

Western Piedmont Bicycle Plan



Western Piedmont
Council of Governments

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Transportation



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Developing the Western Piedmont Bicycle Plan (WPBP) involved cooperation from the Steering Committee, local government, the public, and technical staff. The Western Piedmont Council of Government expresses gratitude to those who have assisted with the plan’s development.

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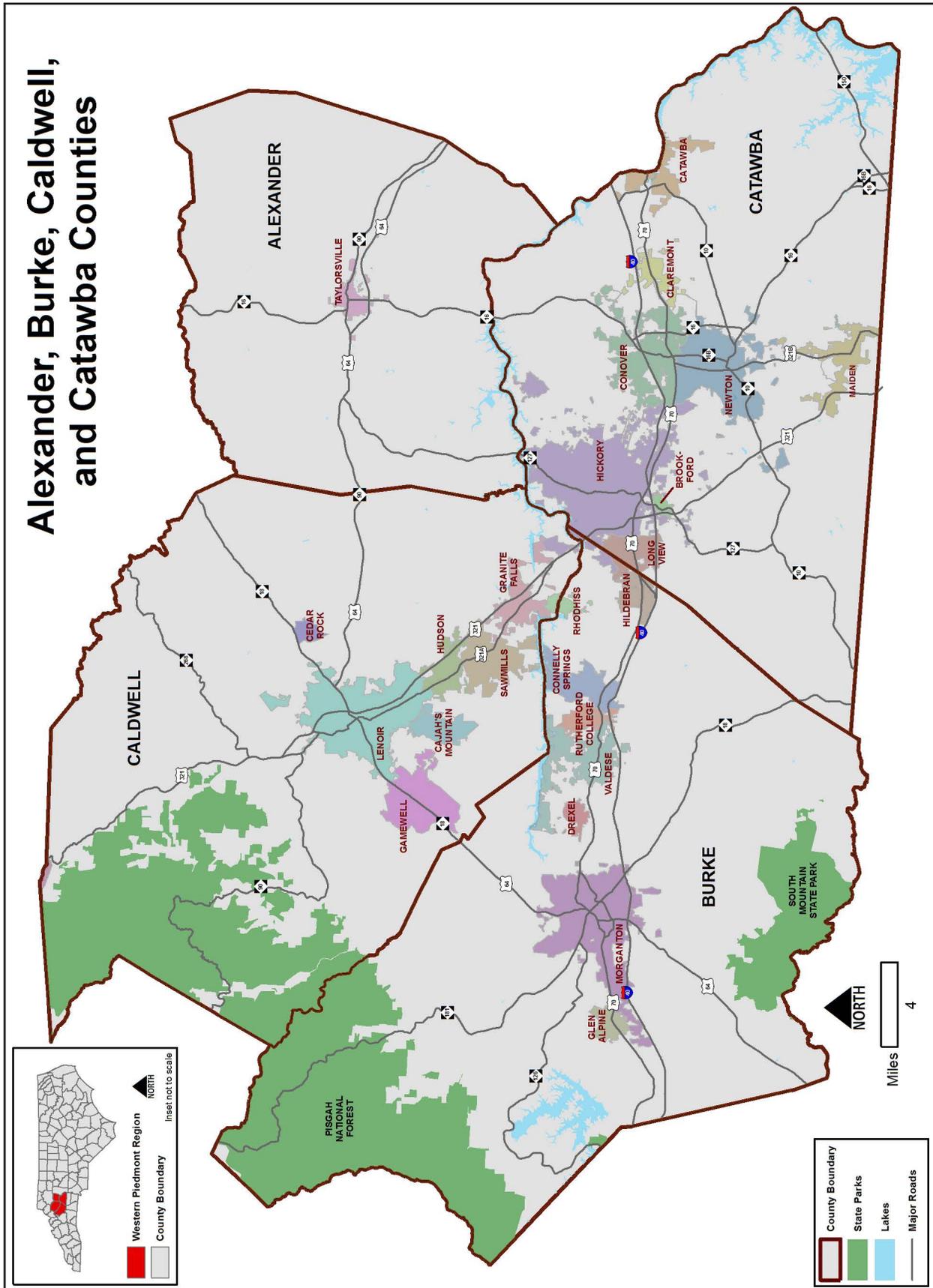
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Chapter 1

Introduction

Figure 1-1
Western Piedmont Region



Overview

In the summer of 2013, the Western Piedmont Council of Governments received funding from the North Carolina Department of Transportation to begin developing a regional bicycle plan for the four-county region of Alexander, Burke, Caldwell, and Catawba Counties. The purpose of this bicycle plan provides a clear framework for the development of new facilities, programs, and policies that will support safe and efficient bicycling throughout the region.

The development of this plan included an open, participatory process, with residents providing input through public events, stakeholder meetings, the project Steering Committee, social media, and online surveys.

Scope

Geographic Scope

The Western Piedmont region is located in the foothills of western North Carolina about 45 miles north of Gastonia, 50 miles northwest of Charlotte, 70 miles west of Winston-Salem and 75 miles east of Asheville. As of 2014, the urbanized area is comprised of 162 square miles containing 24 municipalities: Brookford, Catawba, Claremont, Conover, Hickory, Long View, Newton, Maiden,

Connelly Springs, Drexel, Glen Alpine, Hildebran, Morganton, Rutherford College, Valdese, Cahaj's Mountain, Cedar Rock, Gamewell, Granite Falls, Hudson, Lenoir, Rhodhiss, Sawmills, and Taylorsville.

The rural area encompasses 1,502 square miles and contains both unincorporated communities, agricultural land, and several recreational areas and parks. Of all major parks in the region, the largest are Lake James State Park at 4.89 square miles, South Mountain State Park at 27.76 square miles, and Pisgah National Forest (located in both Burke and Caldwell Counties) at 168.67 square miles.

Project Scope

The Western Piedmont Bicycle Plan addresses the following:

Route Networks

The Plan identifies a bicycle route network based on information gathered from public input.

Economic Impact of Cycling

The Plan examines the impact increased bicycling can have on the region.

Safety Analysis

The Plan reviews bicycle accident data from 2007-2012.



Bicyclists in Downtown Morganton. Source: City of Morganton

Laws/Enforcement

The Plan outlines recommendations for the integration of bicycle-friendly policies into codes and ordinances.

Roadway Design and Signage

The Plan provides recommendations on the placement of signage along the identified routes.

Implementation

A prioritized list of recommended strategic and low-cost improvements is included along with a discussion about future project programming, facility maintenance, and funding sources.

Vision, Goals, and Policies

As part of the public input process, the Steering Committee created a vision, goals, and policies to guide the development of the Western Piedmont Bicycle Plan and bicycle planning in the region for years to come. The following was developed over several months. Each goal has related policies that have been prioritized by the public.

The following vision statement guides the Western Piedmont Bicycle Plan:

Our region values bicycle use for its health and recreational benefits. Bicycles represent an alternative transportation option for our community's residents and visitors as an accessible, safe, healthy and scenic way to reach places people want to go.

To achieve this vision now and in the future, the following goals and policies were developed:

Goal 1: Safety and Engineering - Design our region's communities as places where bicycle use is valued as a significant transportation mode.

1. Improve bicycle safety by eliminating road conditions that present hazards for bicyclists.
2. As part of the development review process, support bicycle-friendly amenities and connectivity to local greenways and routes.
3. Encourage dialogue among engineers, planners, regional bike advocates and local governments.
4. Promote NCDOT's "Complete Streets" policy at the local and regional level.
5. Encourage the use of NCDOT'S "Watch for

Me" campaign and other recognized safety education programs.

6. Encourage and promote public outreach events.

Goal 2: Transportation - Connect key bike routes to individual communities across the region.

1. Connect neighborhoods to schools, shopping and work places.
2. Ensure parks, community destinations, and employment centers are connected to bike facilities.
3. Develop connectivity between public transport and non-motorized modes of transportation.
4. Increase the number of "Share the Road" signs or develop a billboard/advertising campaign promoting "Share the Road."
5. Expand directional signage and pavement markings to direct bicyclists to the greenway trail network.
6. Create a logo and signage for regional bicycle routes.
7. Distribute guides for regional bike routes with location, descriptions of difficulty, and skill levels.

Goal 3: Recreation - Encouraging bicycle use for different purposes, ages, and skill levels.

1. Publish a regional bicycle network map.
2. Promote bike trails by listing them to the "Rails to Trails" website, and publicize their events.
3. Promote biking as a fun, low-cost family activity through region-wide events.
4. Provide bike rental to adults in various parks and urban areas across the region.

Goal 4: Health and Education - Bicycling provides and improves the community's physical and mental health.

1. Educate people that increased biking options contribute to healthier lives. Use data to demonstrate health improvements (such as heart health and lowering risks for diabetes)

that result from bicycling.

2. Strategize between local health organizations and bike advocates about shared funding options.
3. Connect bike advocates with health-focused organizations such as YMCAs and local health departments.

Goal 5: Economic Vitality - Strengthen the economic impact of bicycling.

1. Emphasize that a “bike-friendly” community is an asset to the region’s economic attractiveness.
2. Educate local officials and the public about the economic benefits of bicycling.
3. Market the region’s bike trails through advertising campaigns.

Existing Bicycle and Greenway Plans

Within the region, to date there are five completed and adopted plans that contain recommendations for bicycle facilities:

Hickory Inspiring Spaces (adopted 2014).

The objective of this master plan is “to enhance economic development efforts of many individuals and organizations throughout the Hickory area by defining a specific set of investment opportunities that will produce both tangible and intangible benefits.” This project was useful to the Western Piedmont Bicycle plan because it illustrated where the City of Hickory was anticipating future activity areas and greenway facilities. Among several types of projects outlined in The Inspiring Spaces plan, it recommends 10 specific greenway projects which cover several areas around the city.

Lake James Loop Trail Master Plan (adopted 2014).

The objective of this trail master plan “is to provide a conceptual framework and implementation plan to guide future trail development.” The plan envisions The Lake James Loop “as an easy to moderate multi-use hiking and mountain biking trail with a natural mineral soil surface that circumnavigates Lake James within Burke County.” Given the interest in bicycling in the Lake James area including

Lake James State Park, this plan assisted in the development of the WPBP by giving planners and the public the possible location of the loop trail and potential activity centers along its corridor.

Carolina Thread Trail: Catawba County Master Plan (adopted in 2010).

The purpose of the plan is “to coordinate all existing and proposed municipal and county trails and supplement them with additional greenway/trail segments, to create a comprehensive multi-use network connecting people, places and destinations to each other and to surrounding counties.” This plan assisted the development of the WPBP because of county-wide scope and the incorporation of several municipalities within the county. The locations of these trails were useful in determining potential future corridors and connections between Catawba County and several other counties to the south.

City of Hickory Sidewalk, Bikeway, Greenway, and Trail Master Plan (adopted 2005).

The purpose of this plan is to provide “overall guidance for policy and program development for improving access and mobility for pedestrians and bicyclists.” This plan assisted in the process by informing planning staff on past efforts to improve bicycling conditions within the City of Hickory.

Current Constraints, Barriers and Gaps

- **Funding:** Potential high cost to upgrade existing infrastructure in local municipalities and across counties.
- **Planning:** Several greenway and trails plans have already been adopted, but many municipalities need additional bicycle plans, policies and programs aimed at supporting bicycling at the local level.
- **Awareness:** Lack of information and maps about existing bicycling routes within region.
- **Education:** Lack of knowledge of health, environmental and economic benefits of cycling. There is also a lack of safety programs educating children and adults on the safest methods to bicyclist both on

and off road.

- **Existing Bicycling Infrastructure:** Several opportunities exist for bicycling along greenways and bicycle lanes in most of the region. A more interconnected system of trails and roadway facilities could enhance existing and future projects.
- **Encouragement:** Each county has at least one advocacy group involved in both recreational rides and advocating for future improvements to bicycle infrastructure.
- **Natural Environment:** Mountainous terrain, particularly in northwestern portions of Burke and Caldwell Counties. This topography results in steep grades and limited sight distance on roads. There are also quite a few streams in the region, which require culverts and bridges. Existing bridges limit road width, requiring significant construction costs and greater environmental impacts. The specific recommendations for each County in the WPBP are intended to make cycling safer and more feasible throughout the region and in challenging areas like these.
- **Built Environment:** The Western Piedmont has varying degrees of density. The requirement for long-distance travel may prevent some residents from participating in bicycling. Southwest Burke County lacks routes with Tier Designations. Need connections between municipal greenways in Lenoir, Morganton, Hickory and Newton.
- **Political Constraints:** Implementation of the WPBP may slow in local municipalities if there is little or no buy-in from elected officials or appointed boards.
- **Maintenance:** Existing infrastructure needs better upkeep or repairs to better serve the needs of bicyclists.
- **Administrative:** Lack of communication and coordination between various governmental agencies, advocacy groups, and the general public can prohibit projects from being conceived or realized.



Chapter 2

Trends, Challenges and Benefits

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Introduction

The Western Piedmont has a growing interest in bicycling as both a form of recreation and as a means of everyday transportation. Advocating for changes within the region is a small, but dedicated group of bicyclists organized in each of the larger municipalities in the region. Inside the urbanized areas, roads are used more for transportation, where outside the urbanized areas the roads are narrow and used more for recreation.

The area's terrain is divided between the North Carolina's Mountain and Piedmont geographic regions providing elevation extremes for all forms of bicycling. With numerous miles of greenways and scenic routes, the current cycling infrastructure attracts people from both within and outside of the four counties.

Regional Overview

Primary Points of Interest

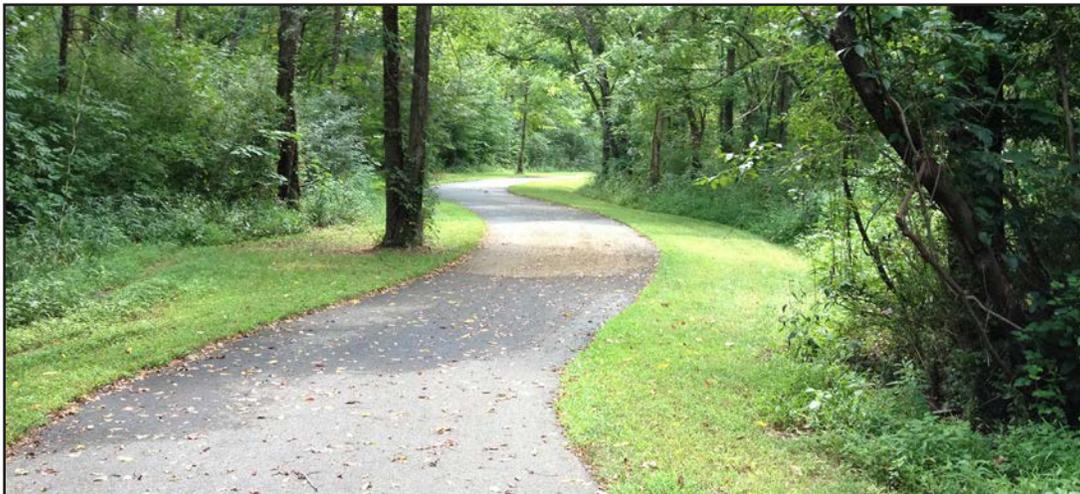
- Alexander County – Rocky Face Park, Downtown Taylorsville
- Burke County– Lake James, South Mountain, Pisgah National Forest, Downtown Morganton, Overmountain Victory Trail
- Caldwell County– Downtown Lenoir, Overmountain Victory Trail
- Catawba County – Downtown Hickory, Downtown Conover, Downtown Newton

Local Bicycle Clubs and Events in the Region

- Local Bike Clubs – Hickory Velo Club, Morganton Cycling Club
- Bike Events - Cycle to Serve Challenge, Bridge to Bridge, Carolina Cycle Challenge (formerly Brett's Ride), The Y Ride of Alexander County, Burke Hospice Metric and Half Metric Century, Soldiers' Reunion 100 Mile Bike Ride, Murray's Mill 30 & 65 Mile

Scheduled Projects

- City of Hickory CityWalk (STIP-EB-5750 and STIP-EB-5805; Construction scheduled 2020) and Riverwalk (Construction schedule TBD)
- Morganton Downtown Greenway Connector (STIP-EB-5807; Construction scheduled 2016/2017)
- City of Conover 1st Avenue Bicycle and Pedestrian Improvements (STIP-EB-5750 and STIP-EB-5803; Constuction scheduled 2024)
- Overmountain Victory Trail (Burke and Caldwell Counties) - Planning Underway; Construction TBD



A Section Along the Lenoir Greenway. Source: Kelly Larkins

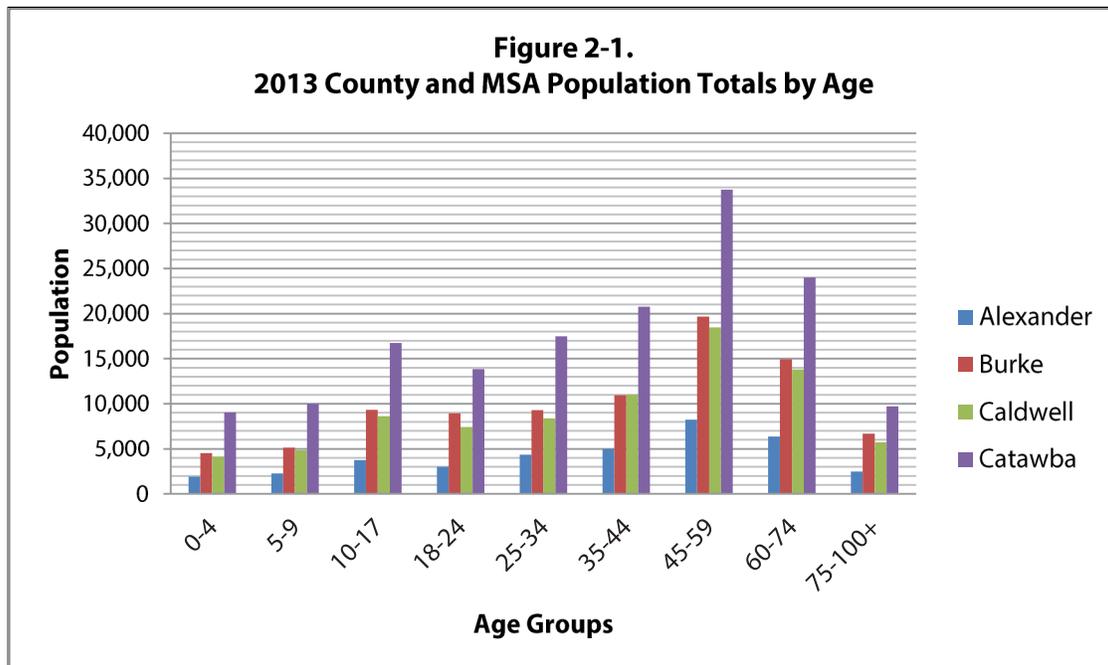
Population Overview

The total population for the region is 364,920 with 155,422 of those residing in Catawba County alone. The largest age group is residents between 45 and 59 which is 80,169 or approximately 22% of the population (1)

**Table 2-1.
2013 County and MSA Population Totals by Age**

Age Group	Alexander	Burke	Caldwell	Catawba	Hickory MSA
0 to 4	1,917	4,520	4,144	9,059	19,640
5 to 9	2,287	5,124	4,855	10,013	22,279
10 to 17	3,771	9,332	8,622	16,730	38,455
18 to 24	3013	8955	7426	13850	33,244
25 to 34	4,338	9,311	8,384	17,490	39,523
35 to 44	5,004	10,956	11,020	20,779	47,759
45 to 59	8,246	19,682	18,487	33,754	80,169
60 to 74	6,365	14,951	13,829	24,004	59,149
75 to 100+	2,495	6,688	5,737	9,722	24,652
Total	37,439	89,534	82,515	155,422	364,920

Source: N.C. Office of State Budget and Management, 2012.



Source: N.C. Office of State Budget and Management, 2014.

Population Trends

In terms of trends, the region experienced the most growth in the age 45 to 64 cohort between Census 2000 and Census 2010 (Table 2-2). This increase is due to the “baby boomer” generation in the region reaching between 45 and 64 years old in 2010. Over the next 20 years the baby boomers in the region will be reaching retirement age. This trend will cause the population total of the 65 and older group to grow by 31,360 to 86,249 in 2030 (2).

Age Group	2000	2010	2020	2030	Change 2000-10	% Change 2000-10	Change 2010-30	% Change 2010-30
0 to 4	22,057	21,592	21,146	22,646	-465	-2.1%	1,054	4.9%
5 to 17	60,090	62,630	56,331	57,665	2,540	4.2%	-4,965	-7.9%
18 to 44	133,627	122,461	120,773	124,998	-11,166	-8.4%	2,537	2.1%
45 to 64	82,411	103,925	104,448	91,513	21,514	26.1%	-12,412	-11.9%
65 and Older	43,666	54,889	72,361	86,249	11,223	25.7%	31,360	57.1%
Total	341,851	365,497	375,059	383,071	23,646	6.9%	17,574	4.8%

Source: N.C. Office of State Budget and Management, 2012.

The age group with the biggest population decline during the past decade is the younger labor force. The 18 to 44 population declined 8.4% between 2000 and 2010. The age group was impacted in the past decade both by baby boomers aging out of the cohort plus job losses in the region over the past 10 years, which has forced some younger workers to find work elsewhere. The population decline in the 18 to 44 group over the last 10 years will in turn impact the 45 to 64 group over the next 20 years. Projections from the N.C. Office of Budget and Management show that the population in the older labor force group is expected to decrease 11.9% from 103,925 in 2010 to 91,513 in 2030 (2).

Housing and Transportation Costs

Housing and transportation costs represent a large portion of a household’s income in the region. The mean annual transportation cost for 73.6% of individuals in the Western Piedmont is \$14,300 or more as shown in Table 2-3 (3). When housing costs are added, 94.2% of people living in the region spend 50% or more annually on these expenses as shown in Table 2-4 (3).

Costs	Population	Percent of Pop.
< \$12,500	820	0.20%
\$12,500 to \$13,500	38,270	10.90%
\$13,500 to \$14,300	53,984	15.40%
\$14,300 to \$15,400	144,662	41.20%
\$15,400+	113,799	32.40%
Total	351,535	100%

Source: Center for Neighborhood Technology, 2014.

Percent	Population	Percent of Pop.
< 40 %	0	0%
40 to 45 %	0	0%
45 to 50 %	20,701	5.90%
50 to 60 %	199,534	56.80%
60 + %	131,300	37.40%
Total	351,535	100%

Source: Center for Neighborhood Technology, 2014.



