than 2 million acres. Since 1994, TPL has helped states and communities craft and pass over 330 ballot measures, generating almost \$25 billion in new conservation-related funding. For more information, visit www.tpl.org/.

Z. SMITH REYNOLDS FOUNDATION

This Winston-Salem based Foundation has been assisting the environmental projects of local governments and non-profits in North Carolina for many years. The foundation has two grant cycles per year and generally does not fund land acquisition. However, the foundation may be able to support municipalities in other areas of greenways development. More



information is available at www.zsr.org.

NORTH CAROLINA COMMUNITY FOUNDATION

The North Carolina Community Foundation, established in 1988, is a statewide foundation seeking gifts from individuals, corporations, and other foundations to build endowments and ensure financial security for nonprofit organizations and institutions throughout the state. Based in Raleigh, North Carolina, the foundation also manages a number of community affiliates throughout North Carolina that make grants in the areas of human services, education, health, arts, religion, civic affairs, and the conservation and preservation of historical, cultural, and environmental resources. In addition, the foundation manages various scholarship programs statewide. Web site: <http://nccommunityfoundation.org/>

NATIONAL TRAILS FUND

In 1998, the American Hiking Society created the National Trails Fund, the only privately supported national grants program providing funding to grassroots organizations working toward establishing, protecting and maintaining foot trails in America. Each year, 73 million people enjoy foot trails, yet many of our favorite trails need major repairs due to a \$200 million in badly needed maintenance. National Trails Fund grants give local organizations the resources they need to secure access, volunteers, tools and materials to protect America's cherished public trails. For 2005, American Hiking distributed over \$40,000 in grants thanks to the generous support of Cascade Designs and L.L.Bean, the program's Charter Sponsors. To date, American Hiking has granted nearly \$382,000 to 105 different trail projects across the U.S. for land acquisition, constituency building campaigns, and a variety of trail work projects. Awards typically range from \$500 to \$5,000 per project.

American Hiking Society considers several project types: securing trail lands, including acquisition of trails and trail corridors, and the costs associated with acquiring conservation easements. Building and maintaining trails which will result in visible and substantial ease of access, improved hiker safety, and/or avoidance of environmental damage. Constituency buildingsurroundingspecifictrailprojects - includingvolunteer recruitment and support. Web site: www.americanhiking.org/NTF.aspx



APPENDIX IV: CONSERVATION TOOLBOX

There are many different ways for Cabarrus County to secure trail right-of-way for the Carolina Thread Trail. The recommended alignment of the trail will follow publicly owned land (easements, parklands, and conservation lands) wherever possible through a significant portion of its length. However, it will be necessary to work with landowners along the route to secure trail right-of-way. The following text provides a list of options that should be considered in securing right-of-way for the Carolina Thread Trail.

I. Partnerships

Cabarrus County and its municipalities should pursue partnerships with land trusts and land managers to make more effective use of their land acquisition funds and strategies. The following offers recommendations on how these partnerships could be strengthened

Land Trusts

Land trust organizations, such as the Trust for Public Lands and Conservation Trust for North Carolina to name just two, are valuable partners, when it comes to acquiring land and rights-of-way for greenways. These groups can work directly with landowners and conduct their business in private so that sensitive land transactions are handled in an appropriate manner. Once the transaction has occurred, the land trust will usually convey the acquired land or easement to a public agency, such as a town or county for permanent stewardship and ownership.

Private Land Managers

Another possible partnership that could be strengthened would be with the utility companies that manage land throughout the Cabarrus County region. Trails and greenways can be built

on rights-of-ways that are either owned or leased by electric and natural gas companies. Electric utility companies have long recognized the value of partnering with local communities, non-profit trail organizations, and private land owners to permit their rights-of-ways to be used for trail development. This has occurred all over the United States and throughout North Carolina.

Cabarrus County and its municipalities should actively update and maintain relationships with private utility and land managers to ensure that community wide bicycle, pedestrian and greenway system can be accommodated within these rights-of-way. The respective municipalities will need to demonstrate to these companies that maintenance will be addressed, liability will be reduced and minimized and access to utility needs will be provided.

II. Greenway Acquisition Tools

The following menu of tools describe various methods of acquisition that can be used by landowners, land conservation organizations, Cabarrus County, and other surrounding municipalities to acquire greenway lands.

IIA. Government Regulation

Regulation is defined as the government's ability to control the use and development of land through legislative powers. Regulatory methods help shape the use of land without transferring or selling the land. The following types of development ordinances are regulatory tools that can meet the challenges of projected suburban growth and development as well as conserve and protect greenway resources.



Exactions

An exaction is a condition of development approval that requires development to provide or contribute to the financing of public facilities at their own expense. For example, a developer may be required to build a greenway on-site as a condition of developing a certain number of units because the development will create the need for new parks or will harm existing parks due to overuse. This mechanism can be used to protect or preserve greenway lands, which are then donated to Cabarrus County or towns within the county. Consideration should be given to include greenway development in future exaction programs. Most commonly, exactions are in the form of mandatory dedications of lands for parks and infrastructure, fees in lieu of mandatory dedication, or impact fees.

Mandatory Dedication

This is a type of exaction where subdivision regulations require a developer to dedicate or donate improved land to the public interest. A dedication may involve the fee simple title to the land, an easement, or some other property interest. Sometimes, the construction of an improvement itself is required such as a park or greenway.

Fee-in-Lieu

An exaction can take the form of a fee-in-lieu of mandatory dedication. It can also complement negotiated dedications (described below). Based on the density of development, this program allows a developer the alternative of paying money for the development/protection of open space and greenways in lieu of dedicating greenway and park lands. Payments are made representing the value of the site or improvement that would have been dedicated or provided. This allows local governments to pool fees from various subdivisions to finance facilities like

parks and greenways. This money can be used to implement greenway management programs or acquire additional open space.

Impact Fee

A final type of exaction, an impact fee can fund a broader range of facilities that serve the public interest. They are commonly imposed on a per unit rather than a build out basis, making them more flexible and keeping developers from having to pay large up front costs. These do not have to be directly tied to any requirements for improvements or dedications of land. They can be more easily applied to off-site improvements.

Growth Management Measures (Concurrency)

Concurrency-based development approaches to growth management simply limit development to areas with adequate public infrastructure. This helps regulate urban sprawl, provides for quality of life in new development, and can help protect open space. In the famous case with the Town of Ramapo (1972), the Town initiated a zoning ordinance making the issue of a development permit contingent on the presence of public facilities such as utilities and parks. This was upheld in Court and initiated a wave of slow-growth management programs nationwide. This type of growth management can take the form of an adequate public facilities ordinance.

Performance Zoning

Performance zoning is zoning based on standards that establish minimum requirements or maximum limits on the effects or characteristics of a use. This is often used for the mixing of different uses to minimize incompatibility and improve the quality of development. For example, how a commercial use is designed and functions determines whether it could be allowed next to a residential area or connected to a greenway.



Incentive Zoning (Dedication/Density Transfers)

Also known as incentive zoning, this mechanism allows greenways to be dedicated for density transfers on development of a property. The potential for improving or subdividing part or all of a parcel can be expressed in dwelling unit equivalents or other measures of development density or intensity. Known as density transfers, these dwelling unit equivalents may be relocated to other portions of the same parcel or to contiguous land that is part of a common development plan. Dedicated density transfers can also be conveyed to subsequent holders if properly noted as transfer deeds.

Conservation Zoning

This mechanism recognizes the problem of reconciling different, potentially incompatible land uses by preserving natural areas, open spaces, waterways, and/or greenways that function as buffers or transition zones. It can also be called buffer or transition zoning. This type of zoning, for example, can protect waterways by creating buffer zones where no development can take place. Care must be taken to ensure that the use of this mechanism is reasonable and will not destroy the value of a property.

Overlay Zoning

An overlay zone and its regulations are established in addition to the zoning classification and regulations already in place. These are commonly used to protect natural or cultural features such as historic areas, unique terrain features, scenic vistas, agricultural areas, wetlands, stream corridors, and wildlife areas.

Negotiated Dedications

This type of mechanism allows municipalities to negotiate with landowners for certain parcels of land that are deemed beneficial to the protection and preservation of specific stream corridors. This type of mechanism can also be exercised through dedication of greenway lands when a parcel is subdivided. Such dedications would be proportionate to the relationship between the impact of the subdivision on community services and the percentage of land required for dedication—as defined by the US Supreme Court in *Dolan v Tigard*.

Reservation of Land

This type of mechanism does not involve any transfer of property rights but simply constitutes an obligation to keep property free from development for a stated period of time. Reservations are normally subject to a specified period of time, such as 6 or 12 months. At the end of this period, if an agreement has not already been reached to transfer certain property rights, the reservation expires.

Planned Unit Development

A planned unit development allows a mixture of uses. It also allows for flexibility in density and dimensional requirements, making clustered housing and common open space along with addressing environmental conditions a possibility. It emphasizes more planning and can allow for open space and greenway development and connectivity.

Cluster Development

Cluster development refers to a type of development with generally smaller lots and homes close to one another. Clustering can allow for more units on smaller acreages of land, allowing for larger percentages of the property to be used for open space and greenways.



IIB. Land Management

Management is a method of conserving the resources of a specific greenway parcel by an established set of policies called management plans for publicly owned greenway land or through easements with private property owners. Property owners who grant easements retain all rights to the property except those which have been described in the terms of the easement. The property owner is responsible for all taxes associated with the property, less the value of the easement granted. Easements are generally restricted to certain portions of the property, although in certain cases an easement can be applied to an entire parcel of land. Easements are transferable through title transactions, thus the easement remains in effect perpetually.

Management Plans

The purpose of a management plan is to establish legally binding contracts which define the specific use, treatment, and protection for publicly owned greenway lands. Management plans should identify valuable resources; determine compatible uses for the parcel; determine administrative needs of the parcel, such as maintenance, security, and funding requirements; and recommend short-term and long-term action plans for the treatment and protection of greenway lands.

Conservation Easement

This type of easement generally establishes permanent limits on the use and development of land to protect the natural resources of that land. When public access to the easement is desired, a clause defining the conditions of public access can be added to the terms of the easement. Dedicated conservation easements can qualify for both federal income tax deductions and state tax credits. Tax deductions are allowed by the Federal government for donations of certain conservation easements. The donation may reduce the donor's taxable income.

Preservation Easement

This type of easement is intended to protect the historical integrity of a structure or important elements in the landscape by sound management practices. When public access to the easement is desired, a clause defining the conditions of public access can be added to the terms of the easement. Preservation easements may qualify for the same federal income tax deductions and state tax credits as conservation easements.

Public Access Easements

This type of easement grants public access to a specific parcel of property when a conservation or preservation easement is not necessary. The conditions of use are defined in the terms of the public access easement.

IIC. Acquisition

Acquisition requires land to be donated or purchased by a government body, public agency, greenway manager, or qualified conservation organization.

Donation or Tax Incentives

In this type of acquisition, a government body, public agency, or qualified conservation organization agrees to receive the full title or a conservation easement to a parcel of land at no cost or at a "bargain sale" rate. The donor is then eligible to receive a federal tax deduction of up to 30 to 50 percent of their adjusted gross income. Additionally, North Carolina offers a tax credit of up to 25 percent of the property's fair market value (up to \$5000). Any portion of the fair market value not used for tax credits may be deducted as a charitable contribution. Also, property owners may be able to avoid any inheritance taxes, capital gains taxes, and recurring property taxes.



Fee Simple Purchase

This is a common method of acquisition where a local government agency or private greenway manager purchases property outright. Fee simple ownership conveys full title to the land and the entire “bundle” of property rights including the right to possess land, to exclude others, to use land, and to alienate or sell land.

Easement Purchase

This type of acquisition is the fee simple purchase of an easement. Full title to the land is not purchased, only those rights granted in the easement agreement. Therefore the easement purchase price is less than the full title value.

Purchase / Lease Back

A local government agency or private greenway organization can purchase a piece of land and then lease it back to the seller for a specified period of time. This lease may contain restrictions regarding the development and use of the property.

Bargain Sale

A property owner can sell property at a price less than the appraised fair market value of the land. Sometimes the seller can derive the same benefits as if the property were donated. Bargain Sale is attractive to sellers when the seller wants cash for the property, the seller paid a low cash price and thus is not liable for high capital gains tax, and/or the seller has a fairly high current income and could benefit from the donation of the property as an income tax deduction.

Installment Sale

An installment sale is a sale of property at a gain where at least one payment is to be received after the tax year in which

the sale occurs. These are valuable tools to help sellers defer capital gains tax. This provides a potentially attractive option when purchasing land for open space from a possible seller.

Option / First Right of Refusal

A local government agency or private organization establishes an agreement with a public agency or private property owner to provide the right of first refusal on a parcel of land that is scheduled to be sold. This form of agreement can be used in conjunction with other techniques, such as an easement to protect the land in the short-term. An option would provide the agency with sufficient time to obtain capital to purchase the property or successfully negotiate some other means of conserving the greenway resource.

Purchase of Development Rights

A voluntary purchase of development rights involves purchasing the development rights from a private property owner at a fair market value. The landowner retains all ownership rights under current use, but exchanges the rights to develop the property for cash payment.

Land Banking

Land banking involves land acquisition in advance of expanding urbanization. The price of an open space parcel prior to development pressures is more affordable to a jurisdiction seeking to preserve open space. A City or County might use this technique to develop a greenbelt or preserve key open space or agricultural tracts. The jurisdiction should have a definite public purpose for a land banking project.

Condemnation

The practice of condemning private land for use as a greenway is viewed as a last resort policy. Using condemnation



to acquire property or property rights can be avoided if private and public support for the greenway program is present. Condemnation is seldom used for the purpose of dealing with an unwilling property owner. In most cases, condemnation has been exercised when there has been an absentee property ownership, when the title of the property is not clear, or when it becomes apparent that obtaining the consent for purchase would be difficult because there are numerous heirs located in other parts of the United States or different countries.



APPENDIX V: DESIGN GUIDELINES

INTRODUCTION

This chapter provides guidelines to both public and private entities for the future development of various types of trails. The guidelines noted herein are based on the best practices in use throughout the United States, as well as accepted national standards for greenway facilities.

The guidelines should be used with the understanding that each trail project is unique and that design adjustments will be necessary in certain situations in order to achieve the best results. Each segment should be evaluated on a case-by-case basis, in consultation with local or state bicycle and pedestrian coordinators, a qualified engineer and a landscape architect. Should these national standards be revised in the future and result in discrepancies with this chapter, the national standards should prevail for all design decisions.

Facility design is a broad topic that covers many issues. This section provides guidelines for typical greenway facilities and is not a substitute for more thorough design and engineering work. For more in-depth information and design development standards, the following publications should be consulted:

Greenways: A Guide to Planning, Design and Development
Island Press, 1993. Authors: Charles A. Flink and Robert Searns

Trails for the Twenty-First Century
Island Press, 2nd ed. 2001. Authors: Charles A. Flink, Robert Searns, Kristine Olka

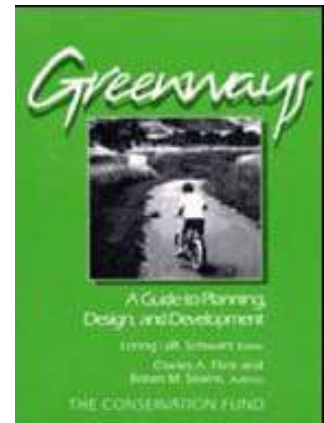
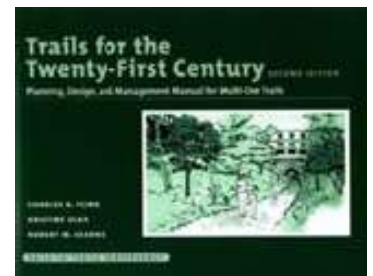
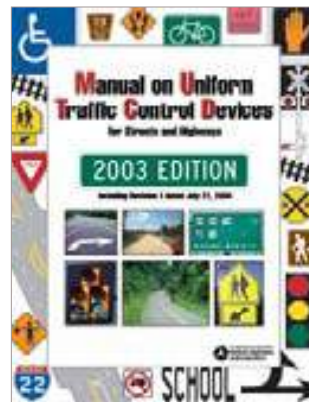
Guide to the Development of Bicycle Facilities
American Association of State Highway Transportation Officials (AASHTO), 1999.

Manual on Uniform Traffic Control Devices (MUTCD)
U. S. Department of Transportation, Washington, DC, 2004.

Universal Access to Outdoor Recreation: A Design Guide
PLAE, Inc., Berkeley, CA, 1993.

North Carolina Bicycle Facilities Planning and Design Guidelines
NCDOT Office of Bicycle and Pedestrian Transportation, Raleigh, NC, 1994

Some trails and trail-related improvements will also require compliance with the NCDOT (for specific design solutions), and with the Americans with Disabilities Act (for portions of trail). Finally, AASHTO is completing an updated Bicycle Design Guidelines in the fall of 2009 with an updated Pedestrian Design Guidelines in the following years. These guidelines should be used to update to this appendix when they become available.





CREEKSIDE TRAIL (*urban areas only*)

- Located only in urban areas, where right-of-way constraints and channelized streams restrict trail development to the floodway.
- 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 with 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, that 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 paid to the mitigation of impacts from trail construction on the natural environment.
- Minimum 10' wide for multi-use trails.



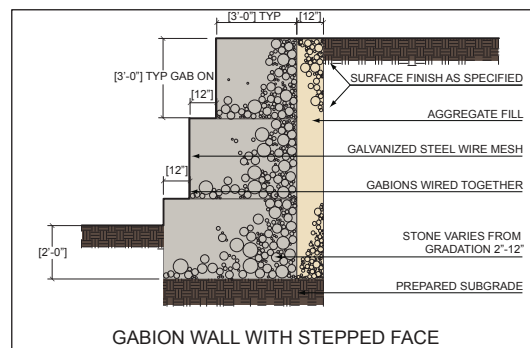
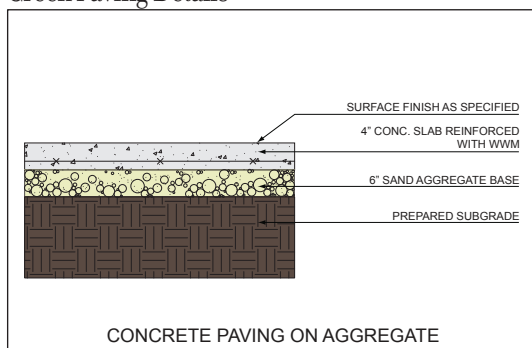


FLOODWAY TRAIL *(limited areas)*

- 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 (see details) 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; design and 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' wide for multi-use trails.