A Group Ride in Glen Alpine. Source: Kelly Russell

Mobility and Land-Use

Mobility and Land-Use Trends

Vehicle Miles Traveled

Vehicle Miles Traveled is one measure of how many miles a vehicle may travel over a particular time period (Table 2-5). According to information provided by The Center for Neighborhood Technology, the amount of Vehicle Miles Traveled (VMT) per household annually in the Hickory MSA is between 21,000 and 26,000 miles (3).

Regional Commuting Patterns

The overall commuting patterns for each county are divided into “out-commuters” to another county, “in-commuters” from another county, and “non-commuters” meaning persons residing and working in the same county as identified in Table 2-6. Within the region, Catawba County is identified the “job magnet” because it has the highest number of in-commuters than out-commuters (4).

Table 2-5. Vehicle Miles Traveled (VMT) Per Household			
Annual Miles	Population	% of Population	Households
< 16,000 Annual Miles	-	0%	-
16,000 to 18,500 Annual Miles	9,924	3%	3,759
18,500 to 21,000 Annual Miles	49,900	14%	19,325
21,000 to 26,000 Annual Miles	256,288	73%	101,380
26,000 + Annual Miles	35,423	10%	14,282
Total	351,535	100%	138,715

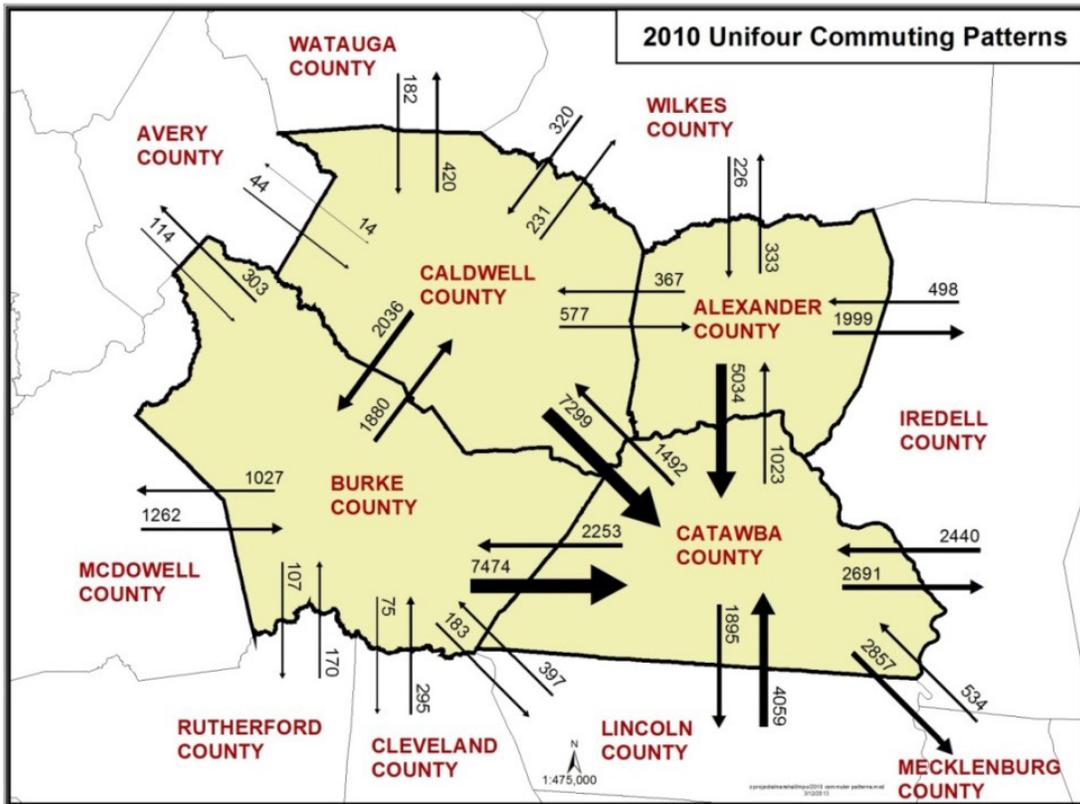
Source: Center for Neighborhood Technology, 2014.

**Table 2-6.
Hickory MSA Workflows by County**

	Alexander	Burke	Caldwell	Catawba
Total Out-Commuters	8,712	12,590	11,883	14,772
Total In-Commuters	2,667	7,732	5,410	30,028
Total Non-Commuters	7,393	25,263	22,719	55,124
Persons Working in County	10,060	32,995	28,129	85,152
Employed Residents	16,105	37,853	34,602	69,896
Net Commuting	-6,045	-4,858	-6,473	15,256
% of Employed Residents who are Out-Commuters	54.1%	33.3%	34.3%	21.1%
% of Employed in County who are In-Commuters	26.5%	23.4%	19.2%	35.2%

Source: U.S. Census Bureau, 2013.

**Figure 2-2
2010 Commuting Patterns**



Source: U.S. Census Bureau, 2013.

**Table 2-7.
Commuting Patterns by Transportation Mode -
American Community Survey 5 Year Estimates, 2008-2012**

Mode	Hickory MSA		North Carolina	
	Total	Percent	Total	Percent
Car, truck, or van	147,491	94.8%	3,880,941	91.6%
Public transportation (excluding taxicab)	112	0.1%	46,150	1.1%
Walked	1,583	1.0%	75,666	1.8%
Bicycle	120	0.1%	10,489	0.2%
Taxicab, motorcycle, or other means	1,252	0.8%	43,919	1.0%
Worked at home	5,039	3.2%	180,524	4.3%
Total (workers 16 years and over)	155,597	100%	4,237,689	100%

Source: U.S. Census Bureau, 2012.

Bicycle Commuting

The total number of bicycle commuters in North Carolina is estimated at 10,489 which is 0.2% of all commuters. From this total, 8,079 or 77% are male and 2,410 or 23% are female (5). According to U.S. Census information, within the Hickory Metropolitan Area, only a small percentage of workers travel by bicycle with the majority of commuters traveling by private automobile. As shown in Table 2-7, bicycling comprises only 0.1% of all commuting modes for both the Hickory MSA (5).

Mobility and Land-Use Challenges

The high number of VMTs per household is a symptom of a larger challenge facing the Western Piedmont region. In a report published by Smart Growth America in April 2014, the Hickory MSA was ranked the worst region for sprawl out of the 221 regions currently in the United States. Smart Growth America measured development by using four separate factors which include development density, land use mix, activity centering, and street accessibility. These measures were then used by researchers who developed for each region a Sprawl index score (6). The highest Index score of 203.4 was earned by the New York/White Plains/Wayne, NY-NJ metro region in comparison to the Hickory metro region which earned a score of 24.9. Other metro regions in the state also ranked low in the Sprawl Index including Durham/Chapel Hill (Index score: 73.8), Charlotte/Gastonia-Rock Hill (Index score: 70.5) and Greensboro/High Point (Index score: 63.5) (6).

Mobility and Land-Use Benefits

Transportation systems have great influence in shaping the built environment: they determine an area's character, change a neighborhood's quality-of-life, and influence property values. In addition, how land-use develops over time can determine the type of transportation options available. The integration of transportation and land-use allows people to have a greater number of choices for getting around. When popular destinations are placed closer to one another, there is a greater number of ways people can access them, including bicycling. Several strategies exist that can assist in re-shaping the built environment such as incorporating compact street design, developing transit-oriented development, managing parking and emphasizing sustainable transportation planning which includes bicycling (7).

In a region such as the Western Piedmont, sprawl has become the standard development pattern illustrated by the Smart Growth America report. If the region were to emphasize compact growth instead of sprawl, people

bicycling to their destinations would benefit from this type of development pattern. Compact growth has been achieved in both North Carolina and across the country through revising zoning codes to allow mixed-use development, encouraging development in established downtowns or similar areas, and emphasizing the incorporation of multiple transportation options for residents (8).

Additional benefits to compact growth exist: providing people greater economic opportunities, safer environments, opportunities for physical activity and pollution reduction (8). Another advantage to compact growth is that with greater connectivity and transportation options, households also spend less on combined housing and transportation expenses. As shown in Table 2-4, 94.2% of households in the region spend 50% or more on housing and transportation costs (9). If bicycle-supportive compact development patterns were implemented in the region, “shorter distances to travel and a wider range of low-cost travel options mean individuals and families in these places spend a smaller portion of their household budget on transportation,” according to Smart Growth America (8).

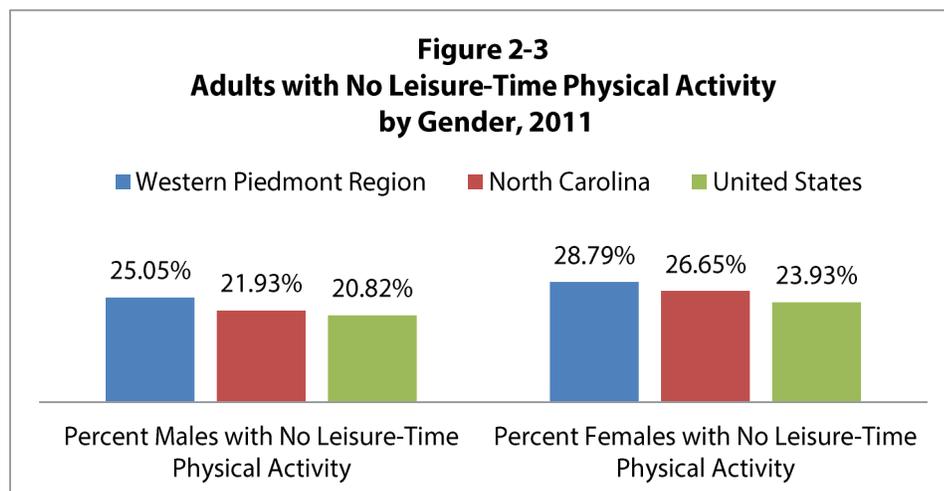
Health

Health is impacted by where we live, learn, work and play. Communities become healthier by creating and improving physical and social environments. The transportation system is a large part of the physical environment and therefore ultimately linked to the health of the community:

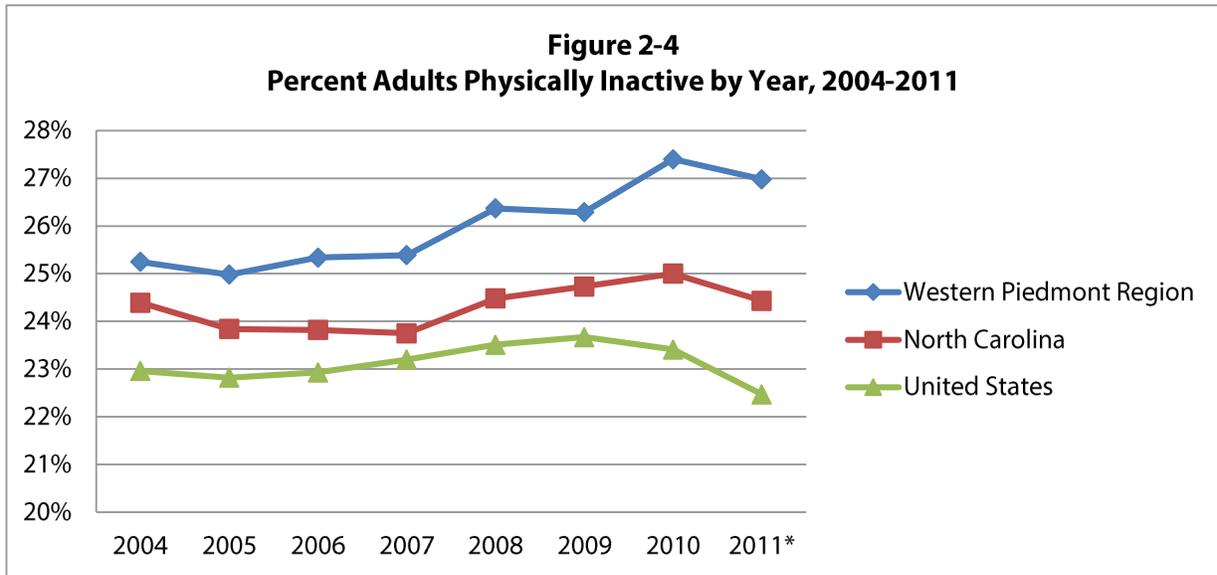
- **Physical activity/obesity:** Increased availability of safe bicycling routes and connectivity to popular destinations encourages biking for active transportation purposes. Bicycling facilities developed for transportation purposes also provide health benefits when utilized for active recreational purposes.
- **Air pollution and associated respiratory and heart diseases:** Increased availability of bicycling facilities can help reduce traffic congestion and VMTs in cars and as a result decrease air pollution known to cause health problems.
- **Environmental justice/social equity:** Creating safe and equitable biking infrastructure helps protect those who already ride and enables those who are interested in riding to do so, regardless of income, age or ability (10).

Trends

Data from the region were compiled to help gauge historic and current health conditions. The three most important health behaviors – nutrition, tobacco use, and most importantly physical activity – help determine our



Source, Centers for Disease Control and Prevention, 2011.



Source, Centers for Disease Control and Prevention, 2011.

health outcomes throughout life. It is important for communities to make their physical environments accessible for cycling and other physical activity.

Physical Inactivity

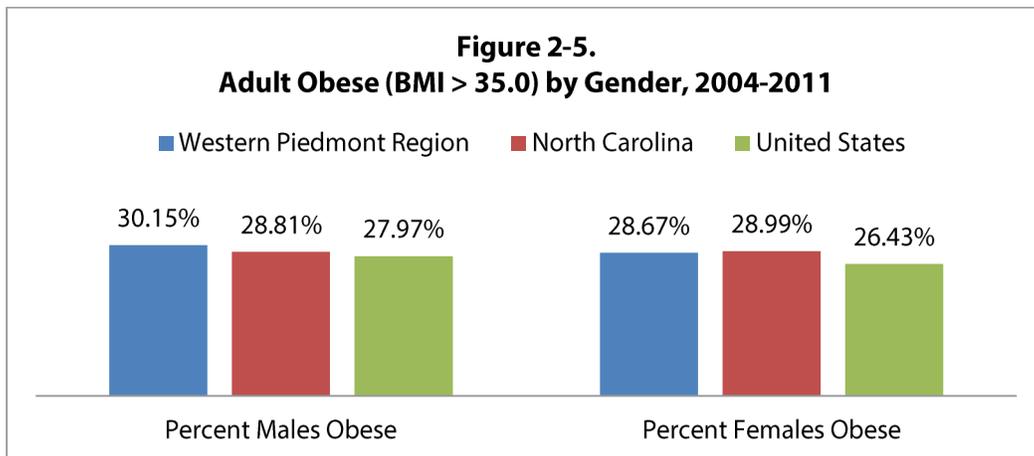
Current health risk behaviors, such as lack of physical activity, are determinants of future health. An estimated one in four (or 26.98%) of adults in the Western Piedmont Region does not participate in any physical activity or exercise (with no leisure-time physical activity) (11).

Health Outcomes

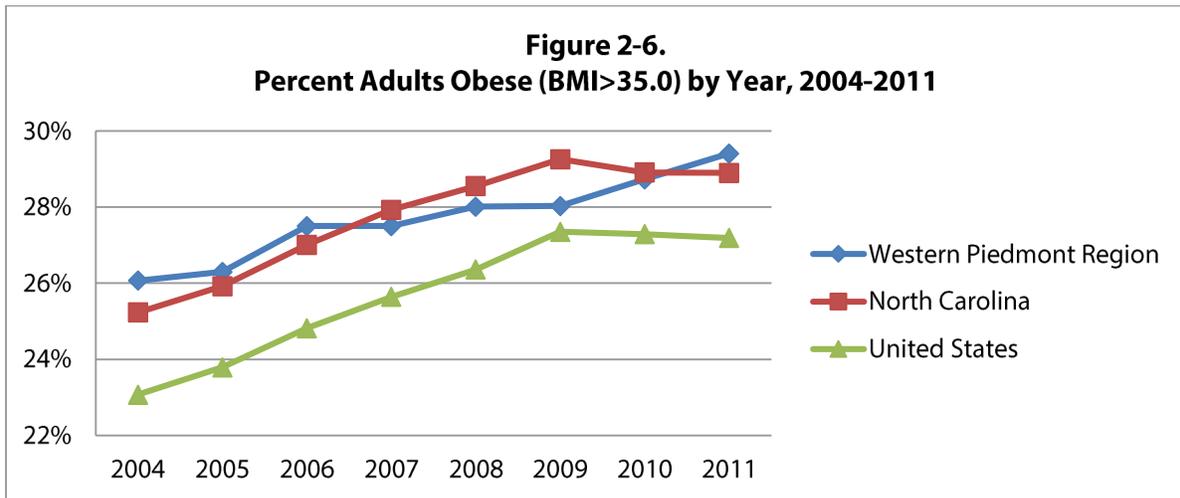
Leading Causes of Death

The four leading causes of death from 2001 to 2012 in Alexander, Burke, Caldwell and Catawba Counties were cancer, diseases of the heart, chronic lower respiratory diseases and cerebrovascular disease (stroke). Several of these causes of death are related to cardiovascular conditions that can be limited or even prevented, in many cases, with improved diet and regular exercise.

Obesity in Adults



Source: Community Commons



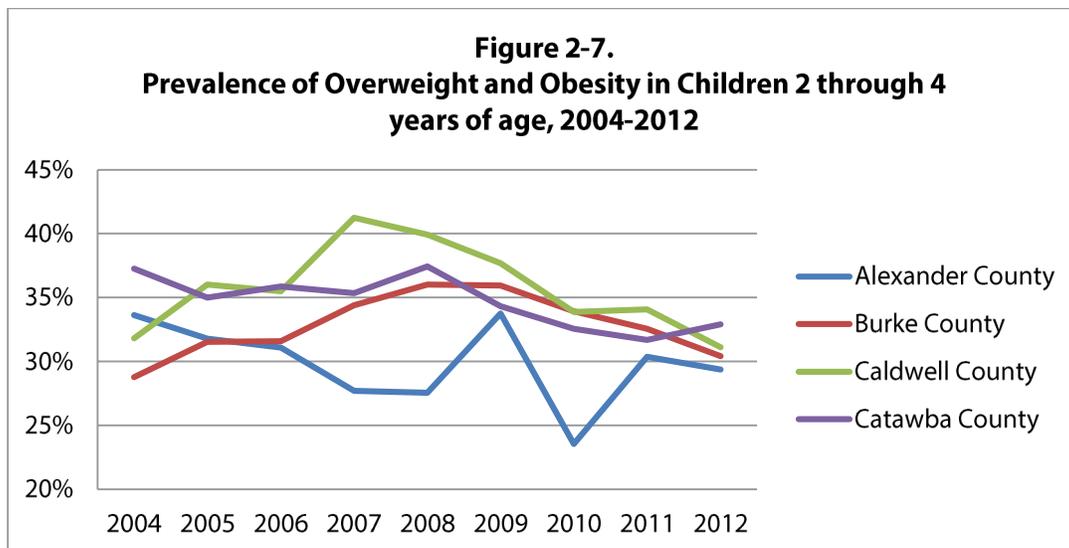
Source: Community Commons

Being obese increases an individual’s risk for numerous health conditions such as cancer, hypertension, Type 2 diabetes, various heart issues, stroke and others. Excess weight may signify an unhealthy lifestyle and increases the risk for further health issues.

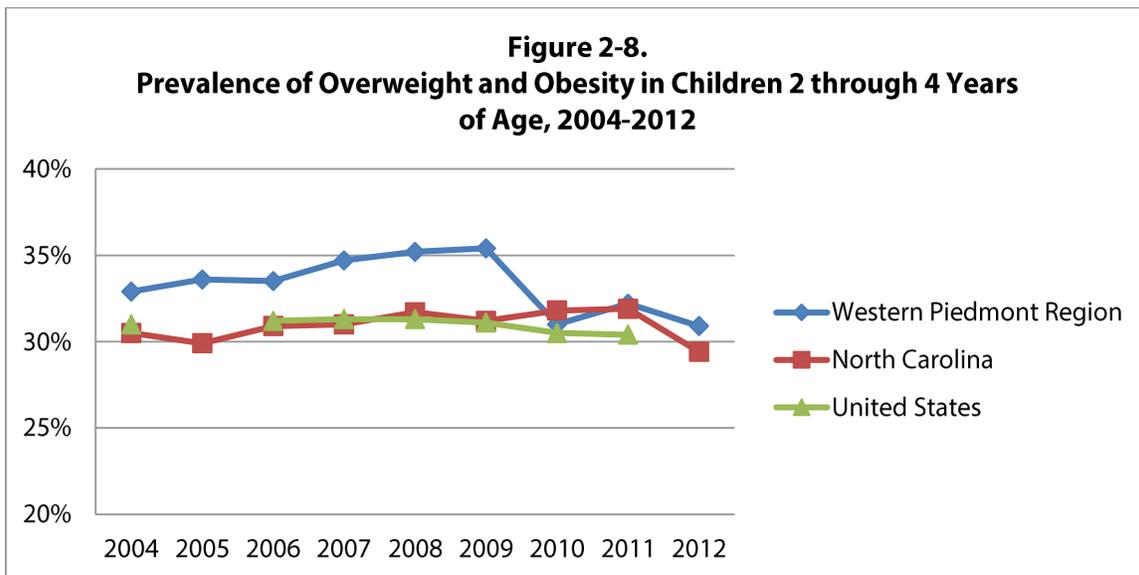
Almost one in three adults, or 29.41% in the Western Piedmont Region are classified as obese. With a total population of over 270,000 for the four counties, this equates to around 80,000 citizens with a body mass index (BMI) of 30 or greater (refer to Figure 2-5).

Overweight and Obese Children

According to the Centers for Disease Control and Prevention, obese children and adolescents “are more likely to have prediabetes, risk factors for cardiovascular disease, and are at greater risk for bone and joint problems, sleep apnea and social and psychological problems” (12). They are also more likely “to be obese as adults and



Source: North Carolina Nutrition and Physical Activity Surveillance System, 2004-2012; Pediatric Nutrition Surveillance System, 2004-2011



Source: North Carolina Nutrition and Physical Activity Surveillance System, 2004-2012; Pediatric Nutrition Surveillance System, 2004-2011

Note: Data is reflective of the population at 185% of the federal poverty level. The majority of the children ages 2 through 4 are from the Special Supplemental Nutrition Program for Women, Infants, and Children - better known as the WIC Program.

are therefore more at risk for adult health problems such as heart disease, type 2 diabetes, stroke, several types of cancer and osteoarthritis” (13).

Almost one in three, or 30.9%, low-income children ages 2 through 4 are overweight and obese in the Western Piedmont Region. The percentage of overweight and obese children in the region has been historically higher than the percentage for North Carolina and the United States; however, within the past five years the percentage has dropped to levels similar to those of the state and the nation.