Creek Paving Details



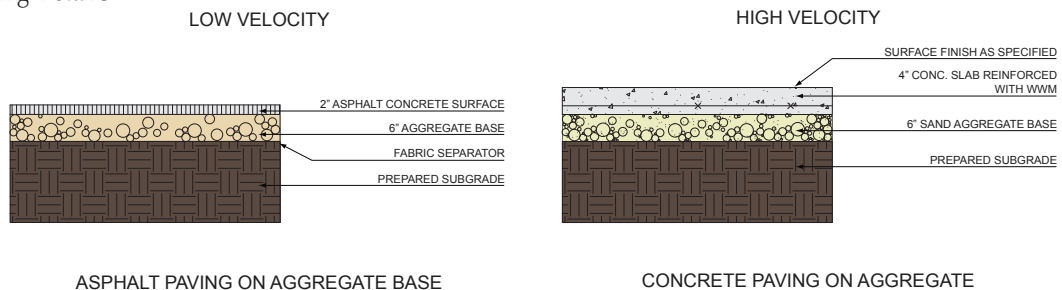


FLOODPLAIN TRAIL

- 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 (see details) will increase the longevity of the trail.
- Minimum 2' graded shoulder recommended.
- Minimum 10' wide for multi-use trails.



Creek Paving Details





WATER TRAIL AND WATER TRAIL ACCESS SITES

- 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 how to navigate 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 space 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' wide
 - Grass not higher than 5"
 - Tree overhang not lower than 14'
 - Grade must not exceed 20%

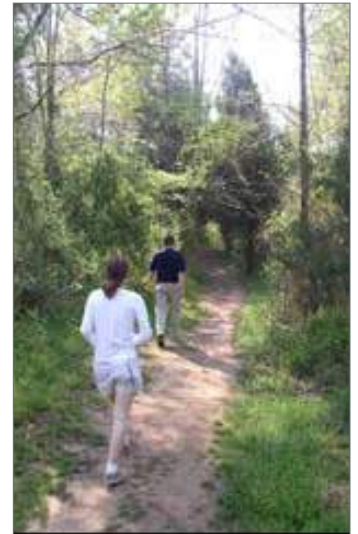


Right: An example water trail map and guide for Shuylkill River, PA



NATURAL SURFACE TRAIL

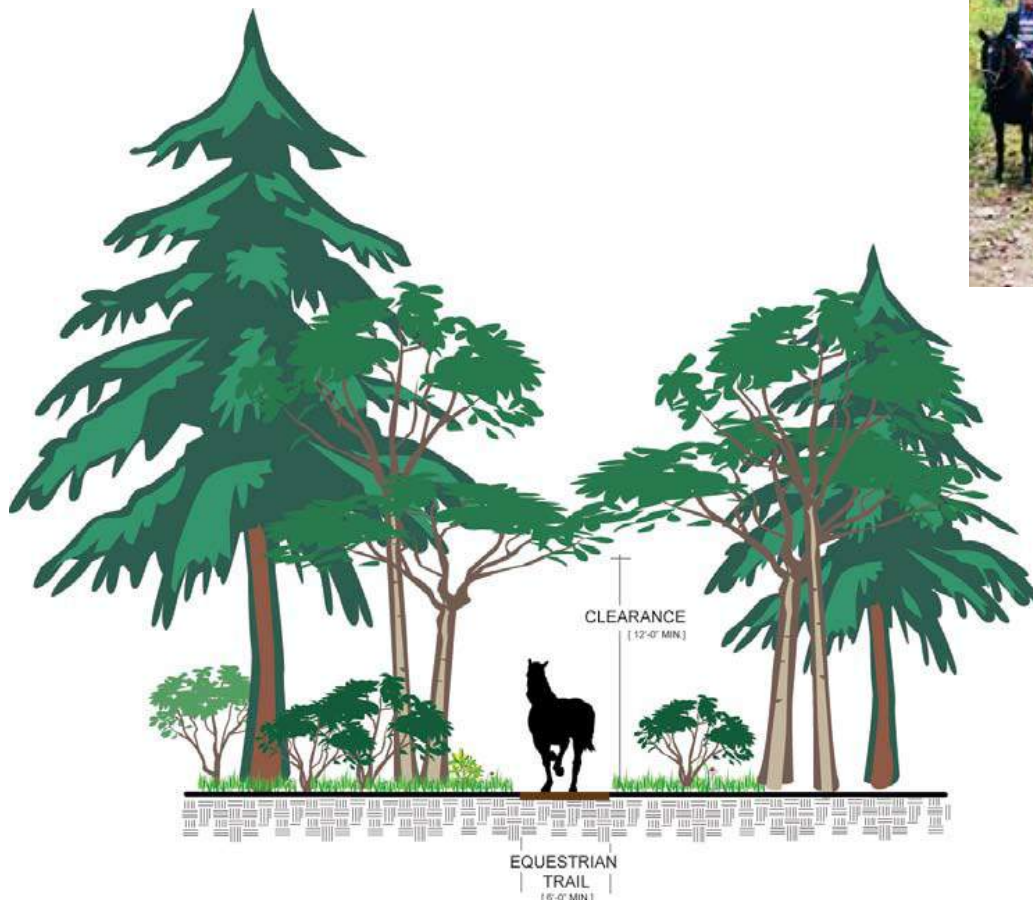
- Also known as footpaths or hiking trails
- Designed to accommodate pedestrians on foot; not intended for cyclists or other wheeled users.
- Trail surface typically made of dirt, rock, soil, forest litter, snow, ice, pine mulch, leaf mulch, or other native materials.
- Preparation varies from machine-worked 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 1' - 6" to 5'.
- Vertical clearance should be maintained at 9'.





EQUESTRIAN TRAIL

- Vertical clearance for equestrians is at least 10 feet, with 12 feet preferred.
- A horizontal clearance should be at least five 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 to 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.



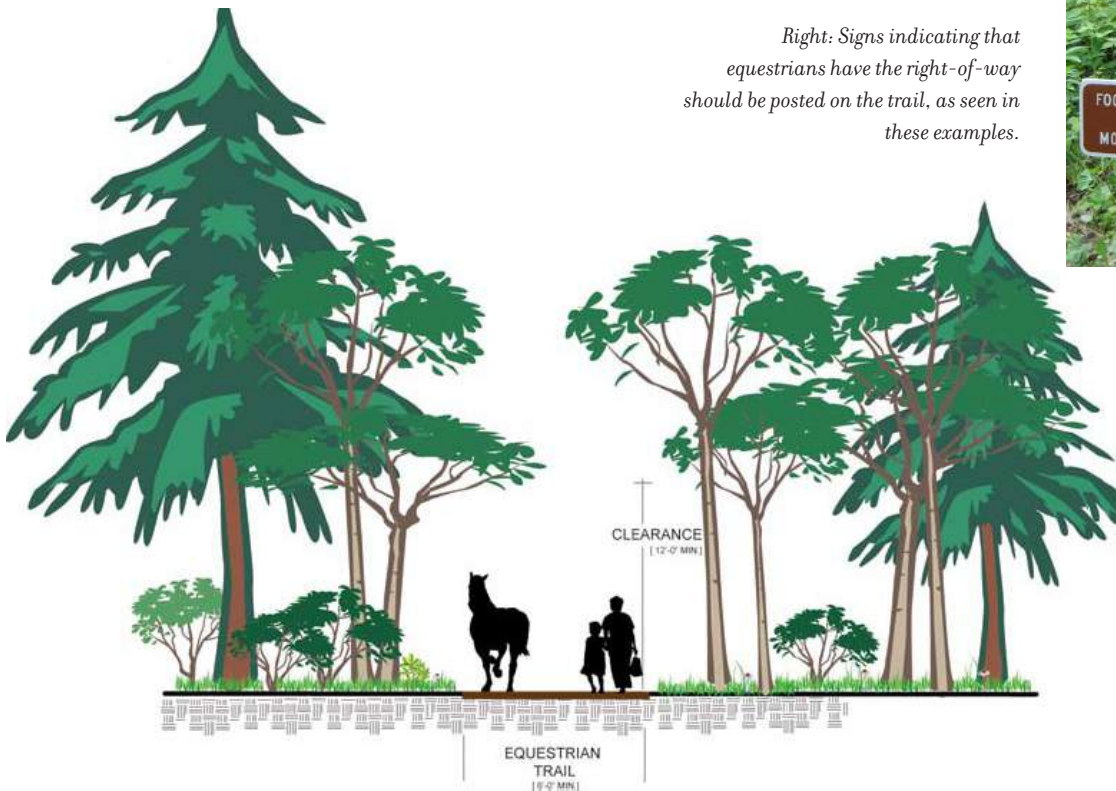


MULTI USE EQUESTRIAN TRAIL

- 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 trail. 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' wide
 - Grass not higher than 5"
 - Tree overhang not lower than 14'
 - Grade must not exceed 20%



Right: Signs indicating that equestrians have the right-of-way should be posted on the trail, as seen in these examples.

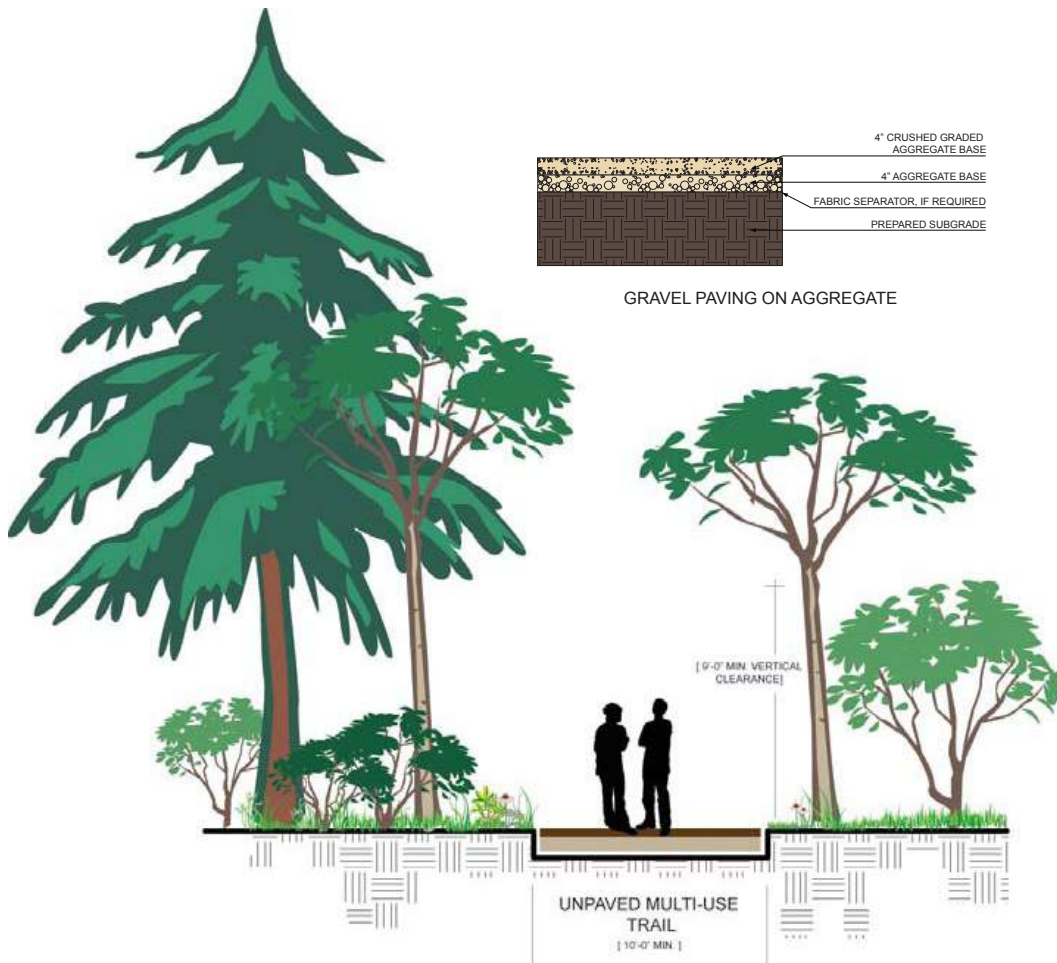




UNPAVED MULTI USE TRAIL

(10' wide typ.)

- 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, however, 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.

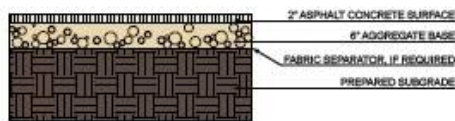




PAVED MULTI USE TRAIL

(10' wide typ.)

- 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 (ABC) 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.



ASPHALT PAVING ON AGGREGATE BASE

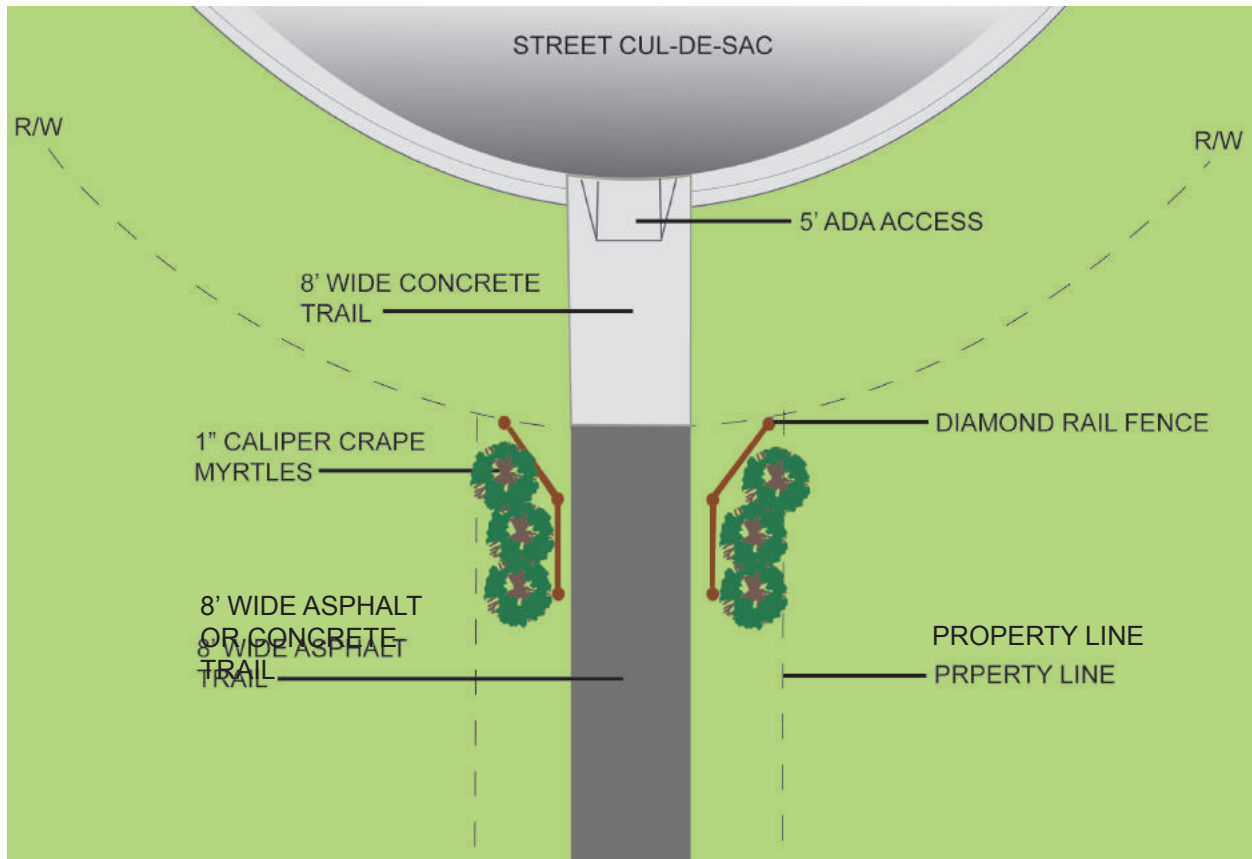




NEIGHBORHOOD ENTRANCE TRAIL

In any instance that an access trail is developed in a residential area to link to a greenway the following standards shall be applied:

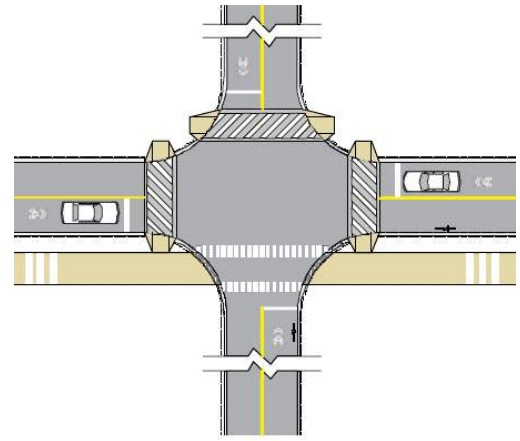
- Trail pavement shall be 8' wide to accommodate emergency and maintenance vehicles, meet ADA requirements and be considered suitable for multi-use.
- Trail widths should be designed to be less than 8' wide only when necessary to protect large mature native trees over 18" in caliper, wetlands or other 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' 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 cul-de-sac. If the access is not in a cul-de-sac the adjacent property owners and property owners directly across from the access trail will be invited to provide landscape design input.
- 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 shall 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.