Health Challenges

The Western Piedmont Region’s current and future health is significantly determined by the current levels of physical inactivity, overweight levels, and obesity rates. These current levels indicate an increased risk of heart disease, diabetes, and other chronic diseases. In order to improve the health of the region, everyone in Alexander, Burke, Caldwell, and Catawba counties should incorporate physical activity into their daily schedule.

Health Benefits

Being physically active is one of the most important actions people can take to improve their health. The 2008 Physical Activity Guidelines for Americans recommends that “adults participate in at least 2 hours and 30 minutes (150 minutes) a week of moderate-intensity aerobic physical activity and muscle-strengthening activities for at least two or more times a week for health benefits. For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate intensity. Children and adolescents should complete one hour (60 minutes) or more of physical activity daily.” Additional and improved bicycle facilities are needed in many communities so that people can meet the physical activity recommendations in their daily routines.

Everyone can gain the health benefits from physical activity. Cycling is one of the best forms of physical activity for most people because it is a low-impact activity that causes less physical strain and fewer injuries than most other forms of physical activity. Bicycling also utilizes all of the major muscle groups, does not require high levels of physical skill, can be done at various intensities from a leisurely pace to a vigorous physical

workout and can be incorporated into normal daily activity.

As a healthy form of physical activity, cycling can help to reduce the risk of a range of health conditions, notably heart disease and cancer – the leading preventable causes of premature death. An increase in the number of people riding bicycles and in the frequency that people ride would help to slow or reverse the obesity epidemic among adults and children. An increase in bicycling activity has the potential to improve overall community health, both by improving air quality through reduced automobile emissions and increasing the amount of safe facilities for people to ride.

Safety

Additional bicycle infrastructure, such as bike lanes and signage, could provide cyclists with a safer environment for commuting and recreational riding. Roadways which were primarily designed to serve only automobile traffic create dangerous conditions for bicyclists. Slight increases in automobile speeds can severely impact the condition of a bicyclist involved in a crash with an automobile.

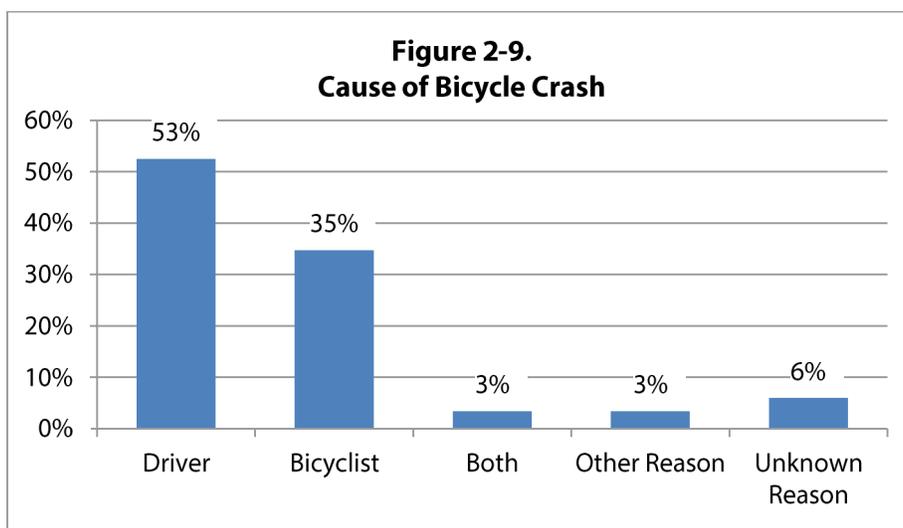
Along with changes in the design of roadways, the region also needs additional education, for both children and adults, about safe bicycling practices and enforcement of the current laws already in place.

This section examines bicycle crashes between 2007 and 2012 in North Carolina. The percent change in crashes over time is first analyzed to see how local trends compare to state and national trends. Other data analyzed includes the cause of crash (who is at fault); the exact reason for crashes, coupled with degree of injury; and motorists speed and speed limit during the crashes.

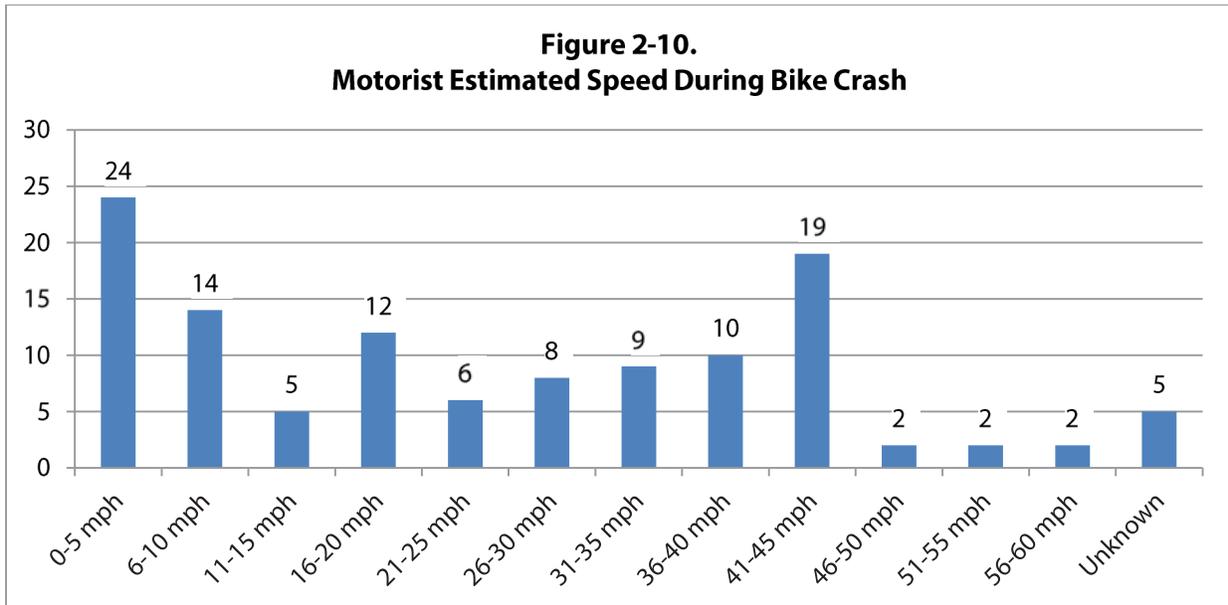
Crash data at national, state, and county levels has not shown a positive or negative trend. From 2007 to 2008, national and statewide crashes increased, though the percent change for state-level crashes was only 1.17%. Burke and Catawba Counties saw decreases in crashes between 2007 and 2008, and the number of crashes in Caldwell County remained the same. Alexander County has had only one recorded crash between 2007 and 2012 (14).

From 2008 to 2009, the number of national bicycle crashes declined slightly. The state also saw a decrease in number of reported crashes, as did Caldwell County with a noteworthy decrease of 83.33% between the two years. Burke and Catawba Counties, however, experienced an uptick in reported incidences (14).

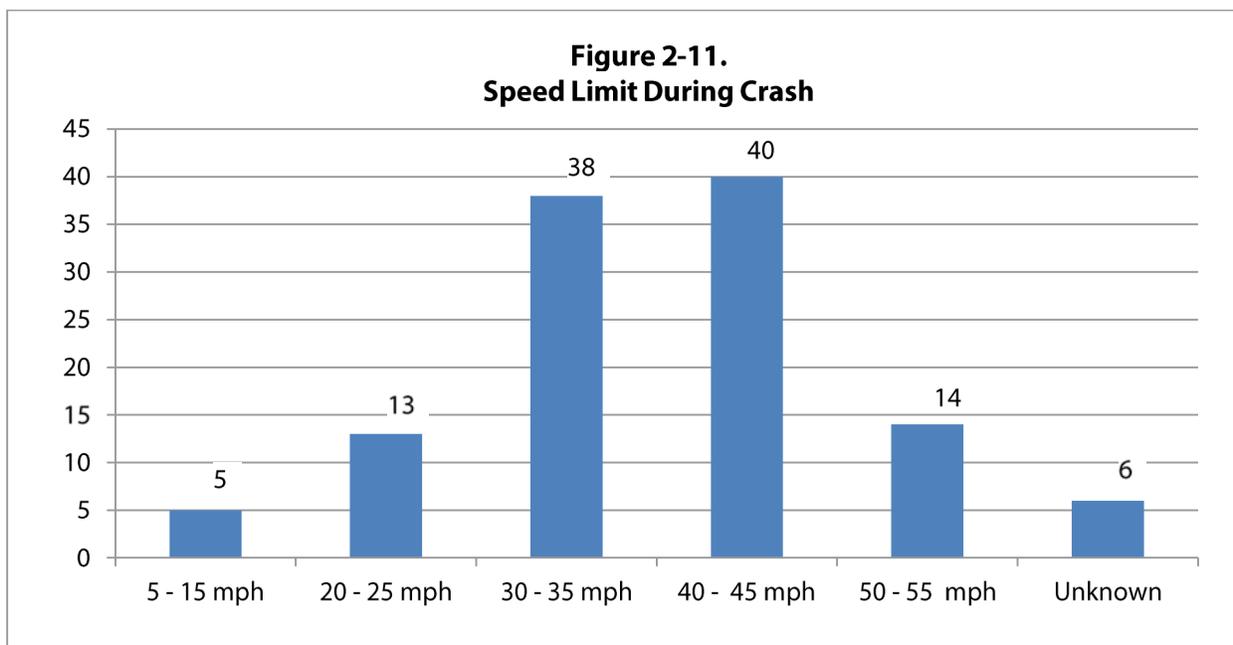
Data at all levels show increases in crashes between 2009 and 2010. However, the U.S. experienced only a 3.17% increase in documented crashes between 2009 and 2010. Burke County reports remained static, while Caldwell County saw a change from 1 to 4 crashes, and Catawba County increased 35.71%. From 2010 to 2011 crash reports decreased in every



Data Source: NCDOT Division of Bicycle and Pedestrian Transportation, UNC Highway Safety Research Center, 2014



Data Source: NCDOT Division of Bicycle and Pedestrian Transportation, UNC Highway Safety Research Center, 2014



Data Source: NCDOT Division of Bicycle and Pedestrian Transportation, UNC Highway Safety Research Center, 2014

category except at the state level. Burke County saw a 100% decrease in reports (0 reports for 2011), Caldwell County experienced a 75% decrease, and Catawba experienced an 89.47% decrease in reports (14).

Percent change varied greatly among categories in the time period between 2011 and 2012. The U.S. saw only a 2.16% increase, while North Carolina experienced a 0.39% decrease and Burke remained unchanged. Notably, Caldwell increased from 1 to 9 crashes (800% increase) and Catawba from 2 to 8 crashes (300% increase) (14).

The data presented in this section indicate that the percent change in Western Piedmont crashes shows no trend between 2007 and 2012 and overall the region has had relatively few crashes when looking strictly at documented totals within each county. Coupled with the fact that the data extends from 2007 to 2012, the small number of crashes could be one reason that the percent change information does not show a pattern (14).

The most common cause of bicycle crashes between 2007 and 2012 in the Western Piedmont was motor vehicle drivers. Motorists contributed to approximately 52.5% of crashes (Figure 2-10). Reasons for those crashes include motorists turning right or merging, motorists turning left or merging, motorists overtaking bicyclists, motorists backing vehicles, and motorists failing to yield. Cyclists caused 34.7% of crashes. The reasons for those crashes include bicyclists turning right or merging, bicyclists turning left or merging, bicyclists overtaking motorists, and bicyclists failing to yield (14).

The driver's speed in the majority of crashes (20.3%) was between 0 and 5 miles per hour (Figure 2-10). The second most common speed (in 16.1% of crashes) was between 41 and 45 miles per hour, and the least common speeds were between 46 to 60 miles per hour (14).

Overall, 33.9% of crashes occurred on roads with speed limits between 40 and 45 miles per hour while 32.2% of crashes occurred in areas with speed limits between 30 and 35 miles per hour. Fewer crashes occurred in areas with speeds limits between 5 and 25 miles per hour and those between 50 and 55 miles per hour, as well as in areas with unknown speed (possibly no speed limit) (14).

As noted in this chapter, motorists are responsible for the majority of bicycle crashes in the Western Piedmont between 2007 and 2012. As noted by states and municipalities across the country, better education policies and methods, such as teaching cycling rules of the road and rights during driver's education courses, along with other policies and practices, could help reduce the number of accidents caused by both motorists and cyclists.

Additional bicycle infrastructure, such as bike lanes and signage, could provide cyclists with a safer environment for commuting and recreational riding.

Economic Benefits

Beyond the ease of use, enjoyment, and health benefits that users experience, bicycling is one of the most efficient and cost-effective means of travel. Bikes require hardly any upkeep and allow people to commute without the inefficiency of moving a two-ton vehicle with them. Placing an emphasis on bicycling also helps in other ways like increasing property values, assisting cities and towns in revitalizing their downtowns, and attracting tourists from both within and outside the region.

Property Values

The Carolina Thread Trail is a regional network of multi-use greenways, trails and blueways that reaches 15 counties, including Catawba County, and stretches from North Carolina into South Carolina. An economic impact study published in March 2007 by Econsult Corporation and Greenways Incorporated found that expansion of green space and trails from the Carolina Thread Trail increases nearby property value by making the property more attractive. The added use of bicycle infrastructure to a road or trail also increases that property's



Bicyclists along the Morganton Greenway System. Source: City of Morganton

value. The study found that once built, the Trail will be situated near an estimated 305,000 housing units and each unit will benefit approximately \$3,580 from the trail (15). Over 50% of all housing units will appreciate around \$4,500 for a total of \$1.7 billion total dollar gain in the affected area (16). This increase in property values will result in approximate \$17 million more in collected property taxes for municipalities that are part of the trail system (15).

Downtown Revitalization

The Rails-to-Trails Conservancy has demonstrated that re-purposing abandoned rail lines into bicycling and walking trails increases tourism dollars spent in each community through which a trail passes. Trails and bike-ways contribute significantly to downtown revitalization when people make purchases at downtown stores. Leadville, CO, for example, reported a 16% increase in sales tax revenue with the opening of a major bikeway in their downtown. According to a study conducted in Brown County, WI, lots adjacent to a bike trail sold faster and for 9% more than similar lots located not close to a trail (16).

Tourism

Econsult Corporation’s study conducted on the potential impacts of the Carolina Thread Trail found that the trail could bring local governments between \$42 million and \$84 million annually in tourism activity (15). A different study published in 2004 by the North Carolina Department of Transportation found that bicycling in the Outer Banks provides annual support for 1,400 jobs and has an annual economic impact of \$60 million (17).

Table 2-8. U.S. Greenhouse Gas Emissions from the Transportation Sector, 2012	
Emission Source	Percent
Fossil fuel combustion: carbon dioxide	94.7%
Fossil fuel combustion: other greenhouse gases	0.9%
Use of fluorinated gases	4.0%
Lubricants	0.5%
Total	100%

Source: U.S. Environmental Protection Agency. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012.

Research from several universities across the country, the National Bicycle Tour Directors Association, Local Government Commission, and numerous state Departments of Transportation confirm that bicyclists riding through towns will stop and spend money. Bicycling allows people to take in their surroundings as they travel, which gives them a chance to observe businesses up close. At each leg along their journey, bicyclists stop to make purchases and find entertainment (movies and concerts). In addition, bicyclists will also dine at restaurants, visit coffee shops and bakeries, patronize local bicycle shops, and rent lodging facilities (16).



The Y Ride of Alexander County. Source: Chad Ritchie

Environment

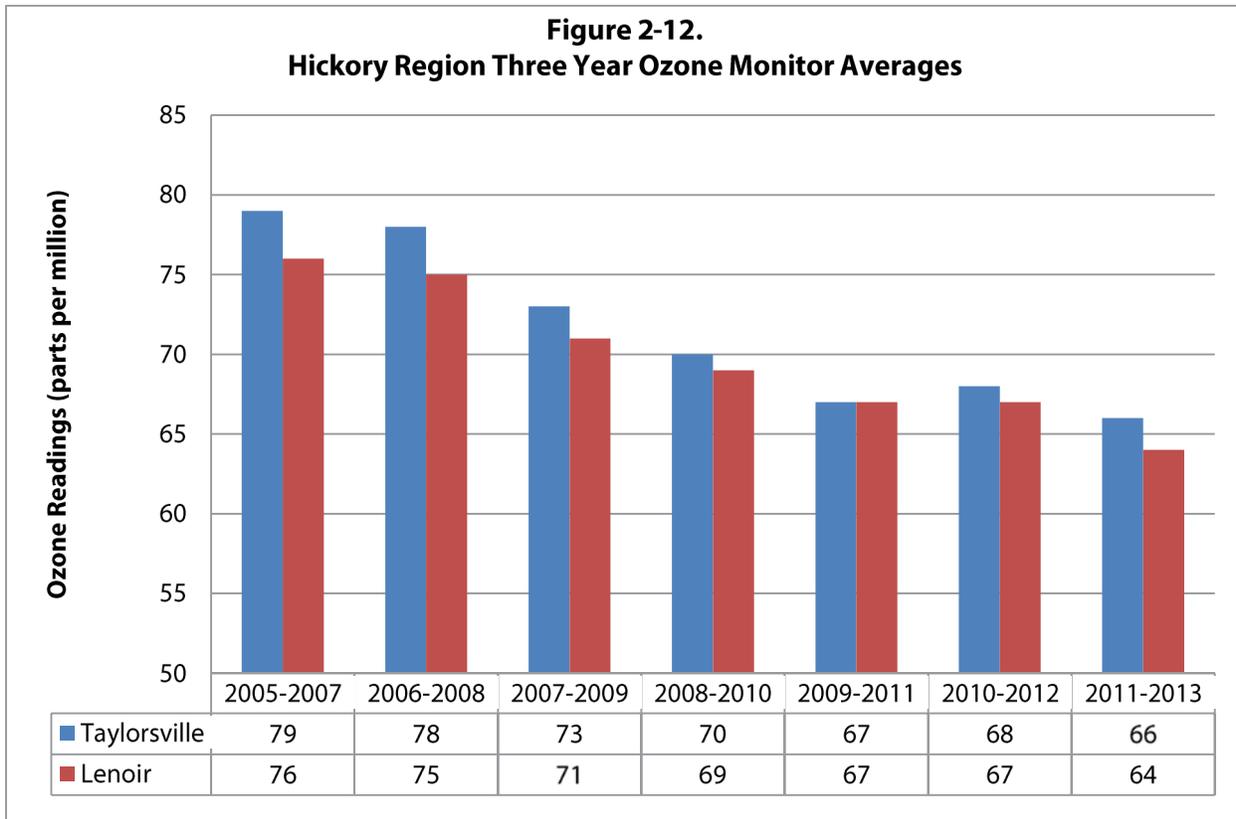
Trends

Air quality can be negatively affected by several types of gases and particles from an engine's exhaust. The most common gases are carbon dioxide, hydrocarbons, nitrogen oxides, sulfur oxides, ground-level ozone, carbon monoxide, and particulate matter from metal and soot (18).

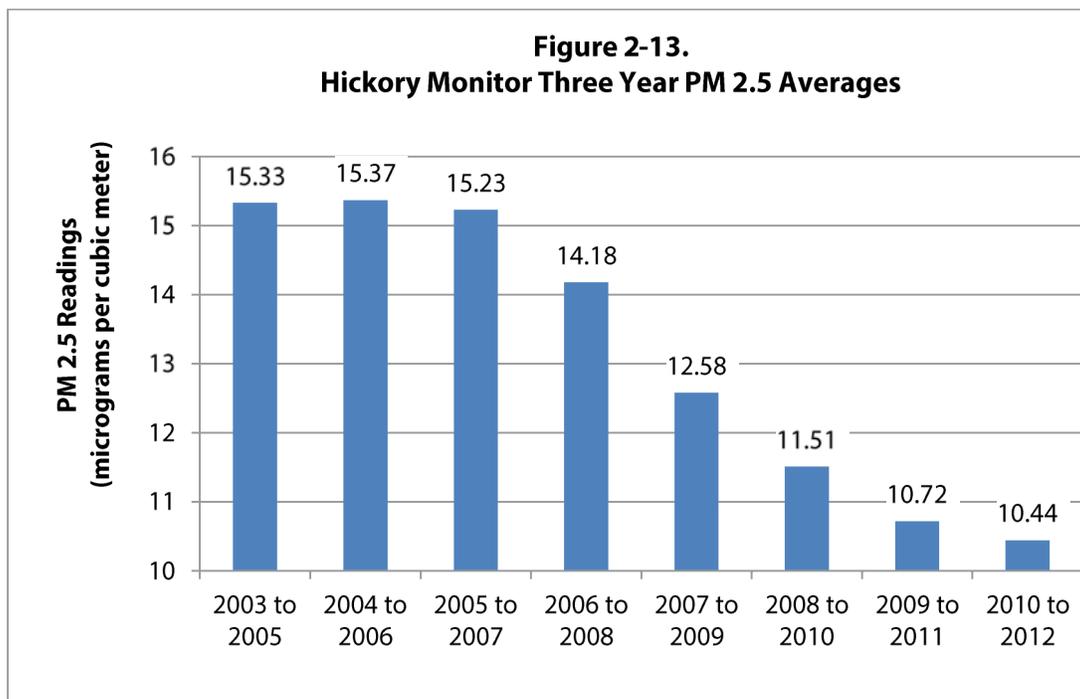
Current and past air quality issues in the Western Piedmont region come from having high-levels of ground-level ozone (O₃) and particulate matter (PM 2.5) in the atmosphere (19). Ozone (O₃) is a gas created by chemical reaction when solar radiation interacts with nitrogen oxides (NO_x) and volatile organic compounds (VOC) in the atmosphere (19). Nitrogen oxide (NO_x) is formed when fuel is burned at high temperatures by both on-road (cars, trucks, buses) and non-road vehicles (boats and construction equipment, for example) as well as from industrial sources such as turbines, power plants, cement kilns, and industrial boilers (20). Volatile organic compounds (VOC) can enter the atmosphere through various sources from either vehicle engine operation or fuel evaporation (21).

Fine particulate pollution (PM 2.5), consists of suspended fine particles that are less than or equal to 2.5 micrometers in diameter. PM 2.5 is made up of a variety of microscopic solids and liquid droplets such as allergens, dust, nitrates, organic chemicals, and sulfates. Unlike ozone, PM 2.5 emissions can occur throughout the year, although the amount and chemical compositions of PM 2.5 depends on location, time of year, and local weather conditions (20). The primary sources of PM 2.5 pollution are many and varied: wood smoke from residential or commercial combustion, automobile exhaust in the form of nitrogen oxide, coal-fired power plants, small engines, open burning of trash or construction debris, and dust from agricultural operations or open areas. Secondary sources can be generated from fuel combustion working in conjunction with sunlight and water vapor (19).