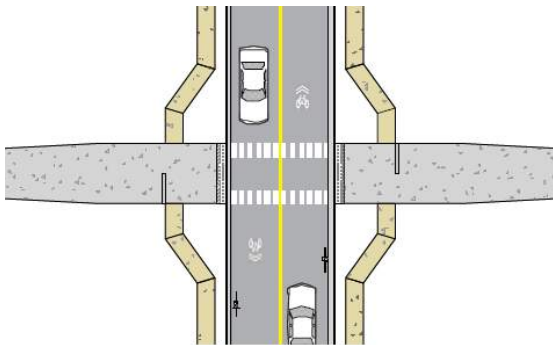


TRAIL INTERSECTIONS

- 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.

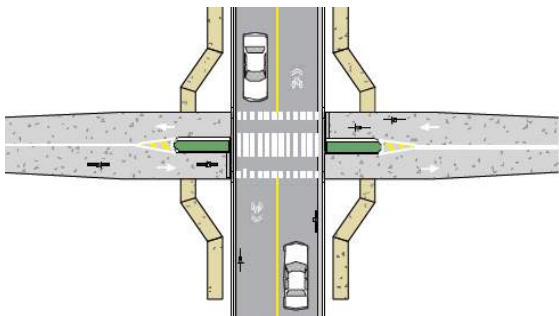
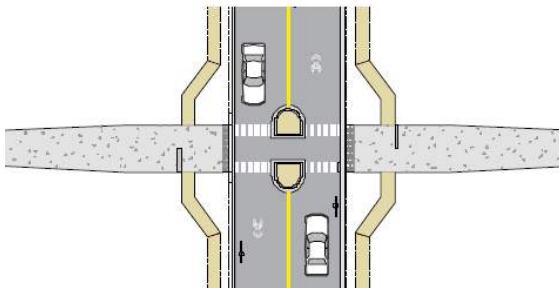


4-WAY INTERSECTION CROSSING
Shared Use Path



MID-BLOCK INTERSECTION
Shared Use Path with Sidewalks

MEDIAN REFUGE
Shared Use Path with Sidewalks



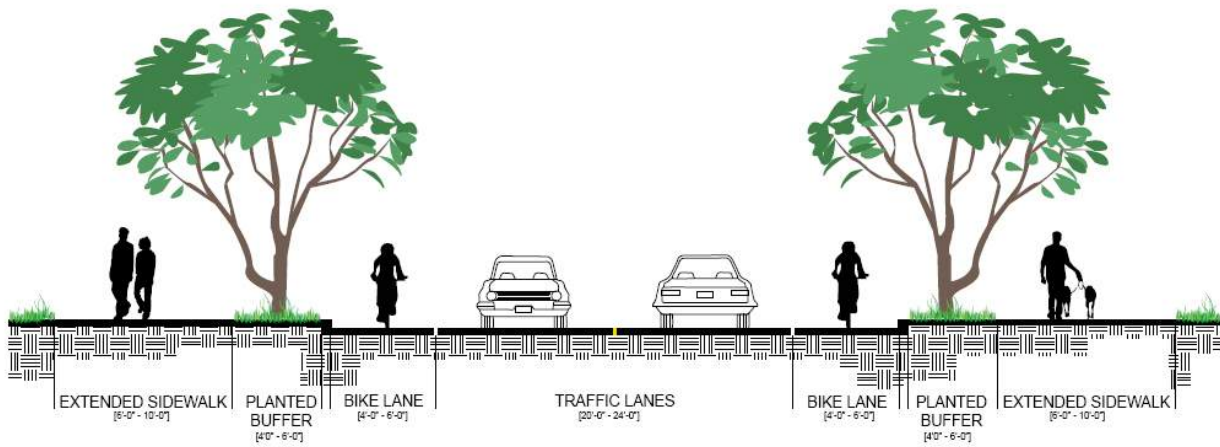
MIDBLOCK CROSSING
Shared Use Path with Sidewalks and Medians



MIDBLOCK CROSSING



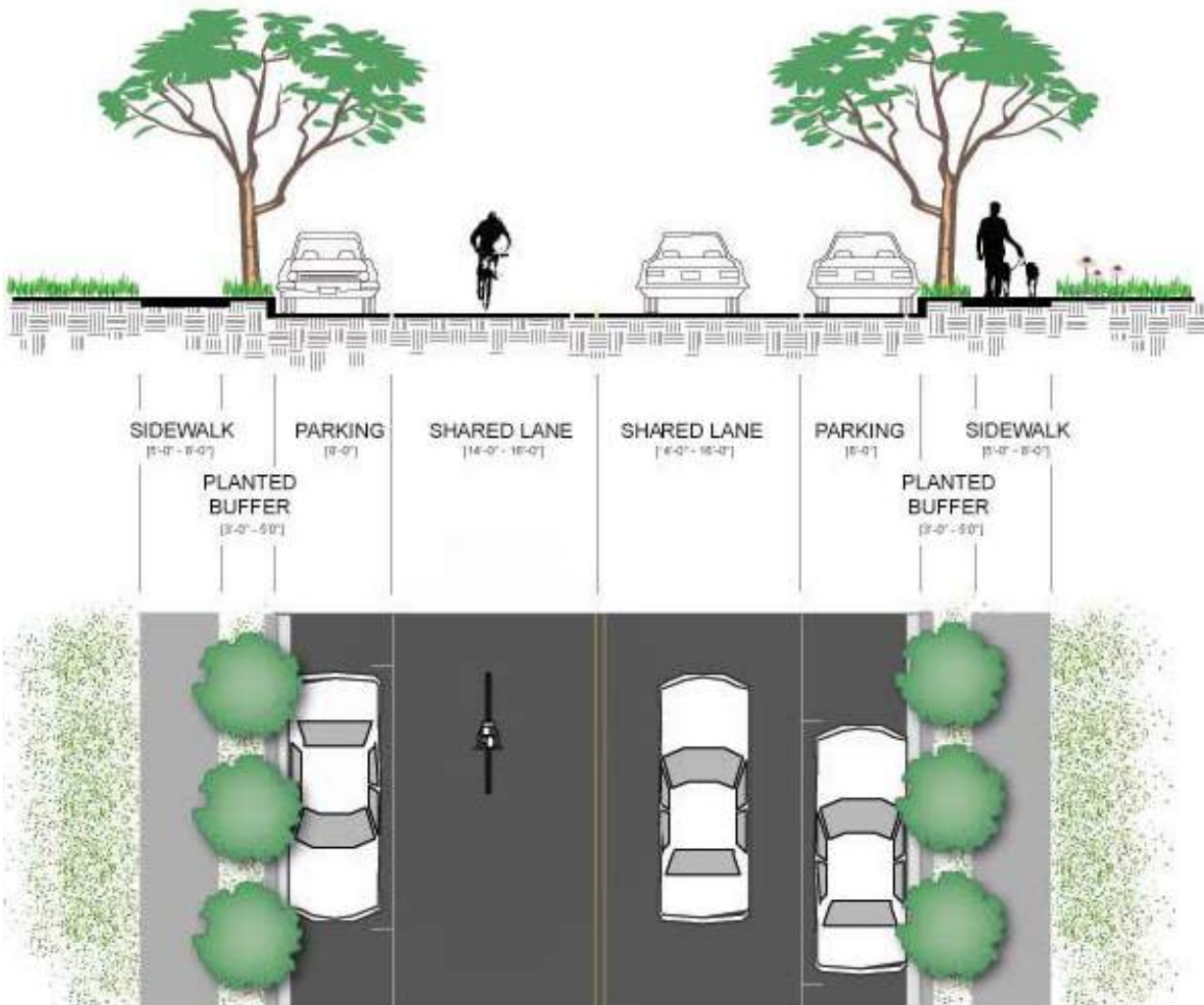
STREET BASED TRAIL:
Sidewalks and Bikeways





STREET BASED TRAIL:
Signed/Shared Roadway

- 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') outside lanes.

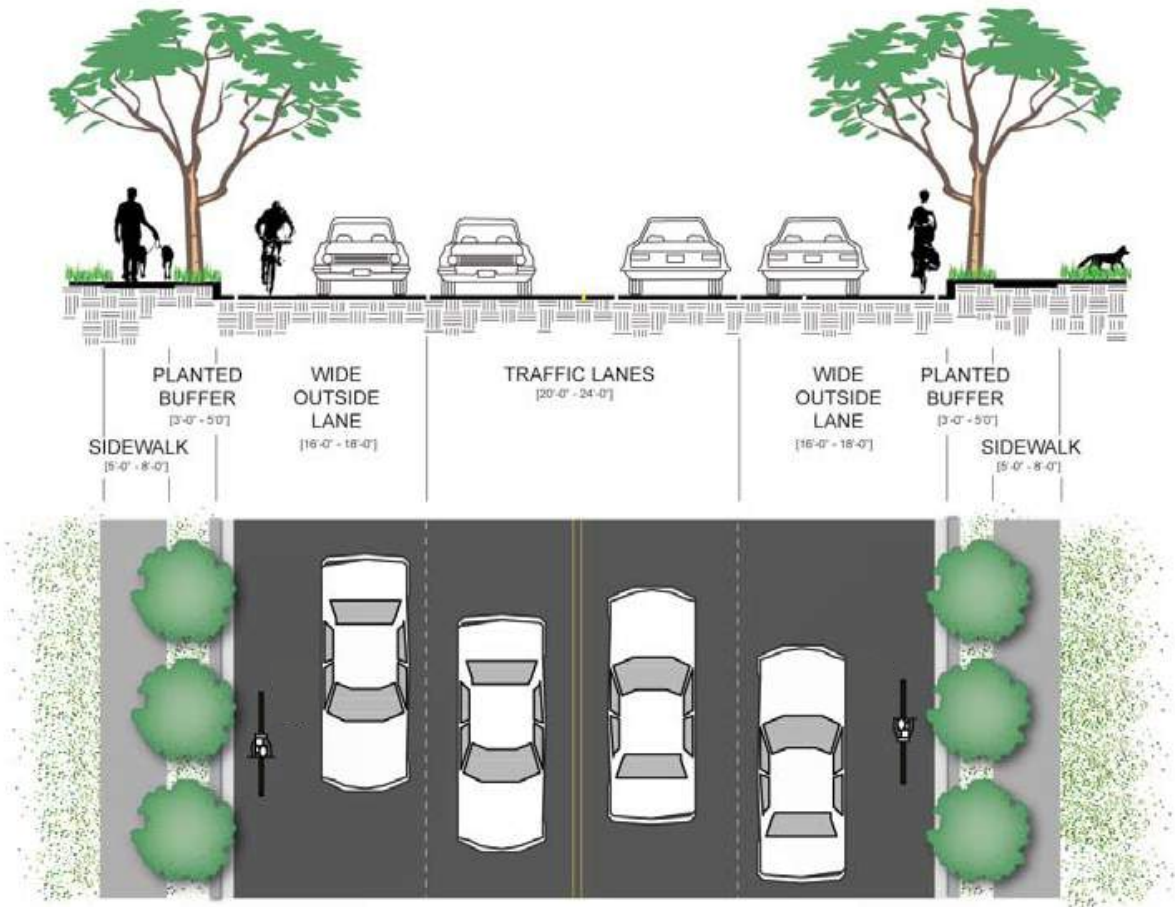




STREET BASED TRAIL:

Wide Outside Lane

- For skilled bicyclist 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)

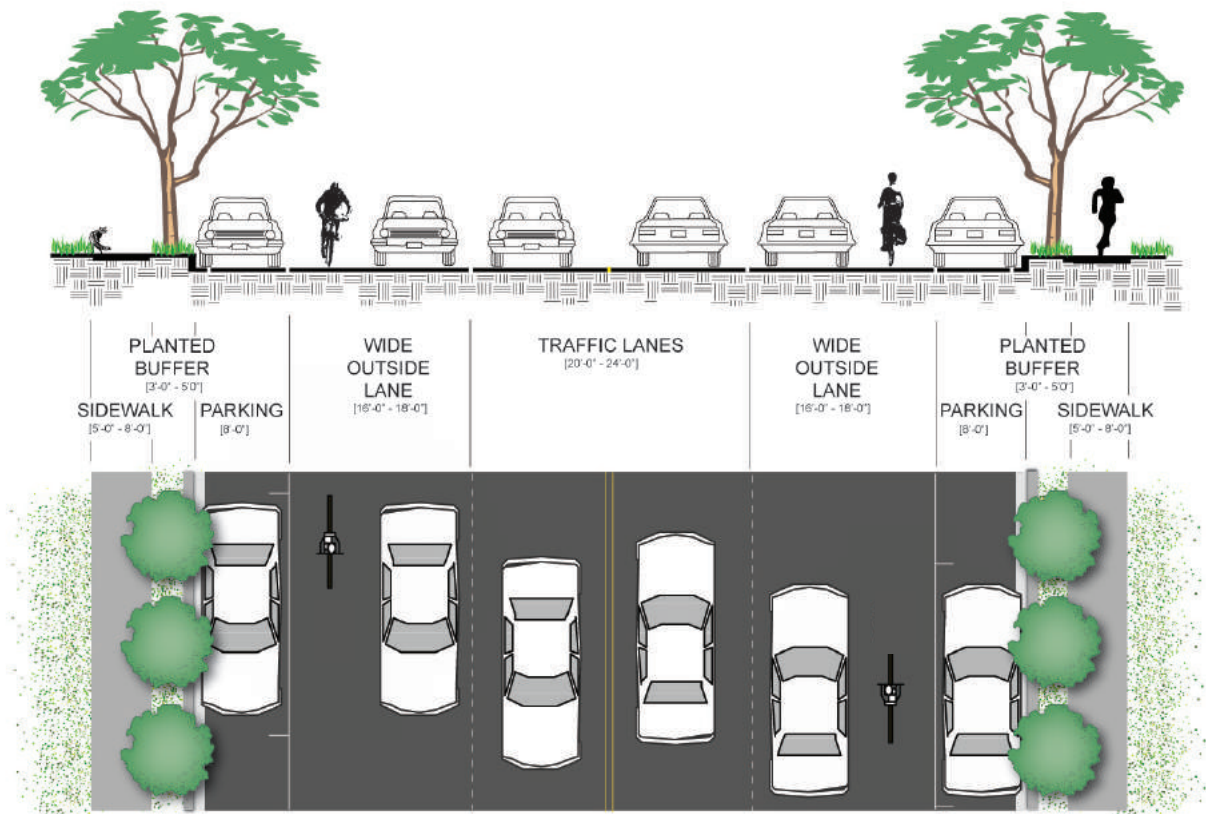




STREET BASED TRAIL:

Wide Outside Lane with Parking

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

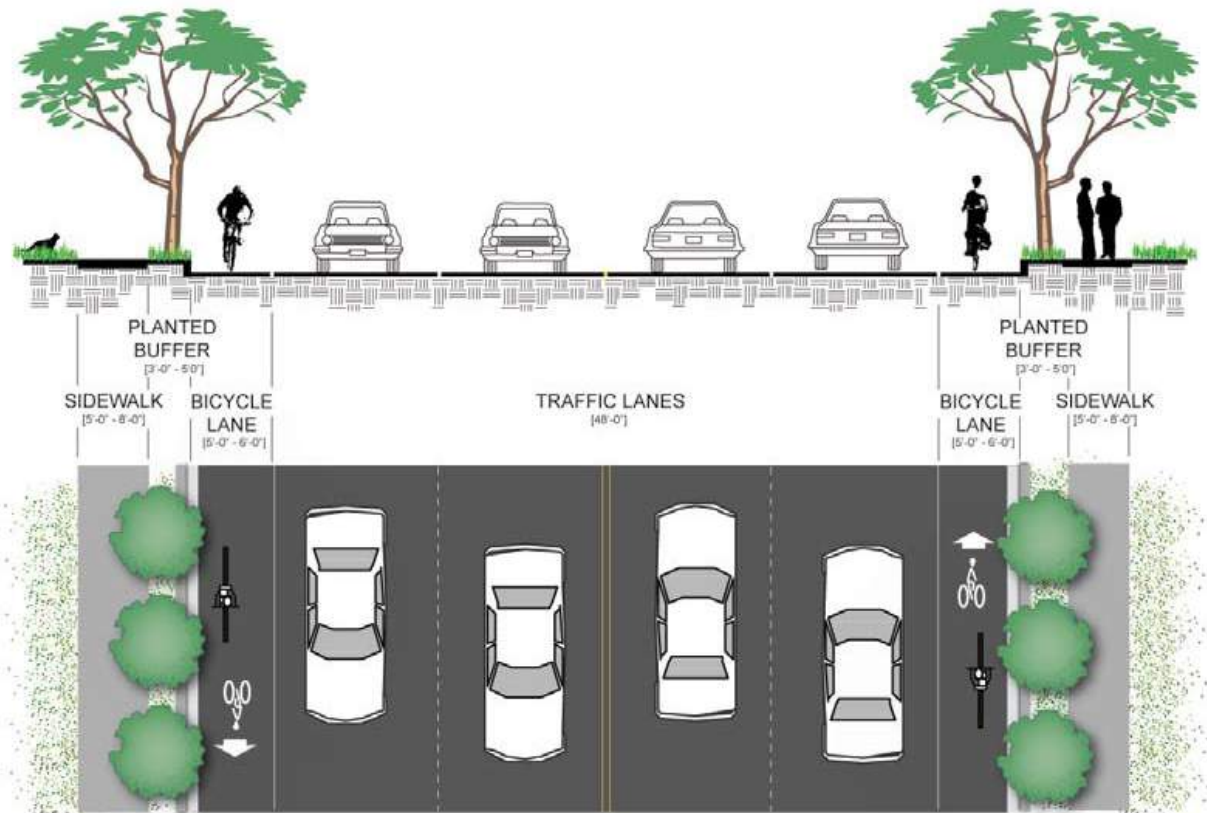




STREET BASED TRAIL:

Bicycle Lane

- Should be used on roadways with 3,000 or more ADT.
- Recommended width of 5'-6'. Minimum width is 4' (ASHTO national standard is 5').