Globally, between 2005 and 2030, transportation-related carbon dioxide (CO₂) emissions are expected to increase by 57% (22). Also, according to the Environmental Protection Agency (EPA), in 2012 alone "greenhouse



Source: Western Piedmont Council of Governments, 2013.



Source: Western Piedmont Council of Governments, 2013.

gas emissions from transportation accounted for about 28% of total U.S. greenhouse gas emissions, making it the second largest contributor of U.S. greenhouse gas emissions after the Electricity sector” (23). These emissions have also been steadily increasing by about 18% since 1990 (24). Using the latest information available from the EPA, Table 2-13 carbon dioxide (CO₂) is the main emission from the transportation sector. Carbon dioxide (CO₂) is followed by other greenhouse gases, fluorinated gases used in refrigeration and cooling systems, and lubricants.

Challenges

Regional

In terms of ozone monitoring, the Western Piedmont has two air monitors; one near Lenoir and the other in Taylorsville. Currently, the three-year average of ozone concentrations is under the 1997 8-hour air standard for both monitors. However, previous three-year averages (2001-2003 and 2002-2004) indicated ozone levels above the acceptable federal level. Therefore, the EPA designated the region as a “non-attainment” area in April 2004. The designation can lead to penalties involving the loss of federal and state grant funds for road and transportation improvements, as well as additional requirements for locating new industry or business in the area. Beyond the direct economic impacts, the “non-attainment” label can cause people not to move to a geographic location, which can hurt economic growth and employment opportunities (20). However, for the past nine years, ozone readings for the Hickory-Lenoir-Morganton MSA region have been improving (Figure 2-12), as have particulate matter readings (Figure 2-13) (19).

Global

The vehicle emissions can also have an effect on global air quality. Carbon dioxide (CO₂) and nitrous oxide (N₂O) which are released primarily through the burning of fossil fuels, and methane (CH₄) and fluorinated gases are commonly called “greenhouse gases”(25). These greenhouse gases absorb infrared radiation leaving Earth and re-emit it in other directions, impeding the flow of heat from the planet (23). This leads to unnatural warming of the earth. David MacKay states in his book, *Sustainable Energy: Without the Hot Air* that “the natural flows [of CO₂] cancelled themselves out. So the natural flows, large though they were, left the concentration of CO₂ in the atmosphere and ocean constant, over the last few thousand years. Burning fossil fuels, in contrast, creates a new flow of carbon that, though small, is not cancelled”(26).

Over the next 100 years, the problem of climate destabilization is estimated to result in large-scale changes to our living, social, and economic environments. However, if grassroots efforts motivate people and governments to make certain policy and infrastructure changes, the results will be grave but may be survivable (27,28). Though policy changes are necessary in order to create a paradigm shift that will lead to cycle-friendly, sustainable communities, grassroots efforts are important for beginning the policy-changing process. Some of the problems that climate destabilization will cause include: increasing global temperatures, sea-level rise, food deserts, parasite infestations, ecological changes, strong storms (such as more damaging hurricanes, torna-

Table 2-9.
Motor Vehicles Gasoline and Emissions

Vehicle Driven	Typical MPG	Gasoline	Emissions
Small Car	35mpg	68 Gallons	.7 Tons of CO ₂
Midsize Car	20mpg	124 Gallons	1.3 Tons of CO ₂
SUV/4x4	14mpg	170 Gallons	1.9 Tons of CO ₂

Source: Bike to Work Day San Francisco Bay, 2014.

does, and blizzards), famine, drought, and, eventually, uninhabitable conditions of islands due to sea-level rise. Locally it could lead to scenery changes in the Appalachians by changing the forested mountains to scrublands (27).

Benefits

Creating bicycling infrastructure and promoting bicycling for commuting, tourism, and recreational purposes can greatly reduce the negative effect of environmental impacts produced by motor vehicle use. Bicycles do not burn fossil fuels, are more energy efficient to make, and do not require toxic batteries or motor oil to operate (29).

If motor vehicle drivers began switching to bicycles for trips averaging between 1 and 3 miles, 6 to 14 million tons of CO₂ could be saved each year from entering the atmosphere. In addition, moving to bicycling for transportation can also save 700 million to 1.6 billion gallons of fuel from being burned (30). Riding a bicycle can also reduce the amount of particulate matter in the atmosphere. During its lifetime, a car or truck can produce an “estimated 1.3 billion cubic yards of polluted air and can scatter an additional 40 pounds of worn tire particles, brake debris and worn road surface into the atmosphere” (29).

If a driver switched to using a bicycle instead of a motor vehicle for a 10 mile round trip for 5 days a week for a year, they would save both fuel and CO₂ emissions depending on what type of vehicle they drive (refer to Table 2-9) (29).

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Chapter 3

Priority Segments

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Overview

One of the purposes of this bicycle plan is to provide a clear framework for the development of new facilities that will support, promote, and encourage both safe and efficient bicycling throughout the region. The Western Piedmont route system is made up of several route segments that provide on-road connections and linkages between town and cities, recreation areas, and points of interest within the four counties.

Development of the bicycle segments for the plan relied on the input from the public and participating members of the Steering Committee. This chapter outlines the methodology used in developing the final segments and information about the final segments themselves.

Methodology

Steering Committee

A steering committee was formed in the summer 2013 to assist in developing this plan. Members of the Steering Committee include:

- Elected officials
- City and town planners
- County planners
- Public health officials
- Bicycle shop owners
- Advocates
- Municipal engineers
- NCDOT division engineers

A full listing of members is found in the Acknowledgement section on page i.

Public Workshops

April 2014

The Western Piedmont Bicycle Plan (WPBP) planning staff conducted public workshops during the month of April in each of the four counties covered by the plan. Each workshop was a drop-in format and was open from 5pm to 7pm.

Participants at the public workshops provided valuable information in both the comments received and commonly used segments that were mapped. The workshops were also used to advertise the ongoing WPBP survey, and the plan's vision, goals and objectives were available for comment and input.

The mapping portion of the public workshop gave attendees the opportunity to mark precisely which segments they commonly use within the four counties. This information was gathered for both the county-wide and city-wide level. Attendees marked the base maps with highlighters while staff member Todd Stroupe answered any questions. After each workshop, the collected data was reviewed and translated into a digital format to be used in the next phase of the plan development process. Other sources for segment information collected during this time period include NCDOT's Bicycle and Pedestrian Division, the website Map My Ride, regional road races, and the Greater Hickory Cooperative Christian Ministry.

In addition to the segment maps, both written and verbal comments were also received during the public workshops. Constructive comment topics ranged from relevant segment and destination information to safety concerns over the issue of stray or unsecured dogs in neighborhoods. These comments were also archived for later use in the plan. A total of 43 people attended the April workshops.



Alexander County April 2014 Public Workshop. Source: WPBP Staff.

September 2014

Four public workshops were conducted during the month of September. Each workshop was drop-in format, open from 4pm to 6pm. The following table summarizes the public workshop locations, dates, and number of persons participating, excluding Western Piedmont Council of Government and North Carolina Department of Transportation staff.

Participants at the public workshops provided valuable information such as which segments they think should be prioritized first in each county and which bicycle facilities they prefer, given the different types of locations found in our region: urban, small town, and rural. The initial segment selection process built on the information collected from the April public workshops. In October the Steering Committee made final recommendations. Workshop attendees were also asked to complete a short survey on the policies that were developed by the Steering Committee earlier in the year. The survey asked which policies should be prioritized first in the region. A total of 23 people attended the September workshops.

Public Surveys

Two online surveys were developed during the public input period. The first survey was released in August 2013 and was open for one year. During that year, the survey gathered demographic data, riding habits, and public opinion on current bicycle infrastructure in the region. In total, 258 persons took the survey which provided the planning staff and steering committee valuable information which was incorporated in the plan. The full survey results are found in Appendix A.

Another online survey was created for the second round of public workshops to allow the public to rank which policies they preferred be accomplished first, second, third, etcetera. A total of 47 people completed the policy preference survey. The results of this survey are incorporated into the

Initial Prioritization

Prior to the Steering Committee finalizing the segment rankings, WPBP staff members developed a list of project prioritized based on several criteria relating to the vision, goals, and policies of the plan developed earlier in 2014. Each segment was evaluated and the total points were available for the Steering Committee

to consider while deciding on the final rankings. The following is the list of criteria that was used for the prioritization process:

- Safety Factor – Exposure to Traffic
- Safety Factor – Posted Speed Limit
- Safety Factor – Number of Crashes
- Economic Development
- Connection to Employment Centers
- Connection to Recreation Areas
- Segment Connectivity
- Environmental Justice
- Proximity to School

Steering Committee Rankings

Building on segment data collected during the two public workshops, the survey, and the prioritization rankings, members of the Steering Committee in October of 2014 met to designate the final rankings for the segments in each county.



Public Outreach at the 2014 Murray's Mill Bike Ride. Source: WPBP Staff.

Developing Municipal Level Bicycle Networks

A complete bicycle system includes both regional and municipal routes. For this reason, it is recommended that all municipalities within the Western Piedmont develop bicycle plans of their own. The routes outlined in this chapter can act as the backbone, with any additional municipal routes helping complete the system. The below list outlines possible steps that a municipality can follow to develop a local bicycle plan:

1. Preparing for the Planning Process

- Conduct initial background research.
- Select plan type: separate or combined.
- Establish the need for the plan.
- Identify sponsoring department.
- Secure funding for the planning process.
- Establish an internal review process.
- Define the project scope.
- Determine how the plan will be integrated with other plans.
- Working with consultants: if, when, and how?

2. Engaging with the Public

- Identify the full range of stakeholders.
- Assemble a steering or public advisory committee.
- Consider forming a technical advisory committee.
- Define roles, responsibilities, and authority of each committee.
- Communicating with the public.
- In-person public involvement strategies.
- Innovative public involvement strategies.
- Document the process.

3. Developing a Vision, Goals, and Objectives

- Craft a clear vision.
- Develop plan goals.
- Generate plan objectives.
- Revise scope based on public input.

4. Establishing a Fact Base

- Inventory existing data.
- Conduct necessary fieldwork.
- Make sense of the data.
- Describe existing conditions.
- Assess current and future needs.
- Identify opportunities and constraints.

5. Developing, Selecting and Prioritizing Plan Recommendations

- Develop evaluation criteria.
- Brainstorm policy changes.
- Identify high priority networks.
- Generate a list of potential projects.
- Consider updating design guidelines.
- Identify potential programs.
- Select and prioritize draft policy, project, and program.
- Recommendations.
- Finalize recommendations.

6. Implementing Plan Recommendations

- Create an implementation plan.
- Phase actions and develop an annual work plan.
- Develop a budget.
- Get the plan adopted.
- Continue public outreach during implementation.
- Brief staff on how the plan should be used.
- Retain flexibility.
- Early success.

7. Monitoring and Evaluating Progress

- Establish performance measures.
- Agree on performance standards or benchmarks.
- Build accountability into the plan.
- Plan updates and revisions.

For more information visit:

<http://www.pdx.edu/ibpi/sites/www.pdx.edu/ibpi/files/IBPI%20Master%20Plan%20Handbook%20FINAL%20%287.27.12%29.pdf>

NCDOT has also created a template that reflects the suggested organization and content for development of a comprehensive municipal bicycle or pedestrian plan. This template was developed as a guide to municipalities preparing a plan with funds received through the NCDOT Bicycle and Pedestrian Planning Grant Initiative.

For more information visit:

<https://connect.ncdot.gov/municipalities/PlanningGrant/Documents/Full%20Template%20for%20Bicycle%20and%20Pedestrian%20Plans.pdf>.

The NCDOT Division of Bicycle and Pedestrian Transportation and the Transportation Planning Branch created an annual matching grant program – the Bicycle and Pedestrian Planning Grant Initiative – to encourage municipalities to develop comprehensive bicycle plans and pedestrian plans.

For more information visit: <https://connect.ncdot.gov/municipalities/PlanningGrant/Pages/default.aspx>.

The Steering Committee later prioritized segments in groups with county maps; safety, connectivity, economic development, and environmental factors were all considered for segments prioritization for potential future infrastructure.

Current System Overview

Alexander County

- Alexander County contains 785 miles of road with 28 miles within the Town of Taylorsville. NCDOT maintains 590 miles (75.1%) of Alexander's roads, 13 miles are in Taylorsville and 41 miles are unpaved.
- Alexander County does not have a greenway system within the county.
- Currently around 20-miles of North Carolina bicycle route NC 2 (Mountains-to-Sea) runs through the county.

Burke County

- Burke County contains 1,371 miles of road with 340 miles within Burke's municipal limits. NCDOT is responsible for 923 miles (67.3%) of Burke's roadways, 138 miles within city and town limits and 35 miles are unpaved.
- The City of Morganton in Burke County currently has a 4.8 mile greenway system located in the western half of the city and 4.9 miles of bike lanes in its downtown. The Morganton Greenway System consists of the Catawba River Greenway and the Freedom Trail Greenway and contains five points for bicyclists to access the facilities. Currently the system connects Freedom Park and Freedom High School with the Catawba River Soccer Park up to Catawba Meadows Park to the north. It is estimated that approximately 18,000 people use the Catawba River Greenway trail each month. Future plans call for adding another section of a 10 foot wide paved trail which would link the Catawba River Greenway to an existing section of the downtown greenway at the intersection of College Street and NC 181 (North Green Street). This section of greenway will directly link access from the Central Business District to the Catawba River Greenway. It will also connect to the City's Aquatic Center, the Mountain View Recreation Center, the Morganton Housing Authority, the Burke Senior Center, and private business properties along NC 181. The current system is in fair condition and is moderately used. It has a limited connection to some restaurants and commercial spaces but will be linked to Downtown Morganton once the extension is completed.
- Around 50-miles of two North Carolina bicycle routes exist in Burke: the Burke portion of NC 2 (Mountains-to-Sea) route is 20 miles and the NC 6 (Piedmont Spur) section is about 30 miles long.

Caldwell County

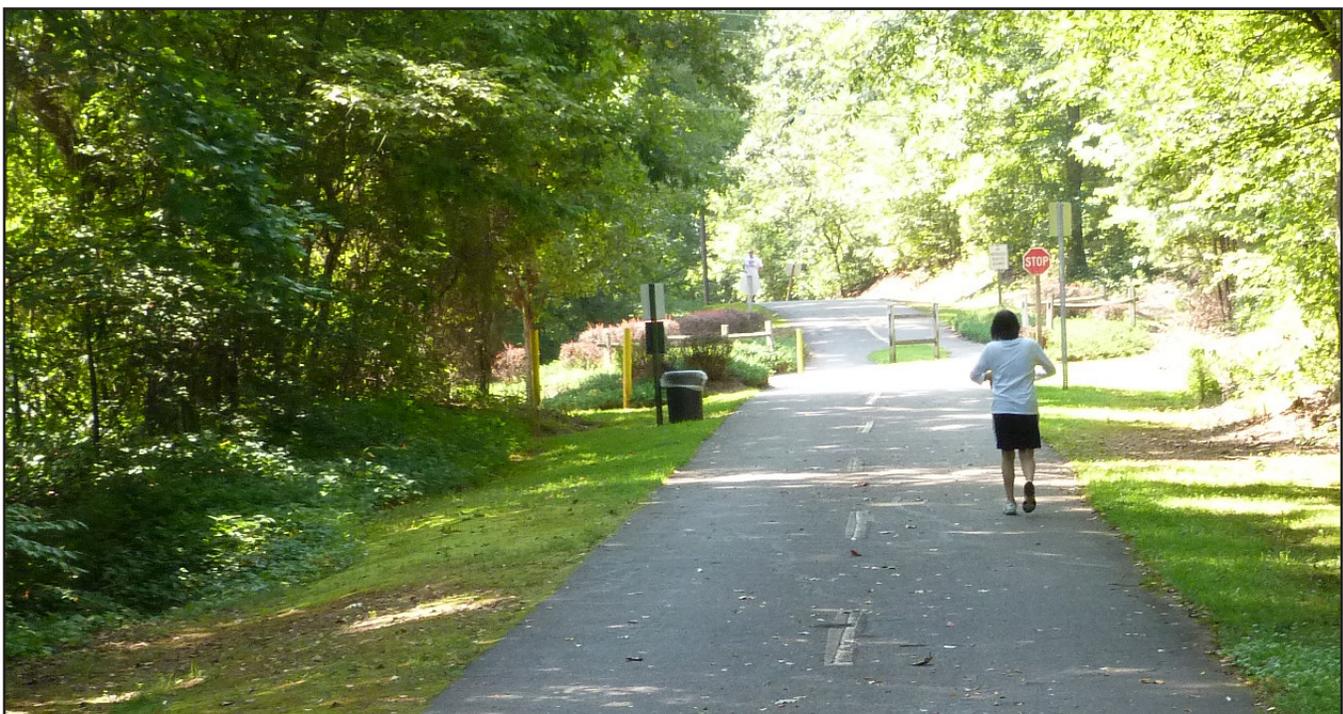
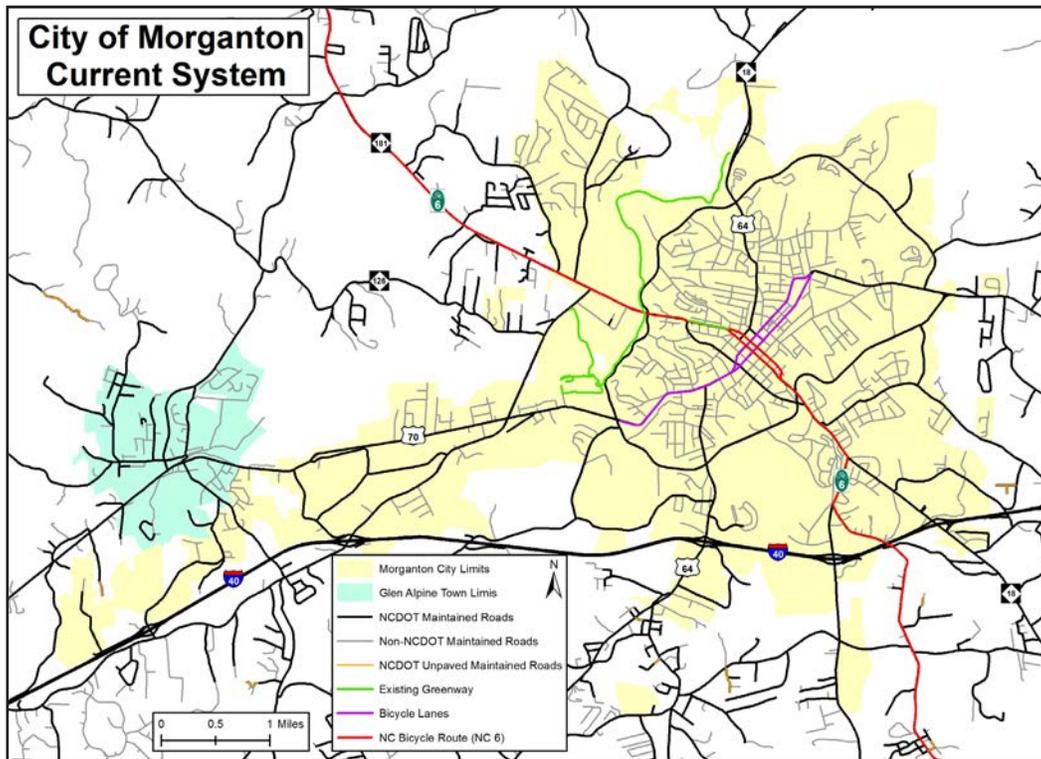
- Caldwell County contains 1,222 miles of road with 402 miles within Caldwell's municipal limits. NCDOT is responsible for 750 miles (67.3%) of Caldwell's roads, 138 miles within city and town limits and 35 miles are unpaved.
- The City of Lenoir in Caldwell County currently has a 5.6 mile greenway system. The current system is in fair condition, moderately used, and provides limited connections to several recreation areas.
- Around 26-miles of North Carolina bicycle route NC 2 (Mountains-to-Sea) also runs through Caldwell County.

Catawba County

- Catawba County contains 1,996 miles of road with 741 miles within municipal limits. NCDOT is responsible for the maintenance of 1,155 miles of Catawba's roads, with 274 miles within municipal limits and 14 miles are unpaved.

- There are currently a total of 4.6 greenway miles in the cities of Conover, Hickory, and Newton. There is also 2.4 miles of bike lanes in the City of Hickory. The current system for Hickory provides connections to recreation areas. All three are in fair condition and moderately used.
- Approximately 16 miles of the Lake Norman Bike Route is found in eastern Catawba County.
- There are approximately 24 miles of the Carolina Thread Trail planned for Catawba County.

Figure 3-1
City of Morganton - Current System



A segment of Hickory's Greenway. Source: WPBP Staff.