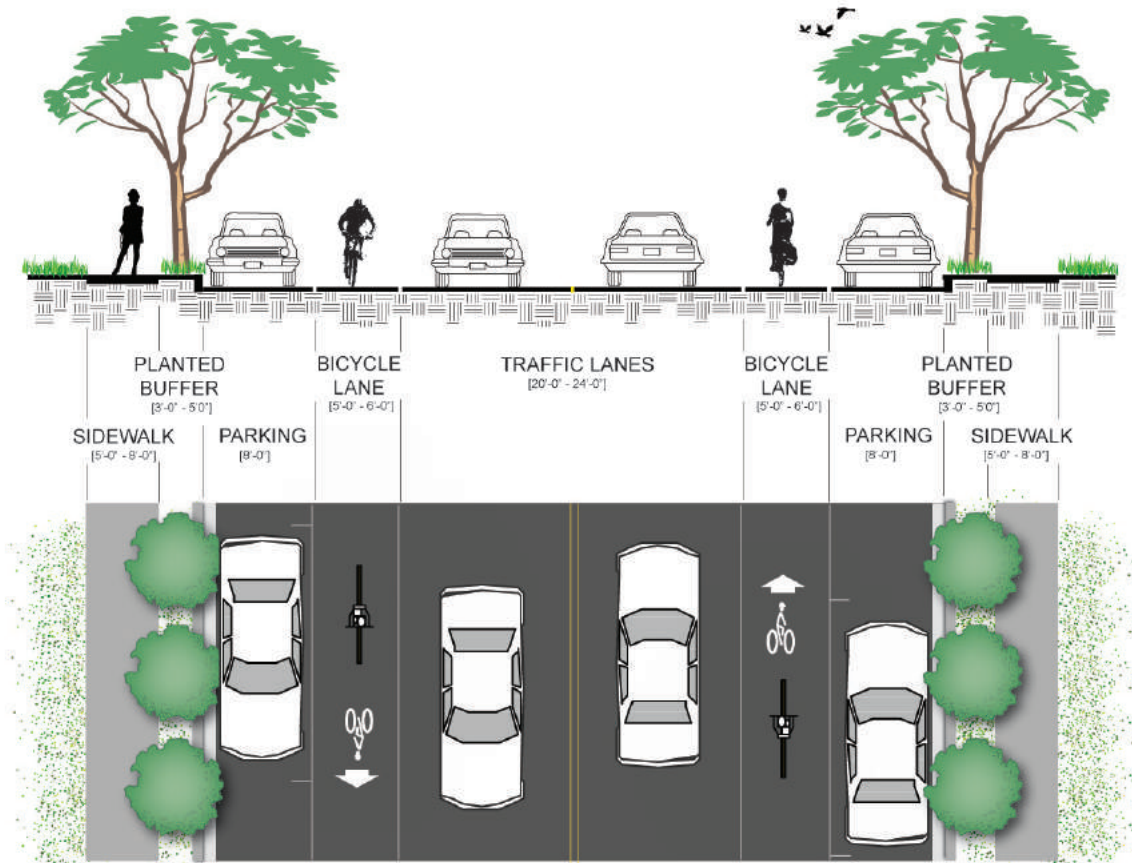




STREET BASED TRAIL:

Bicycle Lane with Parking

- 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

- 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' wide (preferable 12') with a 3-5' (preferable 6') vegetated buffer where possible.
- Side paths are the preferred facility when the primary trail is a street-based.





TRAIL UNDERPASS

- Typically utilize existing overhead roadway bridges adjacent to streams or culverts under the roadway that are large enough to accommodate trail users
- Vertical clearance of the underpass must be at least 8', preferably 10'.
- Width of the underpass must be at least 12'
- Proper drainage must be established to avoid pooling of stormwater.
- Lighting is recommended for safety.





TRAIL OVERPASS

- 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.





SIGNAGE AND WAYFINDING

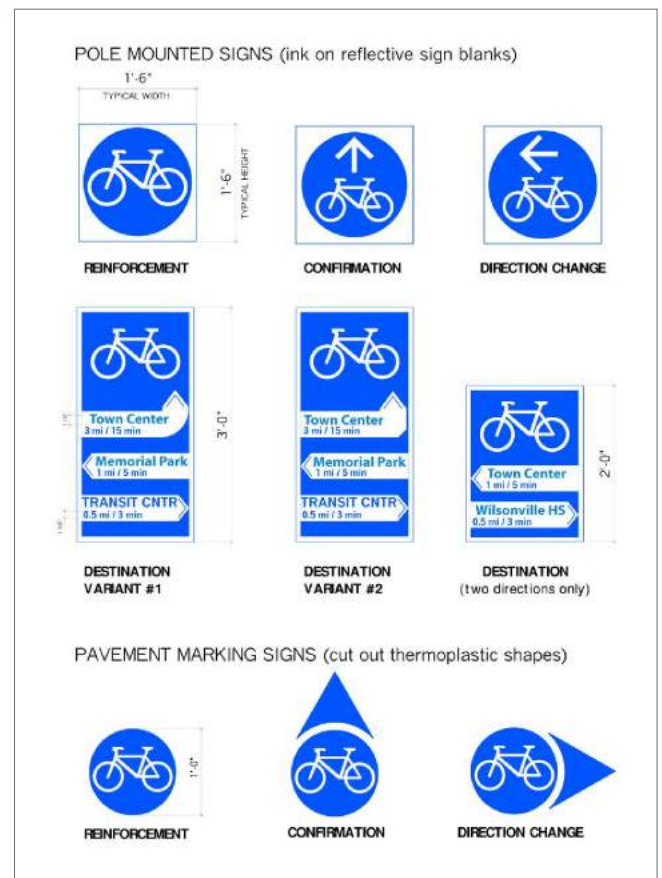
A comprehensive system of signage should be created to ensure that information is provided to trail users regarding wayfinding and the safe use of all greenway facilities. The trail network should be signed seamlessly with other alternative transportation routes, such as designated bicycle routes, historic and/or cultural walking tours, and wherever possible the local transit system. Signage of any type should be used and regulated judiciously. An inordinate amount of signs creates visual clutter. Under such a condition, important safety or wayfinding information may be ignored resulting in confusion and possible pedestrian vehicle conflict. Regulations should also address the orientation, height, size, and sometimes even style of signage to comply with a desired local aesthetic.

- Regulatory signage is used to inform trail users and motorists of a legal requirement and should only be used when a legal requirement is not otherwise apparent (AASHTO, 2004: Guide for the Planning, Design, and Operation of Pedestrian Facilities).
- Warning signage is used to inform motorists and pedestrians of unexpected or unusual conditions. When used, they should be placed to provide adequate response times. These include school warning signs and pedestrian crossing signs.
- Informational and wayfinding signage can provide guidance to a location along or near the trail corridor. Wayfinding signage should orient and communicate in a clear, concise, consistent and functional manner. It should enhance circulation and direct visitors and residents to important destinations. In doing so, the goal is to increase the comfort of visitors and residents while helping to convey a local identity.
- Maintenance of signage is as important as trail maintenance. Clean, graffiti free, and relevant signage enhances guidance, recognition, and safety.

Below: Trail signage used in neighboring Mecklenburg County, prepared by Corbin Design and DAWA Environmental Graphic Design & Signage



Below: Innovative On-Road Bicycle Signage used in Portland





TRAILHEADS AND SUPPORT FACILITIES

Major access point should be established near commercial developments and transportation nodes, making them highly accessible to the surrounding communities. Minor trailheads should be simple pedestrian and bicycle entrances at locally known spots, such as parks and residential developments.

A minor trailhead could include facilities such as parking, drinking fountains, benches, a bicycle rack, trash receptacles, and an information kiosk and/or signage. Major trailheads could include all of the above plus additional facilities, such as rest rooms, shelters, picnic areas, a fitness course, an emergency telephone, and a larger parking area.



Example layouts for a minor trailhead (top) and a major trailhead (bottom).





TRAIL AMENITIES

Benches

Description:

There are a wide variety of benches to choose from in terms of style and materials. The illustrated bench is a custom design that reflects the industrial feel of the warehouse district it is found in. Material selection should be based on the desired design theme as well as cost.

Recommendations:

Due to a wide range of users, all benches should have a back rest. A bench should normally be 16 - 20" above ground with sturdy handrails on either side. The seating depth should be 18-20" and the length should vary between 60 - 90". Provide wheelchair access alongside benches, at least a 30-by-48-inch area for adequate maneuvering. If benches are next to each other (either side by side or face to face), allow 4 feet between them.



Other Seating

Description:

Other more informal seating opportunities may exist along a trail or near a parking area where other furniture like a picnic table may be appropriate.

Recommendations:

This type of furniture can be triangulated with cooking facilities, and a trash receptacle. Wheelchair access spacing recommendations, as noted in the preceding section on 'benches,' also applies to other seating.



Lighting

Description:

There are two basic types of suggested lighting illustrated: Pole lighting and Bollard lighting. Pole lighting is typically employed in high use areas such as an esplanade or where a trail meets a parking lot or other urbanized area. The bollards can be used to guide individuals along a trail to a specific location.

Recommendations:

In general lighting is not appropriate for off-road trails where there is little or no development. A licensed and qualified lighting expert should be consulted before making any lighting design decisions. Doing so should reduce up-front fixed costs as well as long-term energy costs.