Figure 3-2
City of Lenoir - Current System

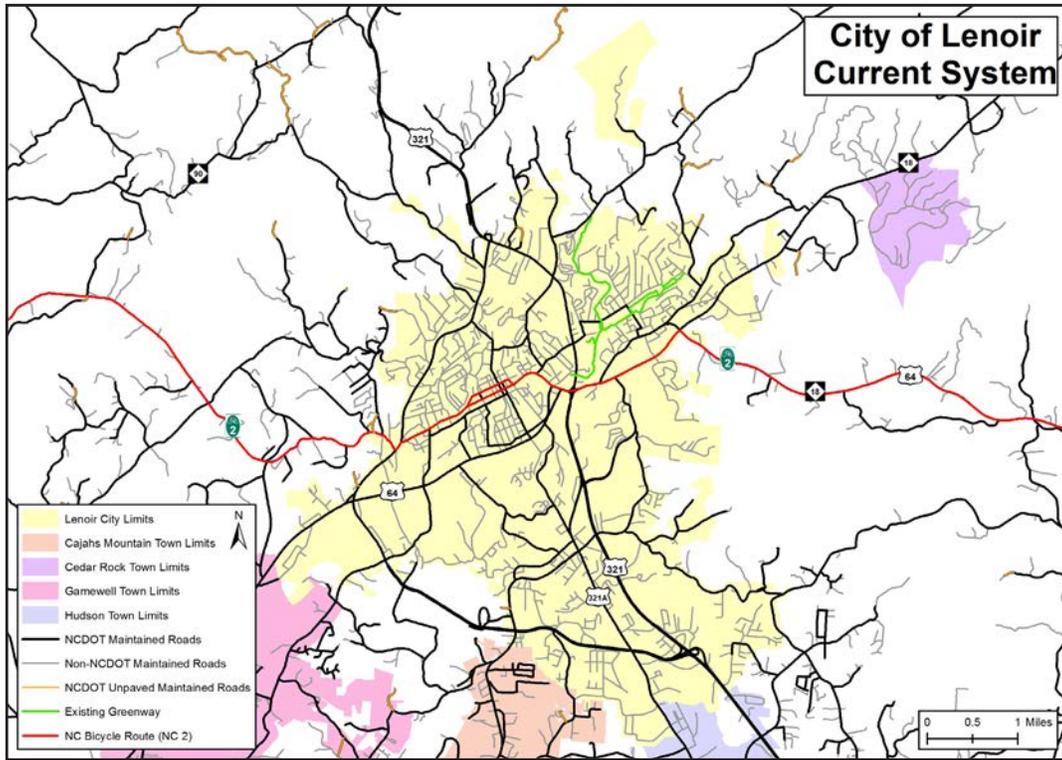
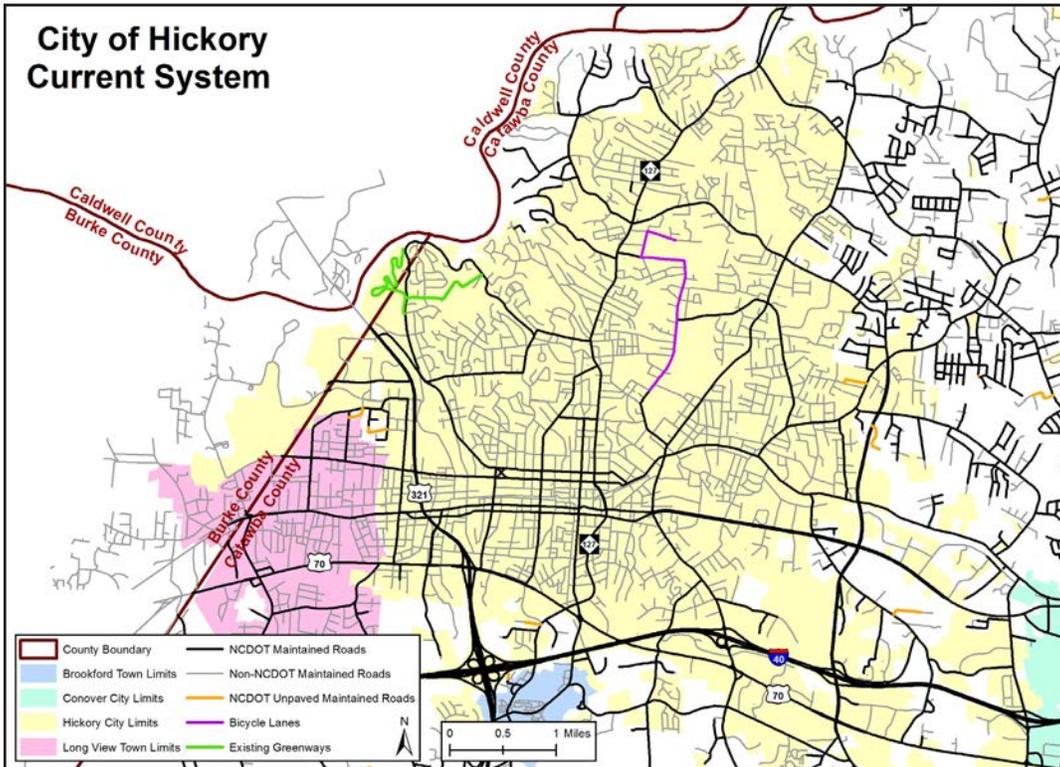


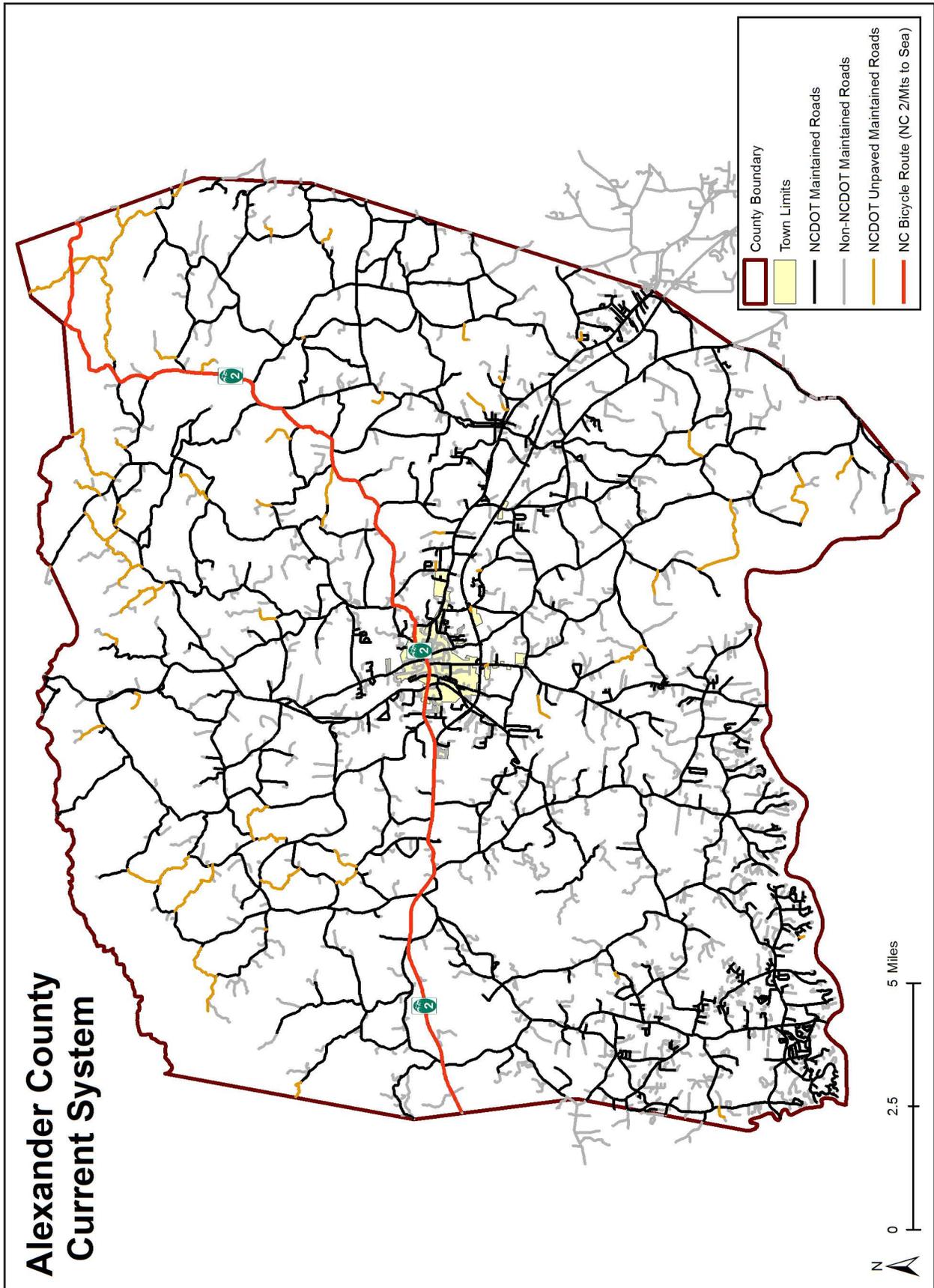
Figure 3-3
City of Hickory - Current System



**Table 3-1:
Current System Overview**

	Alexander	Burke	Caldwell	Catawba
Percent Urban	0.8%	8.0%	9.7%	16.7%
Number of Municipalities	1	8	7	8
Total Road Mileage	785	1,371	1,222	1,996
Total Road Mileage (within municipal limits)	28	340	402	741
NCDOT Maintained Road Mileage	590	923	750	1,155
NCDOT Maintained Road Mileage (within municipal limits)	13	138	158	274
NonNCDOT Maintained Road Mileage (within municipal limits)	15	202	244	467
NCDOT Maintained Road Mileage (unpaved)	41	35	90	14
Greenway Mileage	0	4.8	5.6	4.6
Bike Lane Mileage	0	4.9	0	2.4
Signed Bike Routes	1	2	1	1

Figure 3-4
Alexander County - Current System



Alexander County
Current System

Figure 3-5
Burke County - Current System

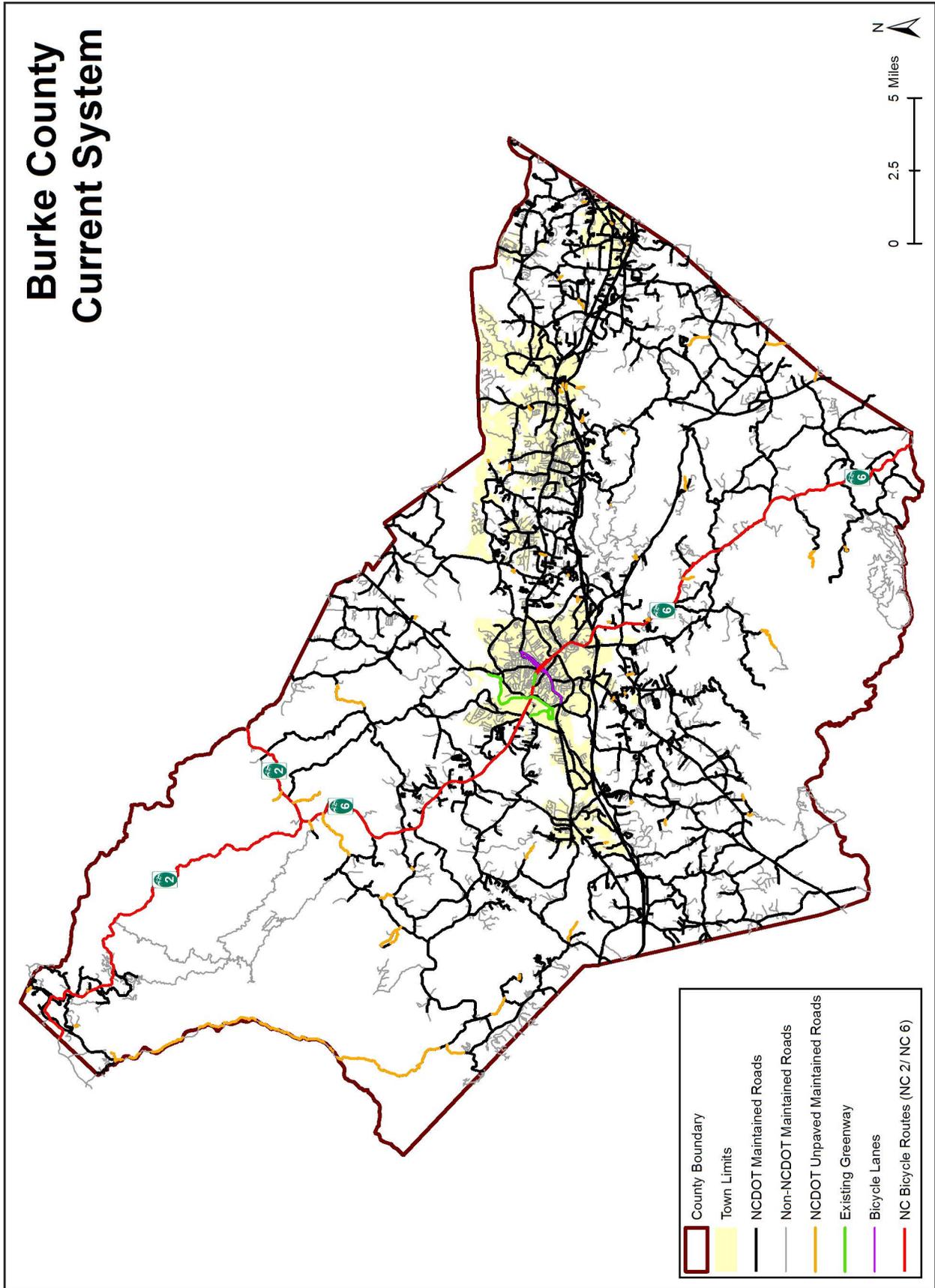


Figure 3-6
Caldwell County - Current System

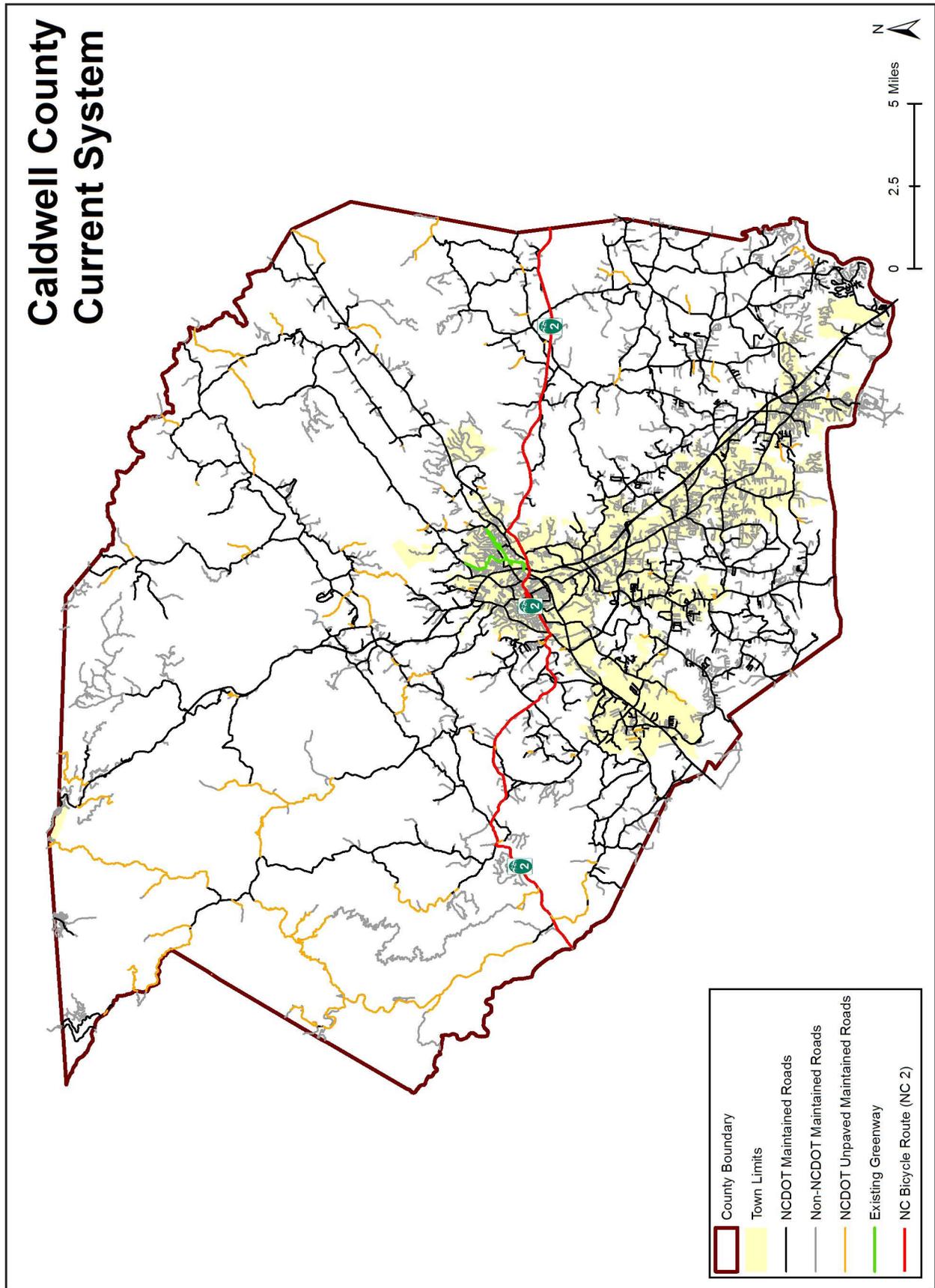
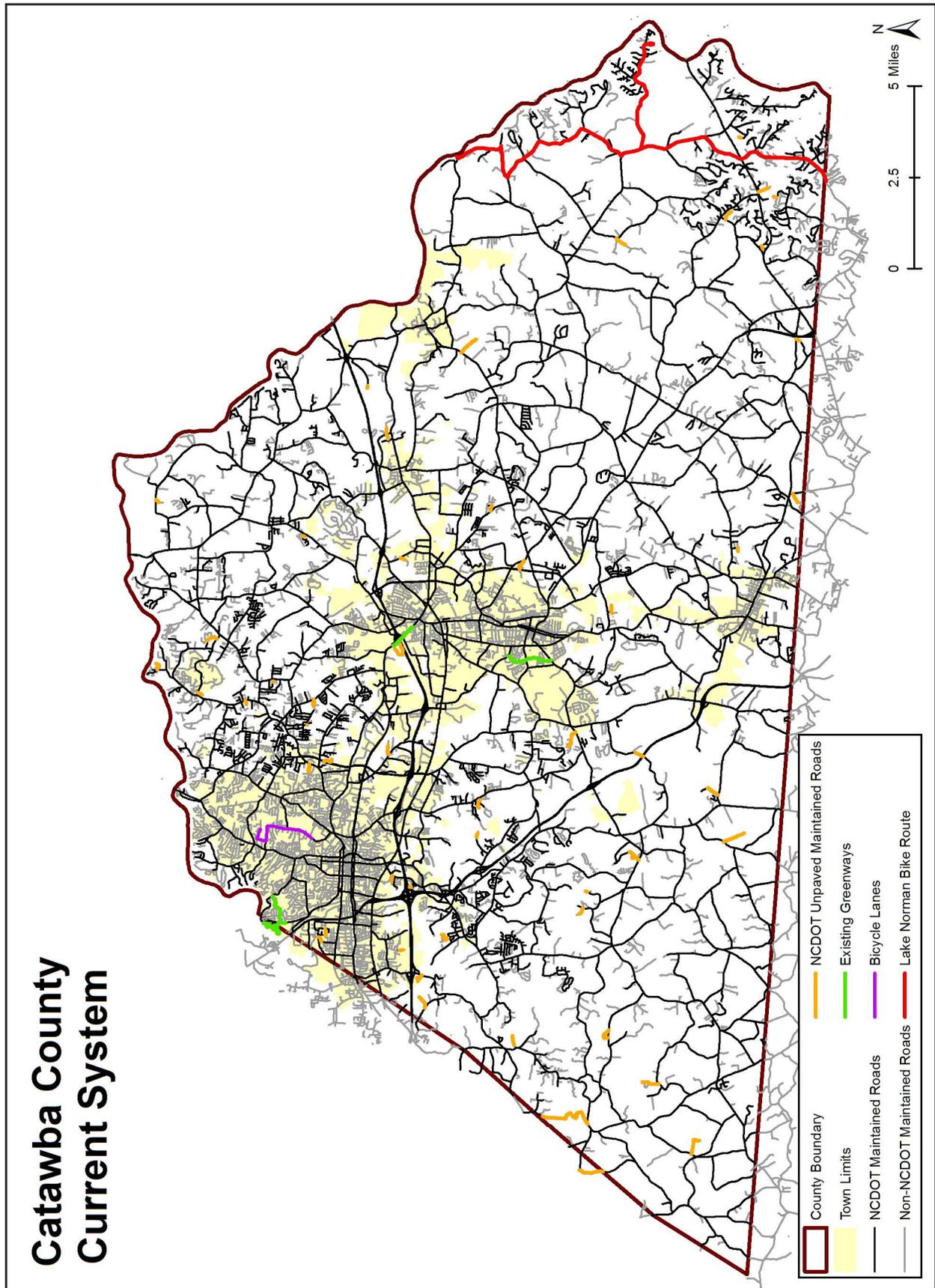


Figure 3-7
Catawba County - Current System



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Tier Designations

The segments discussed in this plan are organized into three different tiers. Assignment into a tier depended on several different factors led by attendees at the public workshops, by the planning staff, and eventually the steering committee. The process for determining segment tiers was as followed:

- April 2014: Members of the public identified commonly used roadway segments at regional workshops.
- September 2014: Segments were prioritized by attendees at public regional workshops.
- September/October 2014: WPBP Staff ranked segments by using internal scoring methodology.
- October 2014: Steering Committee members from each county made final recommendations using information gathered through both workshops and the staff rankings.

Final Segment Selection

The final priority list for each county was divided into thirds with the top third being assigned to Tier 1, the middle third assigned to Tier 2, and the bottom third assigned to Tier 3. While roadway recommendations outlined in this plan apply only to Tier 1 segments, future plan updates will include recommendations for Tier 2 and Tier 3.

The segments found in Tier 1 form the spine of the overall system and connect municipalities across the region. Tier 2 and Tier 3 segments fill in the remaining areas of the region which segments primarily rural.

Segment Descriptions

Tier 1 Segments

- Total Tier Length (in Miles): 168.69
- Roadway Miles Maintained by NCDOT: 164.5
- Number of Projects: 17

- Municipalities Impacted: 21

Tier 2 Segments

- Total Tier Length (in Miles): 191.59
- Roadway Miles Maintained by NCDOT: 189.04
- Number of Projects: 17
- Municipalities Impacted: 16

Tier 3 Segments

- Total Tier Length (in Miles): 211.88
- Roadway Miles Maintained by NCDOT: 211.88
- Number of Projects: 17
- Municipalities Impacted: 10

Facility Type Recommendations

Recommendations for each Tier 1 roadway are based on several factors.

- Public feedback gathered at workshops.
- Right-of-way availability.
- Consultation of NCDOT Division Planning Engineer Dean Ledbetter, PE.
- Expected improvement costs per mile.
- Roadway characteristics such as width, traffic volume, and speed.
- Characteristics of the surrounding built environment.
- Staff reconnaissance of segments.

Figure 3-8
WPBP Network

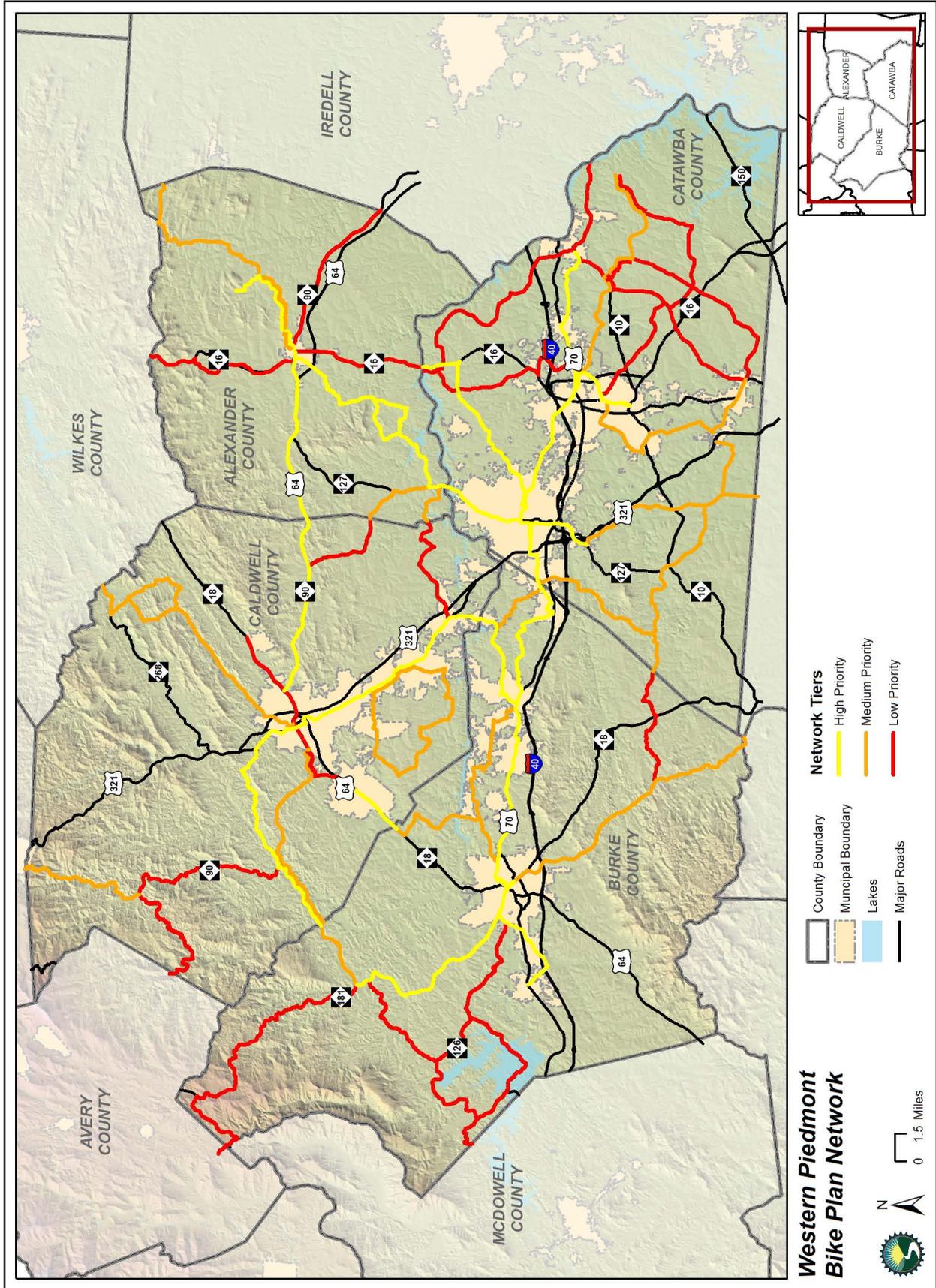


Figure 3-9
Alexander County WPBP Network

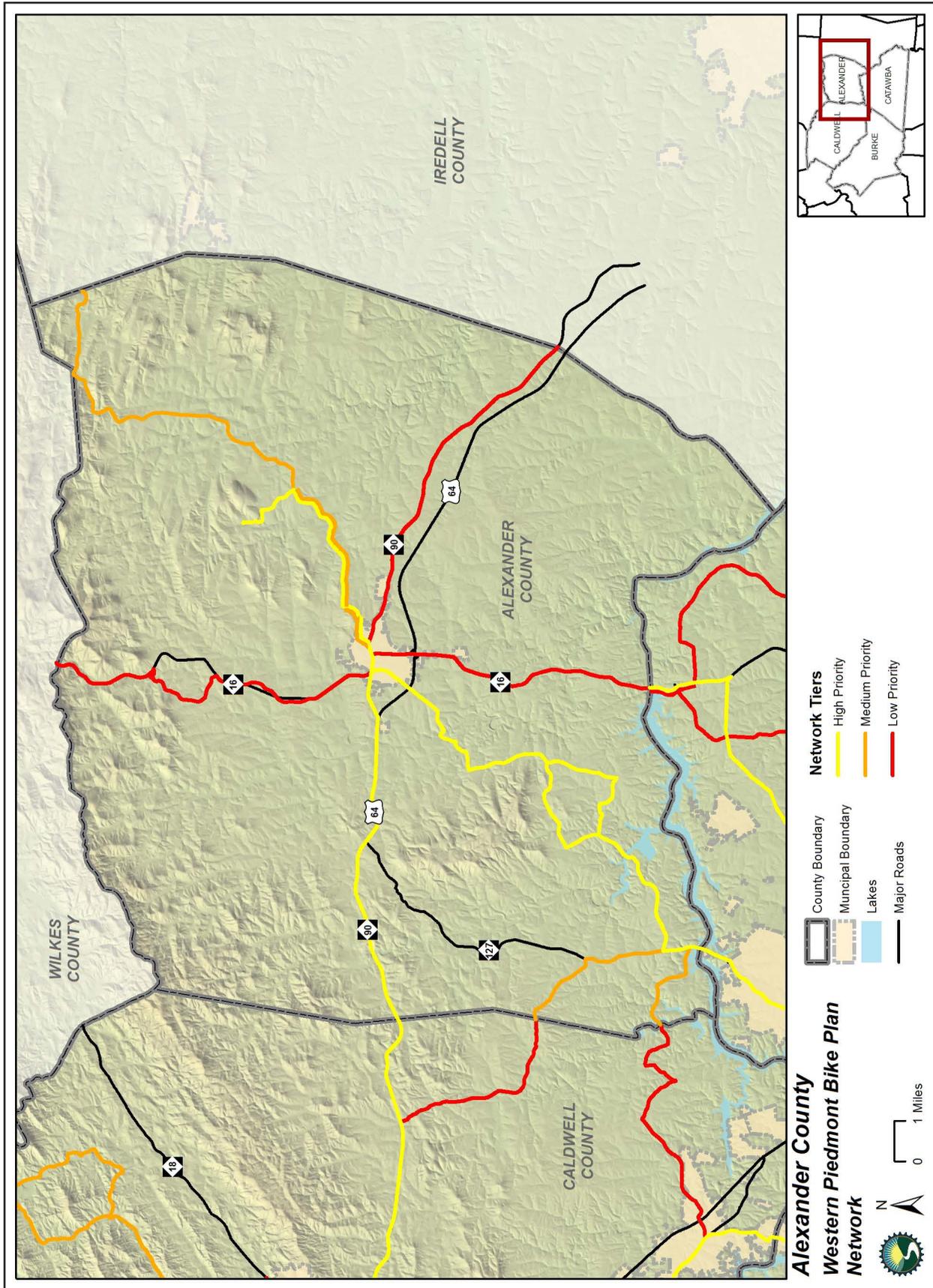
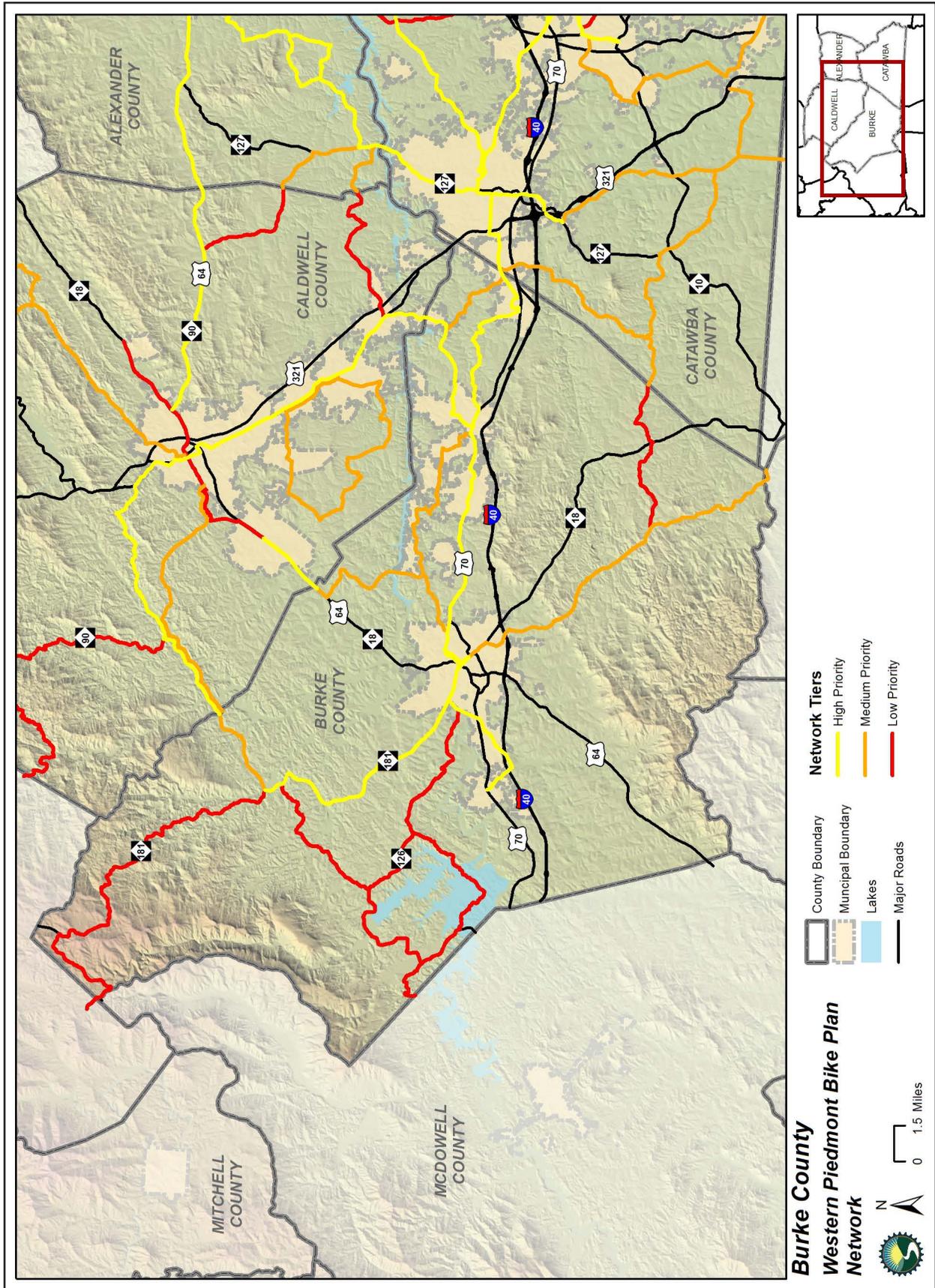


Figure 3-10
Burke County WPBP Network



**Figure 3-11
Caldwell County WPBP Network**

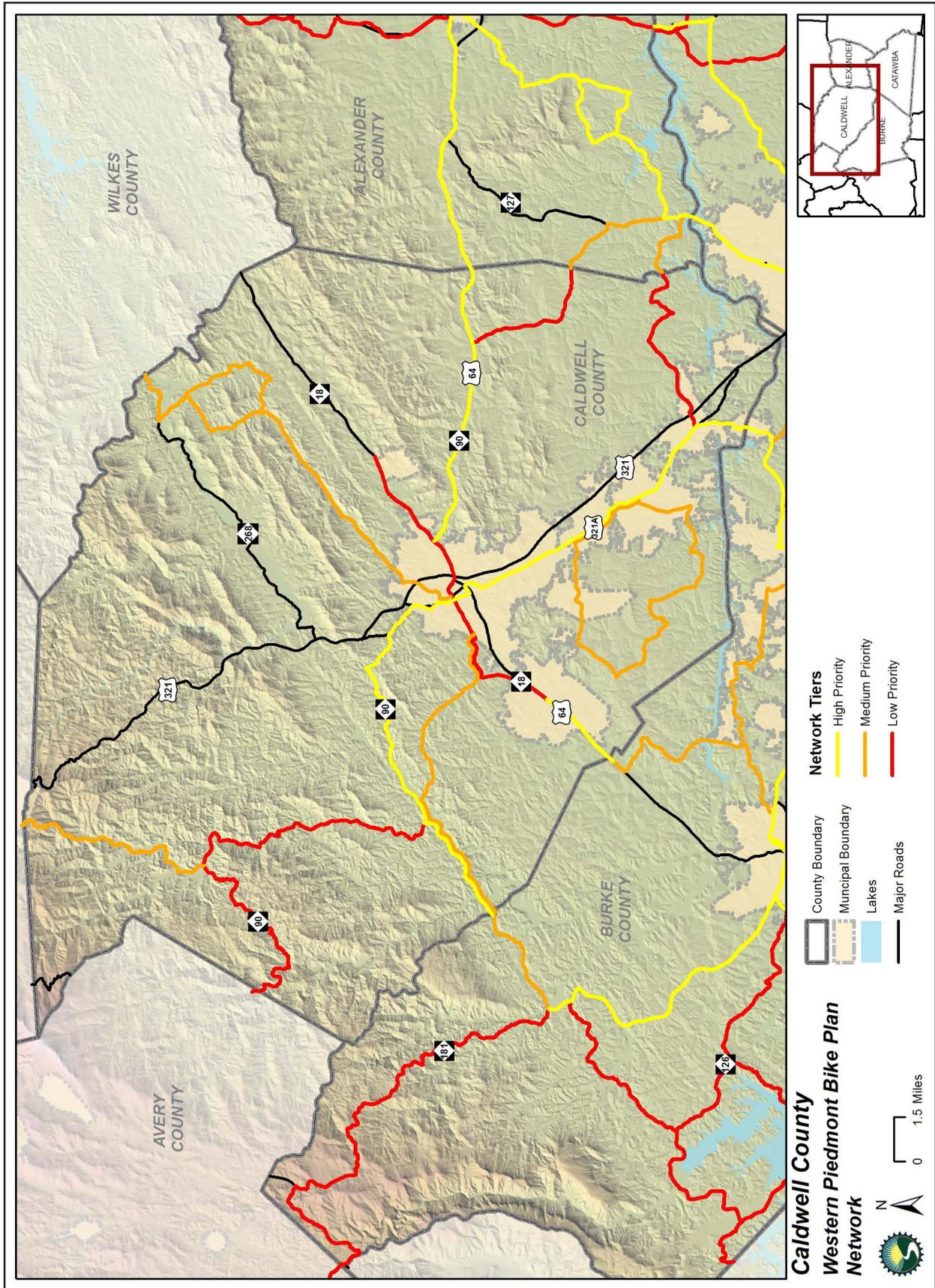
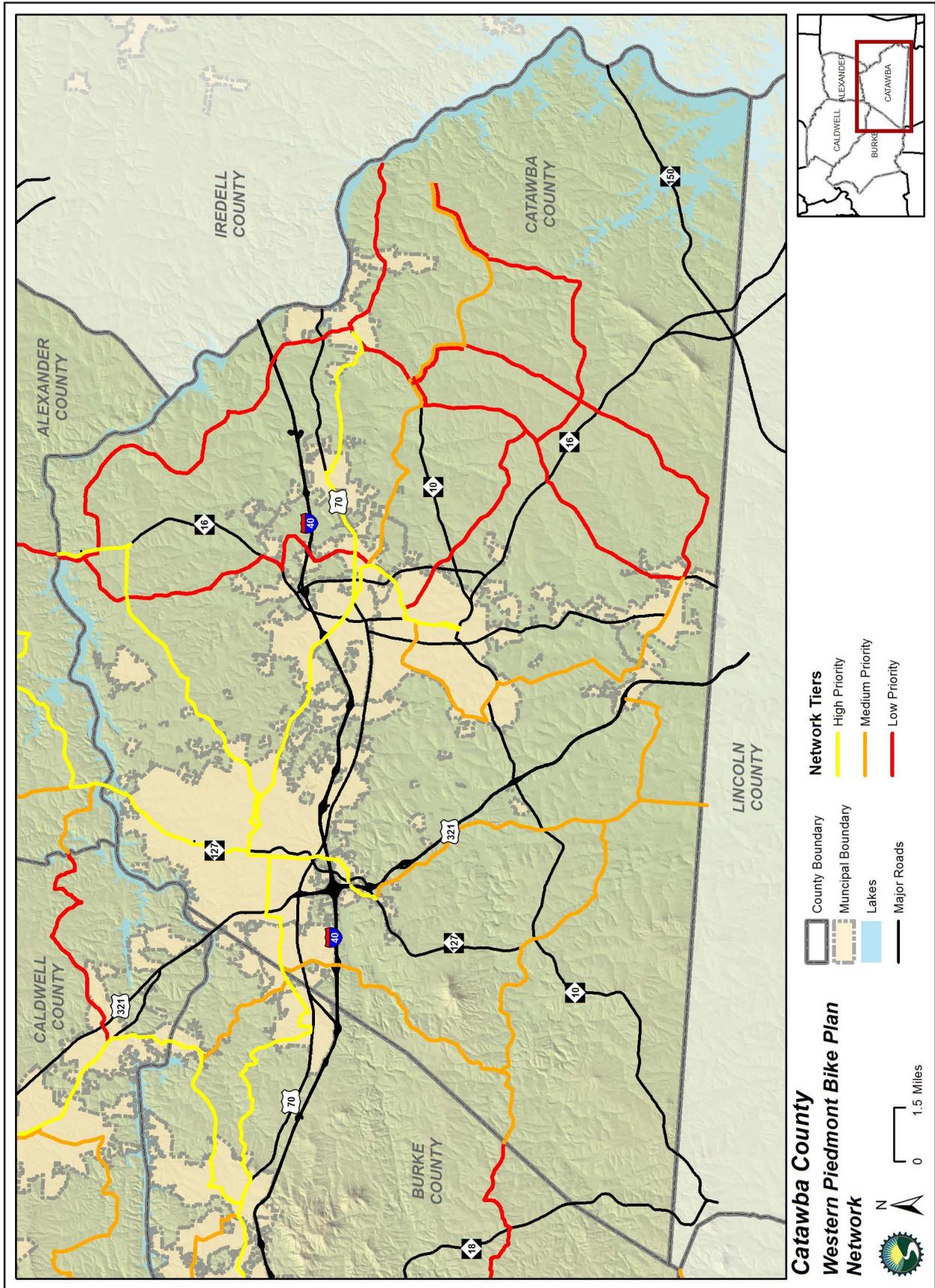


Figure 3-12
Catawba County WPBP Network



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Tier 1 Segments

Route Segment 1

Segment Extent: From Catawba County Limits to NC 16 (Taylorsville)

Segment Total Length: 17.46 Miles

Current Conditions

Route Segment 1 is made of up of sections of NC 127, Rink Dam Road, Church Road, Bowmans Cutover Road, Teague Town Road, and Liledoun Road in Alexander County. NC 127 is a two-lane road with a posted speed limit of 35 miles per hour (mph), average annual daily trips (AADT) count of 14,000 vehicles per day (vpd), and truck AADT count of 600. Rink Dam Road is a 45 mph major collector with an AADT average of 4,600 vpd. Church Road, a 45 mph and 55 mph minor collector, posts an AADT count of 2,800 vpd. Bowmans Cutover Road is 45 mph with an AADT of 1,700 vpd. Liledoun Road is a two-lane, three-lane, and four-lane road with a posted speed limit of 35 mph inside Taylorsville town limits and 45 mph outside the town limits. Liledoun has an AADT count average of 2,336 vehicles per day. NC 127 is currently included in the State Transportation Improvement Plan (STIP R-3603A). Improvements will include upgrades to the two-lane road and provide multi-lane curb and gutter.

Justification

Route Segment 1 connects Catawba County to Taylorsville, Alexander and Catawba Counties to the NC Bicycling Highway system (NC 2/Mountains-to-Sea), and to a Catawba County high priority project that extends the Catawba County connection to Hickory.

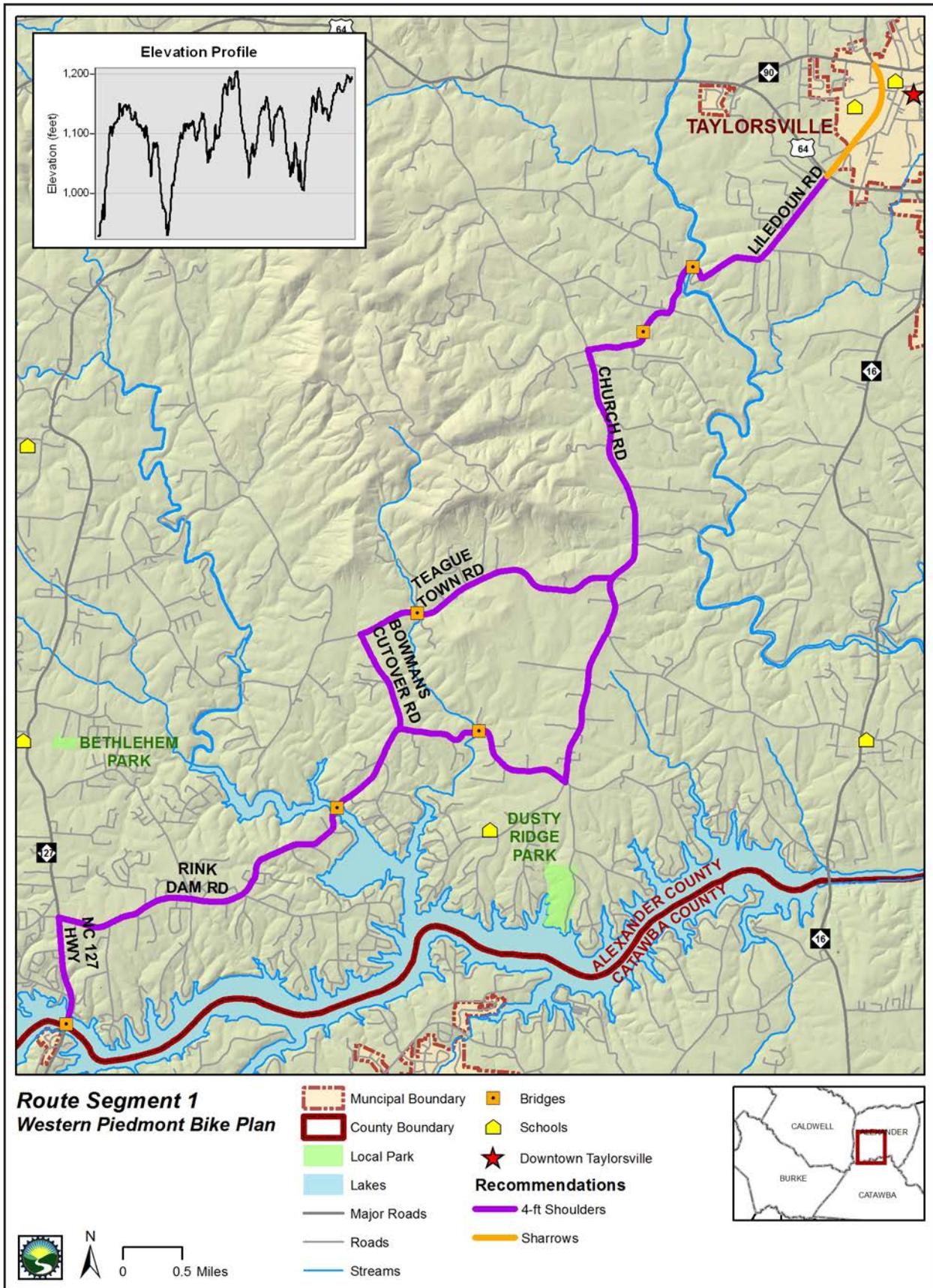
Recommendations

The recommendations for Route Segment 1 consist of 16.36 miles of 4-foot shoulders on NC 127. Rink Dam Rd, Church Rd, Bowmans Cutover Rd, Teague Town Rd, and Liledoun Rd; and 1.1 miles of sharrows on Liledoun Rd.