Trash Receptacles

Description:

Trash receptacles should be constructed of a suitable material to withstand the harsh elements of the outdoor environment. Additionally trash receptacles should ensure that litter is contained securely preventing contamination or spillage into the surrounding environment.

Recommendations:

Trash receptacles should be placed along the trail and at all trailheads. Adequate trash receptacles will combat littering and preserve the natural environment for all trail users.



Bicycle Racks

Description:

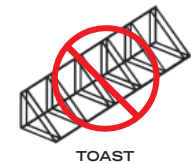
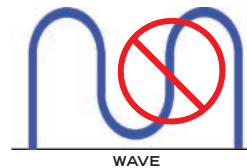
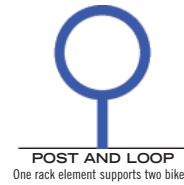
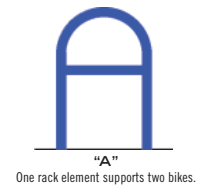
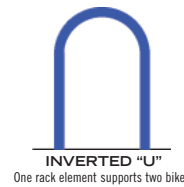
There are many types of bike racks available however the two recommended methods are to secure a bike in an enclosed storage, or to lock it to a rack as illustrated here.

Recommendations:

A bike rack is recommended as the most inexpensive way to secure a bicycle. An enclosed structure with rented keys is appropriate only in very high bicycle use situations. Bike racks can also be designed to reinforce a particular design theme.

See Bicycle Parking Design Guidelines for more info:

www.bicyclinginfo.org/pdf/bikepark.pdf

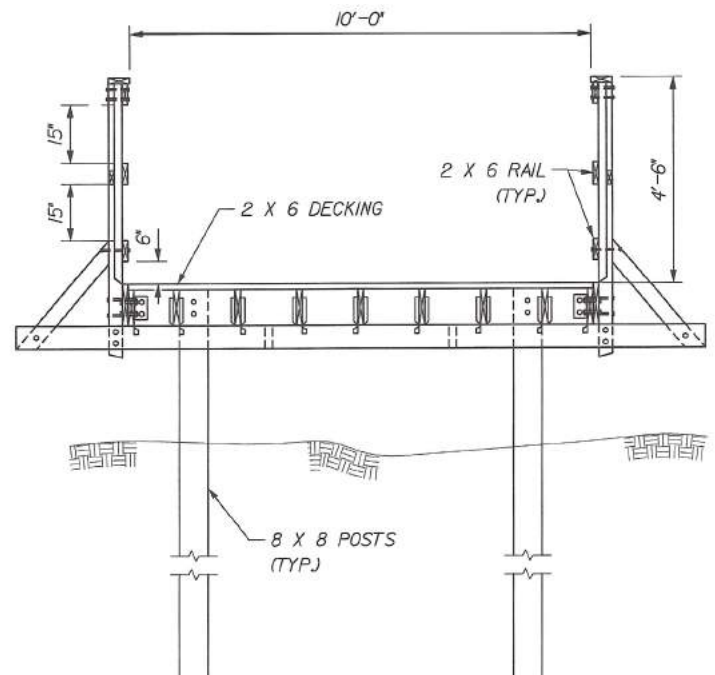


BOARDWALK AND BRIDGES

Boardwalk

Boardwalks are used in environmentally sensitive areas where they function as "mini-bridges"

- When the height of a boardwalk exceeds 30", railings are required
- The thickness of the decking should be a minimum of 2"
- 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.

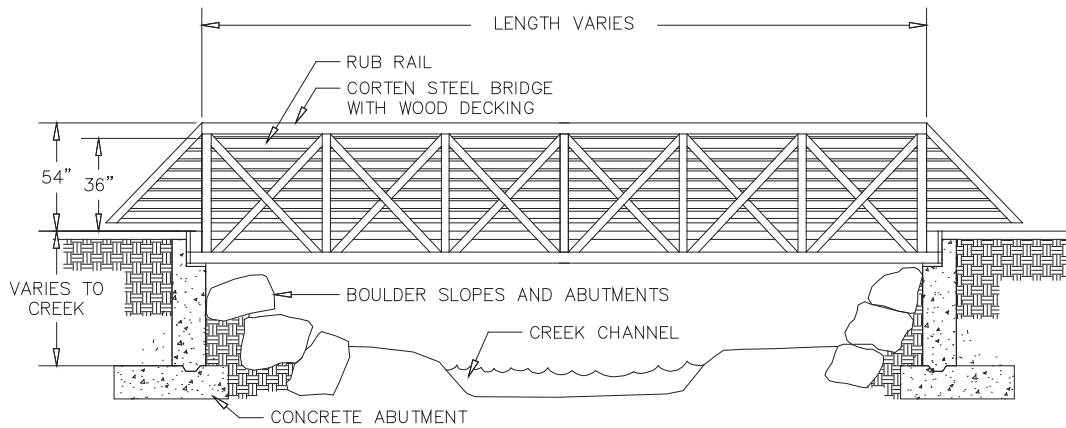
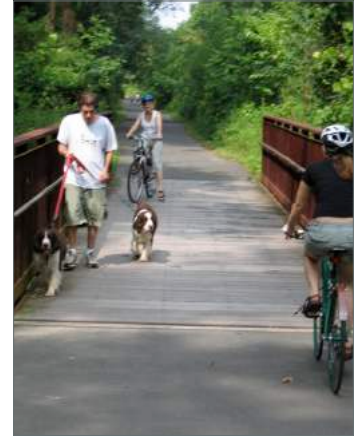




Bicycle/Pedestrian Bridge

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.

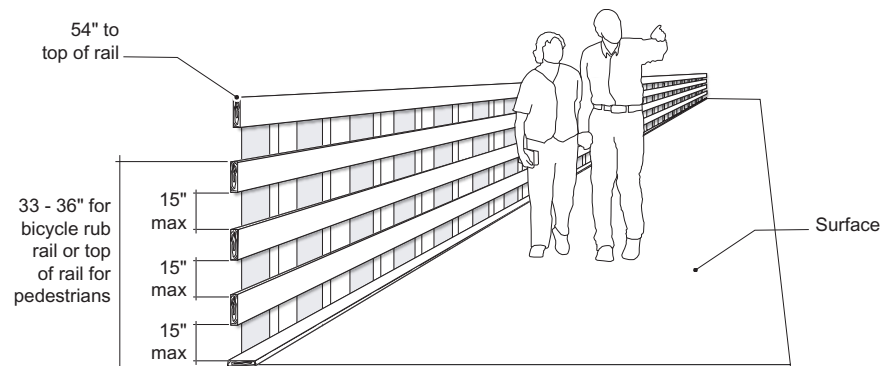
- If a corridor already contains a bridge such as an abandoned rail bridge, an engineer should be consulted to assess the structural integrity before deciding to remove or reuse it.
- A trail bridge should support 6.25 tons.
- Information about the load bearing capacity of bridges can be found in the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges.
- There are many options in terms of high quality, prefabricated pedestrian bridges available.



Railings

Railings are important safety features on bridges, some boardwalks or in any areas where there may be a hazardous drop-off.

- At a minimum, railings should consist of a vertical 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.





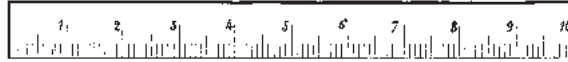
PUBLIC ART

Explore opportunities to include public art within the overall design of the trail system. Below are examples of public art along trails. According to *American Trails*, “Art is one of the best ways to strengthen the connection between people and trails. Across America and elsewhere, artists are employing a remarkably wide range of creative strategies to support all phases of trail activities, from design and development to stewardship and interpretation. In particular, art can be an effective tool for telling a trail’s story compellingly and memorably.”

- Example art programs for trails can be found at: www.americantrails.org/resources/art/ArtfulWays.html







FOOTNOTES

- [1] *American Planning Association. (2002). How Cities Use Parks for Economic Development.*
- [2] *National Association of Realtors and National Association of Home Builders. (2002). Consumer's Survey on Smart Choices for Home Buyers.*
- [3] *Rails to Trails Conservancy. (2005). Economic Benefits of Trails and Greenways.*
- [4] *NCDOT and ITRE. (2006). Bikeways to Prosperity: Assessing the Economic Impact of Bicycle Facilities.*
- [5] *Virginia Department of Conservation. (2004). The Virginia Creeper Trail: An Assessment of User Demographics, Preferences, and Economics.*
- [6] *Rails to Trails. (Danzer, 2006). Trails and Tourism.*
- [7] *American Planning Association. (2002). How Cities Use Parks for Economic Development.*
- [8] *Rails to Trails. (Danzer, 2006). Trails and Tourism.*
- [9] *U.S. Department of Transportation (DOT), Bureau of Transportation Statistics (BTS) and the Federal Highway Administration (FHWA). (2002). National Household Travel Survey.*
- [10] *U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (1996). Physical Activity and Health: A Report of the Surgeon General.*
- [11] *U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. (2002). Guide to Community Preventive Services.*
- [12] *Rails-to-Trails Conservancy. (2006) Health and Wellness Benefits.*
- [13] *Newsweek Magazine. (10/3/2005). Designing Heart-Healthy Communities.*
- [14] *Federal Emergency Management Agency. (2005) Building Stronger: State and Local Mitigation Planning.*