Along Rink Dam Road from NC 127 to Church Road

Figure 3-13
Route Segment 1



Route Segment 1

NC 127 from Catawba County Border to Rink Dam Road

- *2 Lanes/45 mph/24-ft wide, AADT = 14,000*
- Minimal paved shoulders
- Bridge width is adequate for bicycles
- Consider widening the shoulders to 4-ft

Rink Dam Road from NC 127 to Church Road

- *2 Lanes/45 mph/18-ft to 2 Lanes/45 mph/22-ft wide, AADT = 2,600 to 7,500*
- Minimal paved shoulders, inconsistent shoulder widths (1-ft to 2-ft)
- There is a bridge on Rink Dam Road
- Parts of Rink Dam are very curvy
- Consider widening the shoulders to 4-ft

Church Road from Rink Dam Road to Liledoun Road

- *2 Lanes/45 mph/18-ft wide to 2 Lanes/55 mph/22-ft wide, AADT = 2,800*
- Somewhat curvey
- No paved shoulders
- Relatively little slope (flat)
- Consider widening the shoulders to 4-ft

Bowmans Cutover Road from Rink Ram Road to Teague Town Road

- *2 Lanes/45 mph/20-ft wide, AADT = 1,700*
- No paved shoulders
- Road is straight and flat
- Consider widening the shoulders to 4-ft

Teague Town Road from Bownmans Cutover Road to Church Road

- *2 Lanes/45 mph/20-ft wide, AADT = 2,500*
- Inconsistent shoulder widths (No paved shoulders in some areas, 6-inch to 1-ft

wide in some areas)

- Road somewhat curvy
- Consider widening the shoulder to 4-ft

Liledoun Road from Church Road to US 64

- *2 Lanes/45 mph/20-ft wide to 2 Lanes/35 mph/18-ft wide, AADT = 1,700 – 4,400*
- No paved shoulders
- Liledoun Rd has a bridge

- Consider widening the shoulders to 4-ft

Liledoun Road from US 64 to Main Avenue (NC 90)

- *3 Lanes/35 mph/37-ft wide to 4 Lanes/35 mph/48-ft wide, AADT = 6,300*
- Inside Taylorsville town limits
- This section goes in front of the high school
- Curb and gutters
- Consider sharrows

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Route Segment 2

Segment Extent: From Linneys Mountain Rd to Caldwell County Limits
Segment Total Length: 9.9 Miles

Current Conditions

Route Segment 2 is made of up of sections of Main Avenue (NC 90), NC 90, and US 64/NC 90 in Alexander County. East Main Avenue is a 20 mph, 2-lane and 4-lane minor arterial with an AADT count of 6,3000 vpd. West Main Avenue (NC 90) in Taylorsville is a 20 mph, 25 mph, and 35 mph minor arterial with an AADT count average of 7,700 vpd. NC 90 is a 45 mph, 2-lane road with an AADT count average of 5,500 vpd. US 64/NC 90 has a posted sign limit of 55 mph and an AADT average of 5,375 vpd.

Justification

Route Segment 2 connects the town of Taylorsville to the Caldwell County border, and to a Caldwell County high priority project that extends the Taylorville connection to Lenoir. Alexander-1B is currently part of the NC Bicycling Highway system (NC 2/Mountains-to-Sea).

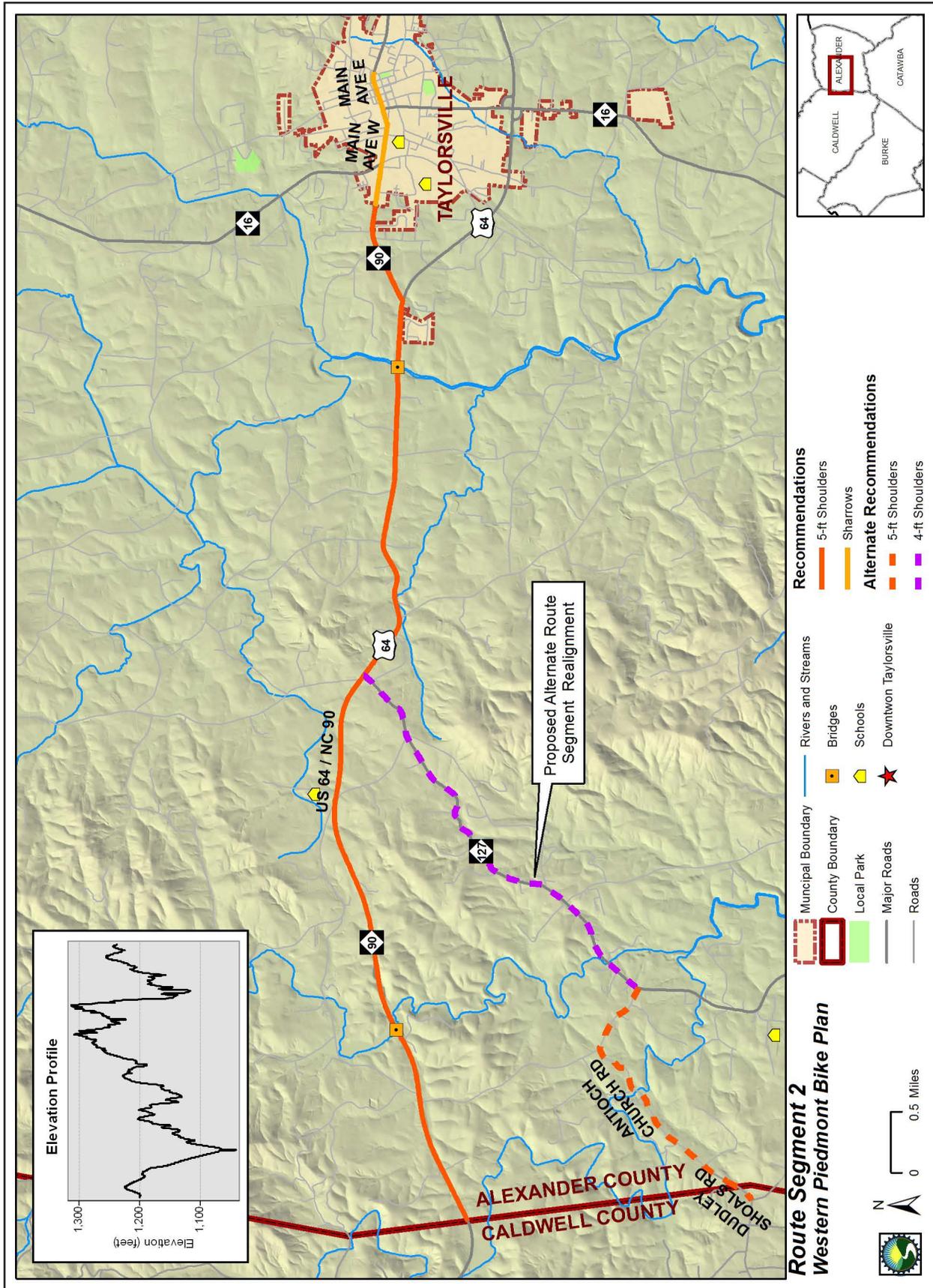
Recommendations

The recommendations for Route Segment 2 consist of 8.77 miles of 5-foot shoulders on US 64/NC 90 and 1.13 miles of sharrows on Main Avenue (NC 90) in Taylorsville.



Along NC 90 from Taylorsville town limits to US 64

Figure 3-14
Route Segment 2



Route Segment 2

E Main Ave (NC 90) from Linneys Mountain Road to Center Street

- 2 Lanes/20 mph/40-ft wide to 4 Lanes/20 mph/60-ft wide, AADT = 6,600
- Downtown Taylorsville
- On-Street Parking on both sides
- Sidewalks on both sides
- Consider sharrows

W Main Ave (NC 90) from Center Street to NC 16

- 4 Lanes/20 mph/60-ft wide to 2 Lanes/20 mph/40-ft wide/ to 2 Lanes/25 mph/40-ft wide to 2 Lanes/35 mph/30-ft wide, AADT = 8,700 to 11,000
- Downtown Taylorsville
- On-Street Parking from Center Street to Main Avenue Dr
- Sidewalks on both sides
- Consider sharrows

W Main Ave (NC 90) from NC 16 to Taylorsville town limits

- 3 Lanes/35 mph/36-ft wide, AADT = 7,100
- Curb and gutter from NC 16 to School Rd
- Within Taylorsville town limits
- Minimal paved shoulders, inconsistent shoulder widths (6-inches to 1-ft) from School Rd to town limits.
- Consider sharrows

NC 90 from Taylorsville town limits to US 64

- *2 Lanes/45 mph/24-ft wide, AADT = 4,200 to 7,100*
- No shoulders.
- Looks to be recently paved
- Consider widening the shoulders to 4-ft

US 64/NC 90 from NC 90 to Caldwell County

- *2 Lanes/55 mph/24-ft wide, AADT = 2,800 to 7,500*
- Inconsistent shoulder width (1-ft to 4-ft)
- Multiple bridges on US 64/NC 90
- Consider warning signs before bridge and sharrows on bridge.
- Consider widening the shoulders to 5-ft

Alternate Route Segment 2 Realignment

Dudley Shoals Rd from Caldwell County Line to Thunderbolt Lane

- 2 Lanes/55 mph/18-ft wide, AADT = 1,000
- No paved shoulders
- Consider widening the shoulders to 5-ft

Antioch Church Rd from Thunderbolt Lane to NC 127

- 2 Lanes/55 mph/19-ft wide, AADT = 730 to 2 Lanes/55 mph/19-ft wide, AADT = 1,100
- No paved shoulders
- Consider widening the shoulders to 5-ft

NC 127 from Antioch Church Rd to US 64/ NC 90

- 2 Lanes/45 mph/20-ft wide, AADT = 3,500
- No paved shoulders
- Consider widening the shoulders to 4-ft

Route Segment 3

Segment Extent: From Main Avenue (NC 90) to Atwell Canter Road
Segment Total Length: 6.64 Miles

Current Conditions

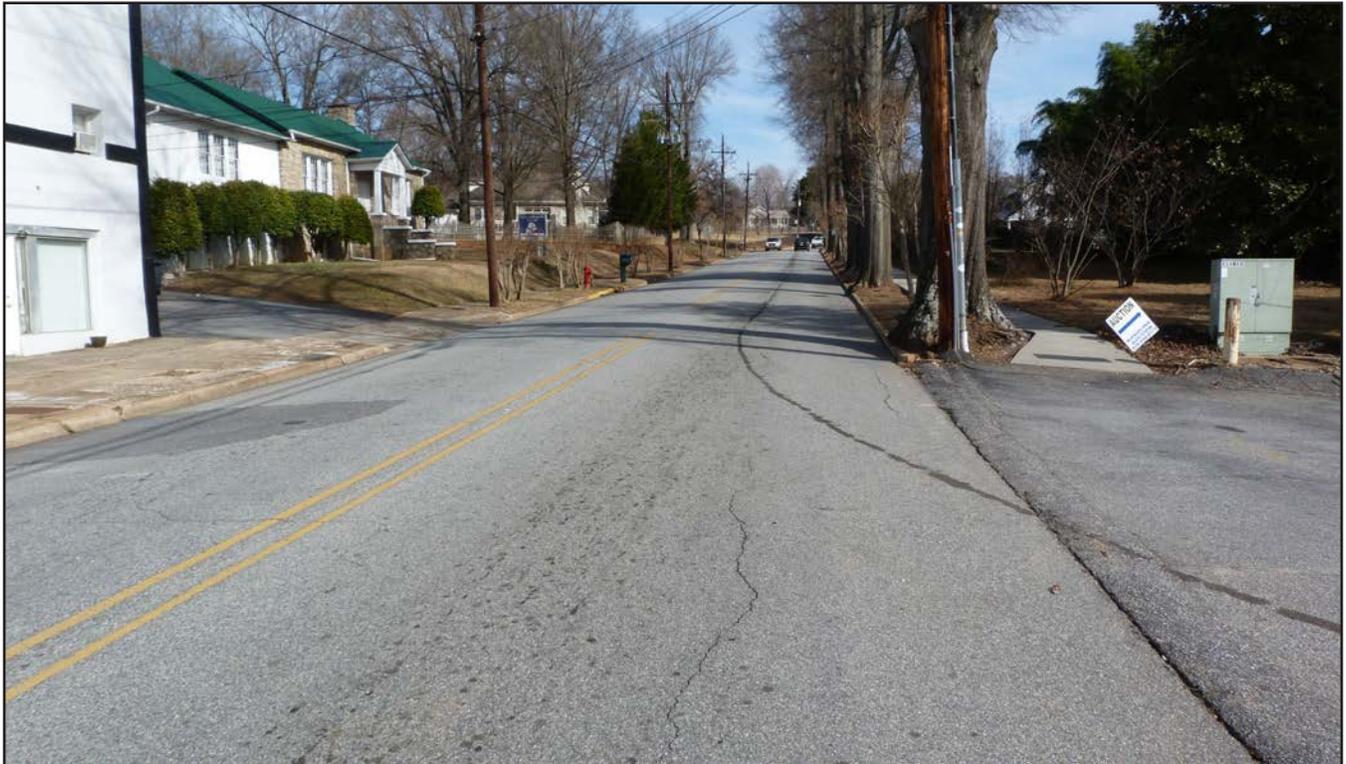
Route Segment 3 is made up of sections of Linneys Mountain Road, Black Oak Ridge Road, Rocky Springs Road, and Rocky Face Church Road in Alexander County. Linneys Mountain Road is a 35 mph, two-lane major collector with an AADT count of 3,200 vpd. Black Oak Ridge Road is a 35 mph, two-lane road with an AADT count of 1,500 vpd. Rocky Springs Road has a posted speed limit of 45 mph and an AADT count of 1,300 vpd. Rocky Face Church Road is a 55 mph, two-lane road. No AADT data is available for Rocky Face Church.

Justification

Route Segment 3 connects the town of Taylorsville to Alexander County's Rocky Face Mountain Recreational Area. Linneys Mountain Road, Black Oak Ridge Road, and Rocky Springs Road are currently part of the NC Bicycling Highway system (NC 2/Mountains-to-Sea). Public input bike has suggested it exhibits low ridership because bikers claim its current conditions are unsafe, even though it is an established signed route.

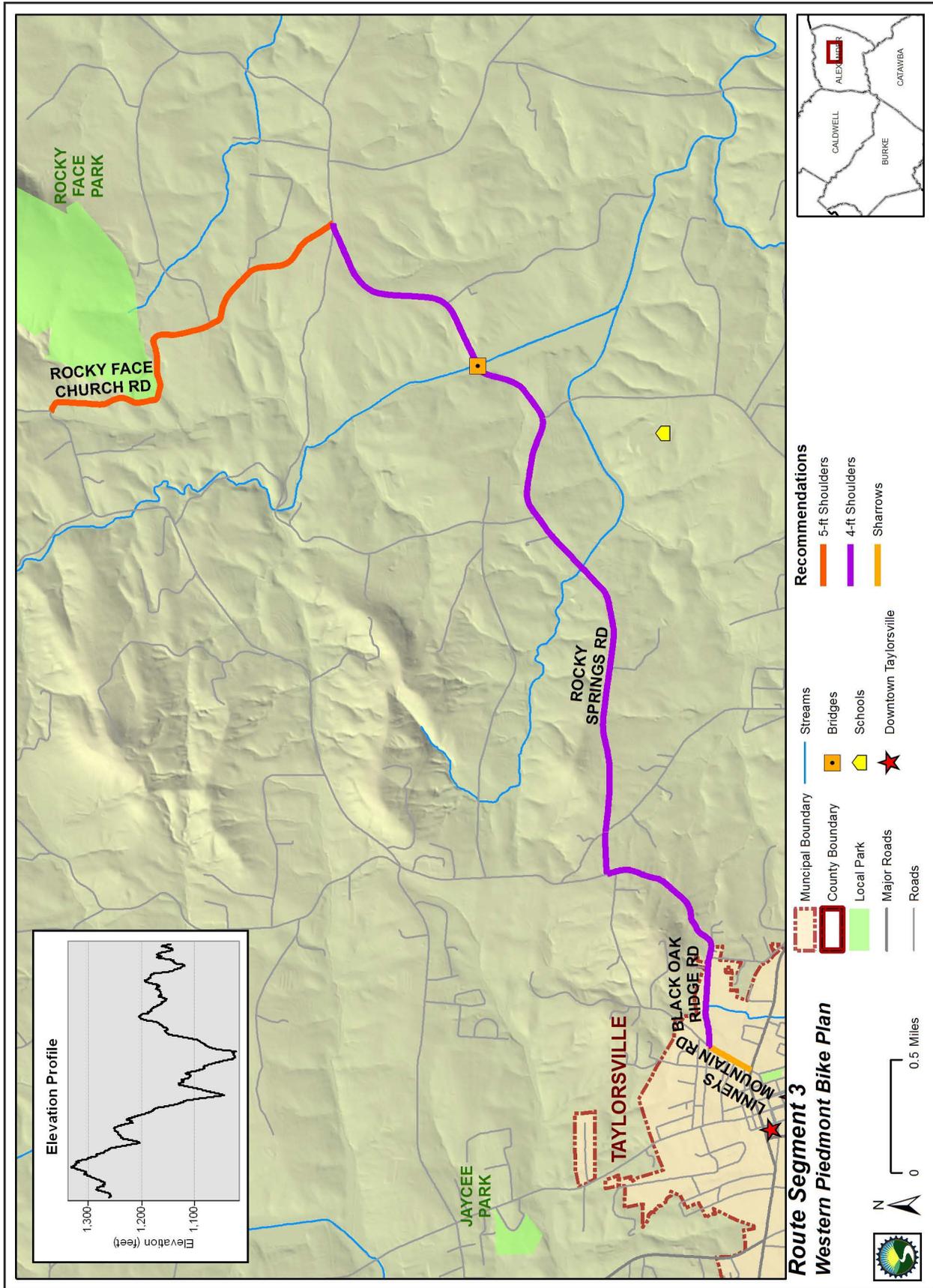
Recommendations

The recommendations for Route Segment 3 consist of 4.64 miles of 4-foot shoulders on Black Oak Ridge Road, and Rocky Springs Road; 1.79 miles of 5-foot shoulders on Rocky Face Church Road; and 0.21 miles of sharrows on Linneys Mountain Road.



Along Linney's Mountain Road from Main Ave (NC 90) to Black Oak Ridge Road

Figure 3-15
Route Segment 3



Route Segment 3

Linneys Mountain Road from Main Avenue (NC 90) to Black Oak Ridge Road

- *2 Lanes/35 mph/28-ft wide, AADT = 3,200*
- Some on street exist on east side of road
- Road is fairly wide but crosses railroad tracks
- Within Taylorsville town limits
- Curb and gutters
- Consider sharrows

Black Oak Ridge Rd from Linneys Mountain Rd to Rocky Springs Rd

- *2 Lanes/35 mph/24-ft wide to 2 Lanes/35 mph/18-ft wide, AADT = 920 – 1,500*
- No paved shoulders
- Consider widening the shoulders to 4-ft

Rocky Springs Rd from Black Oak Ridge to Rocky Face Church Rd

- *2 Lanes/45 mph/18-ft wide, AADT = 2,800 to 7,500*
- No paved shoulders
- Small bridge with 2-ft to 4-ft shoulders
- Consider widening the shoulders to 4-ft

Rocky Face Church Rd from Rocky Springs Rd to Atwell Canter Rd

- *2 Lanes/55 mph/18-ft wide, AADT = N/A*
- No paved shoulder
- Consider widening the shoulders to 5-ft

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Route Segment 4

Project Extent: From Green St (Morganton) to US 70 (Connelly Springs)

Project Total Length: 12.22 Miles

Current Conditions

Route Segment 4 is made of up of sections of East Meeting Street (US Business 70), East Union Street (US Business 70), US 70, Main Street in downtown Valdese, Eldred Street Southwest, and US 70 in Burke County. East Meeting Street with speed limits of 20, 30, and 35 mph is a minor arterial with an AADT count average of 4,050 vpd and truck AADT count of 109. East Union Street is a 35 mph, 2- and 4-lane road with an AADT count average of 7,000 vpd and truck AADT count of 201. US 70 is a 35, 45, and 55 mph minor arterial with an AADT of 8,900 vpd and truck AADT count of 375. Main Street (US 70) in downtown Valdese is a 20 and 35 mph minor arterial with an AADT count of 10,000 vpd and truck AADT count of 472. Eldred Street Southeast is a 2-lane road with posted speed limits of 35, 45, and 55 mph.

Justification

Route Segment 4 connects the City of Morganton with the Towns of Drexel, Valdese, and Rutherford College and to other high priority Burke routes that create connections to Glen Alpine, Connelly Springs, Rhodiss, Caldwell County, and Catawba County.

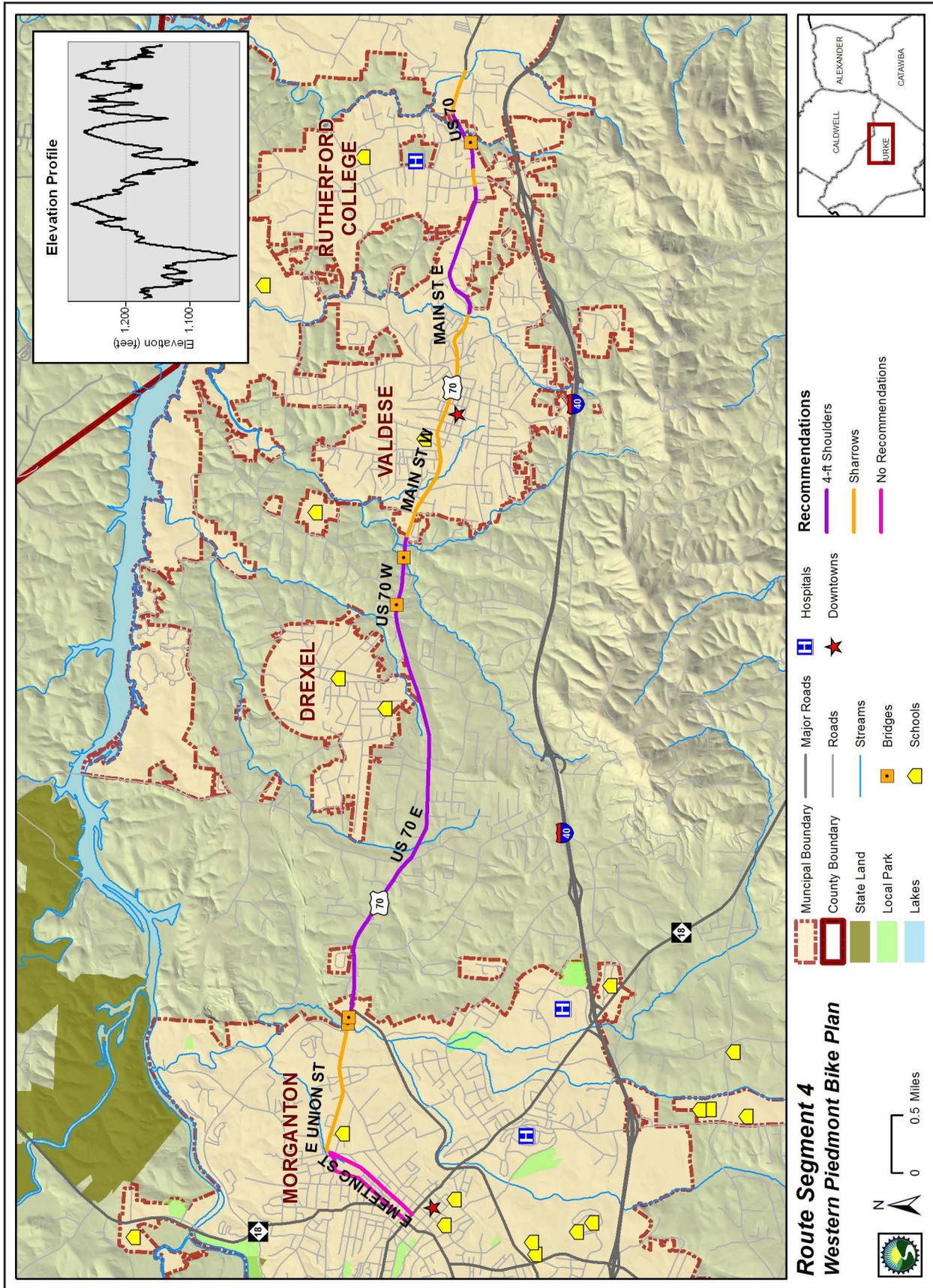
Recommendations

The recommendations for Route Segment 4 consist of 6.49 miles of 4-ft shoulders on US 70 and Main St E; 3.89 miles of sharrows on East Union Street (US Business 70), US 70, Main Street in downtown Valdese, and US 70 in Rutherford College. Bike lanes already exist on 1.84 miles of Meeting Street and Union Street so no recommendations were provided.



Along East Meeting Street (US Bus 70) from South Green Street to Center Street

Figure 3-16
Route Segment 4



Route Segment 4

East Meeting Street (US Bus 70) from South Sterling Street to Center Street

- 2 Lanes/35 mph/38-ft wide to 2 Lanes/25 mph/38-ft wide to 2 Lanes/35 mph/38-ft wide; AADT = 3,100 to 5,000
- This portion of East Meeting St (US Bus 70) already has existing bike lanes
- Bike lane on right side (One-way)
- Curb and Gutter
- No Recommendations

East Union Street (US Bus 70) from South Sterling Street to Center Street

- 2 Lanes/35 mph/36-ft wide to 2 Lanes/25 mph/36-ft wide; AADT = 2,900 to 4,400
- This portion of East Union St already has existing bike lanes
- Bike lane on right side (One-way)
- Curb and Gutter
- No Recommendations

East Union Street (US Bus 70) from Center Street to west of Overlook Drive

- 4 Lanes/35 mph/56-ft wide; AADT = 5,500
- Lanes with Median
- Curb
- Consider sharrows

East Union Street (US Bus 70) from west of Overlook Drive to East Fleming Drive

- 2 Lanes/35 mph/56-ft wide; AADT = 5,500 to 10,000
- No Shoulder
- No curb or gutter
- Consider sharrows

US 70 from East Fleming Drive to Dugout Circle

- 3 Lanes/45 mph/32-ft wide; AADT = 12,000
- Inconsistent shoulder widths

- No curb or gutter
- Consider widening the shoulders to 4-ft

US 70 from Dugout Circle to Tunnel Road SW

- 2 Lanes/45 mph/27-ft wide to 2 Lanes/45 mph/22-ft wide to 2 Lanes/35 mph/22-ft wide to ; AADT = 8,000 to 12,000
- No shoulder
- Center turn lane
- Consider widening the shoulders to 4-ft

Main Street West (US 70) from Tunnel Road Southwest to Roller Street Southwest (Downtown Valdese)

- 2 Lanes/35 mph/22-ft wide to 4 Lanes/35 mph/48-ft; AADT = 10,000
- No shoulder
- No curb or gutter
- Consider sharrows

Main Street W (US 70) from Roller Street SW to Eldred Street SE

- 4 Lanes/20 mph/35-ft wide to 2 Lanes/20 mph/35-ft to 2 Lanes/20 mph/43-ft wide to 2 Lanes/20 mph/34-ft wide; AADT = 8,900 to 10,000
- On Street Parking
- Curb and Gutters
- Consider sharrows

Main St E (US 70) from Eldred St SE to Torre Pellice St

- 2 Lanes/20 mph/22-ft wide to 2 Lanes/35 mph/22-ft wide; AADT = 6,100
- Curb from Eldred to Martinat Dr NE
- Inconsistent shoulder widths (Martinat to Torre Pellice)
- Sidewalks (North side of road from Eldred to Club Cir NE; South side of road from Club to Torre)
- Consider sharrows

Main St E/US 70 from Torre Pellice St to Ridge St

- *2 Lanes/35 mph/22-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 6,100 to 6,700*
- No curb or gutter
- Inconsistent shoulder widths
- Consider widening the shoulders to 4-ft

US 70 from Ridge St to Hamby's Service Center (Gas Station)

- *2 Lanes/35 mph/22-ft wide; AADT = 6,700*
- Curb and gutter
- Consider sharrows

US 70 from Hamby's Service Center to Israel Chapel Road

- *2 Lanes/35 mph/22-ft wide; AADT = 7,600*
- Inconsistent shoulder widths
- Consider widening the shoulders to 4-ft

Route Segment 5

Project Extent: From Springs Rd (Connelly Springs) to 39th St NW (Long View)
Project Total Length: 8.83 Miles

Current Conditions

Route Segment 5 is made of up of sections of US 70, Rhodhiss Road, Mcduffy Road, Bailey Road, Icard Rhodhiss Road, Warlicks Church Road, North Center Street in Hildebran, First Avenue Northeast in Hildebran, Third Street Northeast in Hildebran, Cline Park Drive, US 70A, and 1st Avenue Southwest in Burke County. US 70 is a 45 mph, 2-lane minor arterial with an AADT count of 9,200 vpd and truck AADT count of 352. Rhodhiss Road is a 45 mph, 2-lane road with an AADT count of 2,800 vpd. Mcduffy Road and Bailey Road are 45 mph local classified roads with an AADT count of 610. Icard Rhodhiss Road is a 45 mph minor arterial with an AADT count of 2,400 vpd. Warlicks Church Road and N Center Street in Hildebran are 35 mph major collectors with an AADT count average of 2,150 vpd. First Avenue NE, Third Street NE, and Cline Park Drive in Hildebran are all 35 mph 2-lane roads. US 70A and 1st Avenue SW in Long View are both 35 mph minor arterials with an AADT count of 4,200 vpd.

Justification

Route Segment 5 connects the Towns of Connelly Springs, Hildebran, and Long View. This project also links with other Burke County high priority routes creating connections to the Towns of Rutherford College, Valdese, and Rhodhiss.

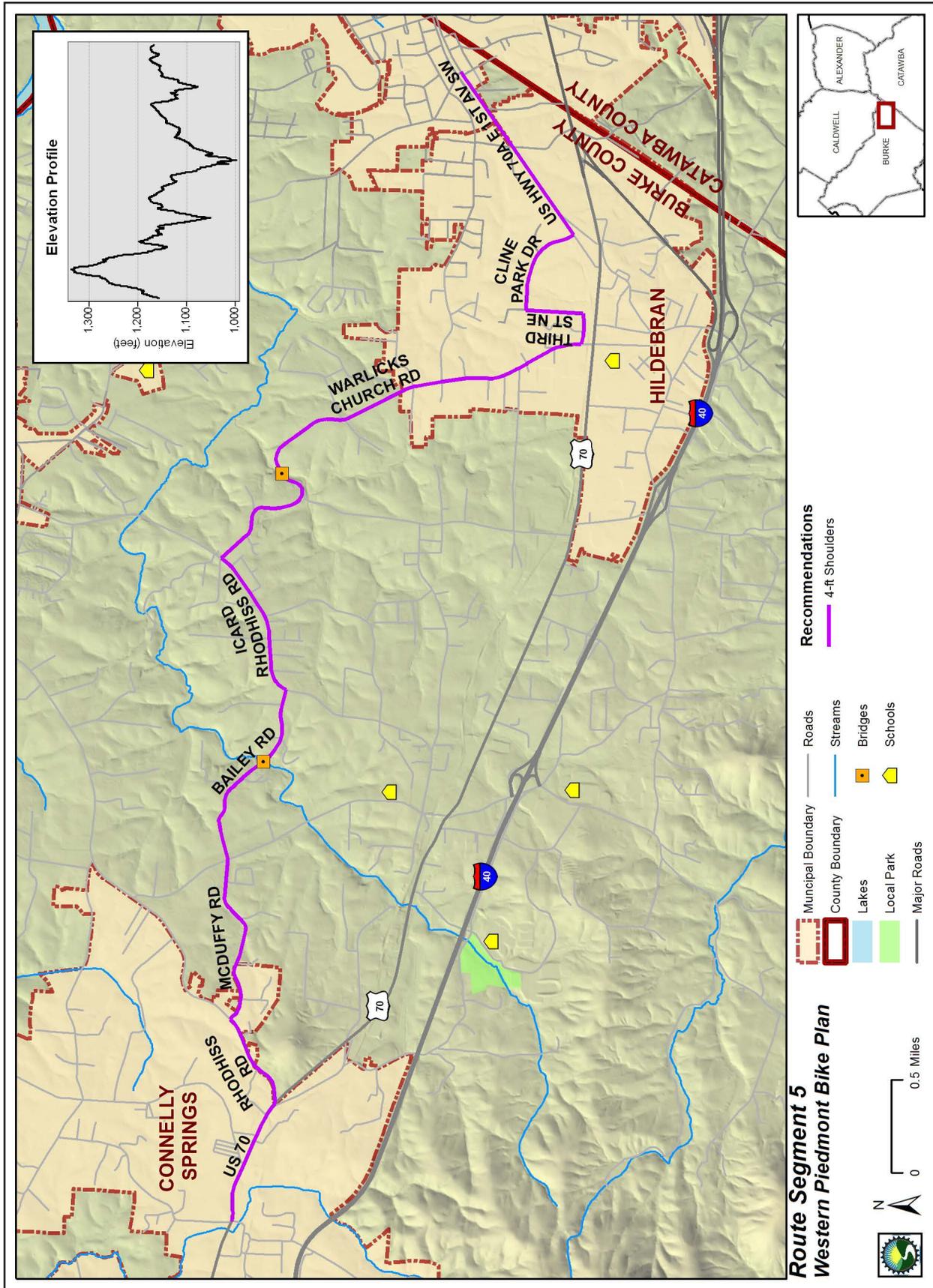
Recommendations

The recommendations for Route Segment 5 consist of 8.83 miles of 4-ft shoulders on US 70, Rhodhiss Road, Mcduffy Road, Bailey Road, Icard Rhodhiss Road, Warlicks Church Road, N Center Street, First Avenue NE, Third Street NE, Cline Park Drive, US 70A, and 1st Avenue SW.



Along US 70A from Cline Park Drive to Eleventh Street NE

Figure 3-17
Route Segment 5



Route Segment 5

US 70 from Israel Chapel Road to Rhodhiss Road

- 2 Lanes/45 mph/22-ft wide; AADT = 9,200
- No shoulder
- Consider widening the shoulders to 4-ft

Rhodhiss Road from US 70 to McDuffy Road

- 2 Lanes/45 mph/20-ft wide; AADT = 2,800
- No shoulder
- Consider widening the shoulders to 4-ft

McDuffy Road from Rhodhiss Road to Icard School Road

- 2 Lanes/45 mph/18-ft wide; AADT = 610
- No shoulders
- Curvy and narrow
- Consider widening the shoulders to 4-ft

Bailey Road from Icard School Road to Icard Rhodhiss Road

- 2 Lanes/45 mph/20-ft wide; AADT = 560
- No shoulders
- Small bridge with same road characteristics
- Consider widening the shoulders to 4-ft

Icard Rhodhiss Road from Bailey Road to Warlicks Church Road

- 2 Lanes/45 mph/19-ft wide; AADT = 2,400
- No shoulder
- Smooth and narrow
- Consider widening the shoulders to 4-ft

Warlick's Church Road from Icard Rhodhiss Road to Wilson Road

- 2 Lanes/35 mph/18-ft wide to 2 Lanes/45 mph/20-ft wide; AADT = 2,200
- No shoulder
- Curvy

- Consider widening the shoulders to 4-ft

North Center Street from Wilson Road to First Avenue NE

- 2 Lanes/35 mph/20-ft wide; AADT = 2,100
- No shoulder
- Consider widening the shoulders to 4-ft

First Avenue NE from North Center Street to Third Street NE

- 2 Lanes/35 mph/20-ft wide; AADT = N/A
- No striping
- Narrow
- Consider widening the shoulders to 4-ft

Third Street NE from First Ave NE to Cline Park Road

- 2 Lanes/35 mph/20-ft wide; AADT = N/A
- No striping
- Narrow
- Consider widening the shoulders to 4-ft

Cline Park Drive from Third Street NE to US 70A

- 2 Lanes/35 mph/20-ft wide; AADT = 2,100
- Fairly narrow
- Consider widening the shoulders to 4-ft

US 70A from Cline Park Drive to Eleventh Street NE

- 2 Lanes/45 mph/20-ft wide; AADT = 4,200
- No shoulder
- Consider widening the shoulders to 4-ft

1st Ave SW from Eleventh St NE to 39th St NW

- 2 Lanes/35 mph/20-ft wide; AADT = 4,200
- No shoulder
- Flat
- Consider widening the shoulders to 4-ft

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Route Segment 6

Project Extent: From US 70 (Glen Alpine) to US 70 (Morganton)

Project Total Length: 8.86 Miles

Current Conditions

Route Segment 6 is made of up of sections of London Street, Conley Road, Jamestown Road, Carbon City Road (US 70), West Union Street (US 70), Green Street, Sterling Street, and East in Burke County. London Street and Conley Road are 35 mph, 2-lane major collectors with an AADT count average of 2,450 vpd. Jamestown Road is a 45 mph, 2-lane road with an AADT count average of 8,750 vpd. Independence Boulevard is a 45 mph, 2 lane minor arterial with an AADT count average of 12,000 vpd. North and South Green Street is a 20, 25 and 35 mph, principal arterial with an AADT count average of 9,100 vpd and truck AADT of 450. North and South Sterling Street is a 20 and 35 mph, principal arterial with an AADT count average of 10,500 vpd and truck AADT count average of 562.

Justification

Route Segment 6 connects the City of Morganton with the Town of Glen Alpine. This project also links with other Burke County high priority routes in Morganton's Downtown that create connections to the Town of Valdese, Town of Drexel, Caldwell County, and Cleveland County. Green Street and Sterling Street are currently part of the NC Bicycling Highway system (NC 6/Piedmont Spur).

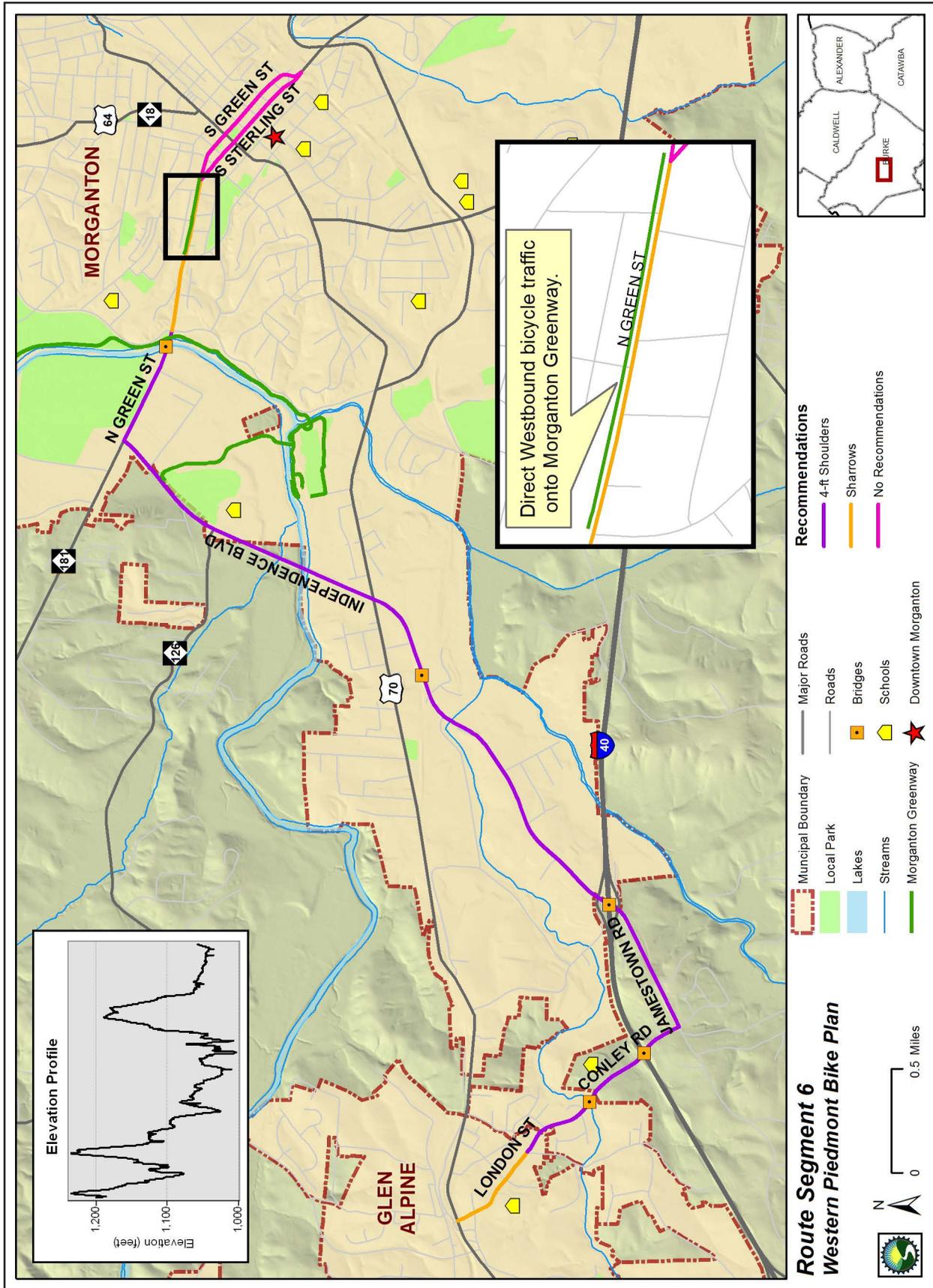
Recommendations

The recommendations for Route Segment 6 consist of 5.6 miles of 4-ft shoulders on on London Street, Conley Road, Jamestown Road, Independence Boulevard, and N Green St; 1.81 miles of sharrows on London Street and N Green Street. Bike lanes already exist on 1.45 miles of Green Street and Sterling Street so no recommendations were provided.



Along North Sterling Street from North Green Street to East Union Street

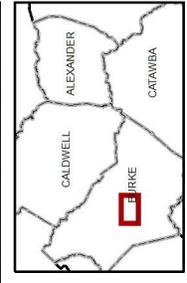
Figure 3-18
Route Segment 6



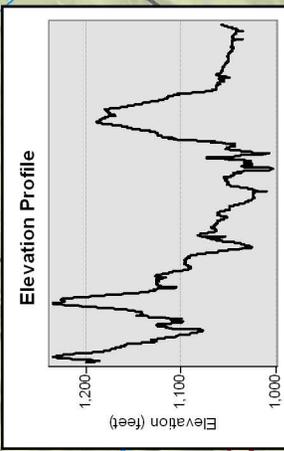
Route Segment 6
Western Piedmont Bike Plan

- Municipal Boundary
- Local Park
- Lakes
- Streams
- Morganton Greenway
- Major Roads
- Roads
- Bridges
- Schools
- Downtown Morganton

- Recommendations**
- 4-ft Shoulders
 - Sharrows
 - No Recommendations



Direct Westbound bicycle traffic onto Morganton Greenway.



Route Segment 6

London Street from Main Street (US 70) to Causby Road

- *2 Lanes/35 mph/20-ft to 2 Lanes/35 mph/18-ft wide; AADT = 2,200*
- Curb and gutter from Main to Glen Alpine Elementary School
- Sidewalks (West side of road from Main to Scott Street; East side of road from Scott to Causby)
- Consider sharrows

Conley Street from Causby Road to Jamestown Road

- *2 Lanes/35 mph/18-ft wide; AADT = 2,700*
- No shoulders
- Consider widening the shoulders to 4-ft

Jamestown Road from Conley Road to Carbon City Road

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/45 mph/32-ft wide; AADT = 6,500 to 11,000*
- No shoulders
- Consider widening the shoulders to 4-ft
- Consider widening bridge if replaced

Jamestown Road from Dixie Boulevard to Carbon City Road

- *2 Lanes/45 mph/32-ft wide; AADT = 10,000*
- Middle turn lane
- Existing 2-ft to 3-ft foot shoulders
- Consider widening the shoulders to 4-ft

Independence Boulevard from Jamestown Road to North Green Street

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/35 mph/48-ft wide to 2 Lanes/45 mph/24-ft wide; AADT = 11,000 to 13,000*
- Existing 2-ft to 3-ft foot shoulders
- Curb and gutter on East side of road in front of Freedom High School

Consider widening the shoulders to 4-ft N Green Street from Independence Boulevard to Sanford Drive

- *4 Lanes/45 mph/60-ft wide; AADT = 18,000*
- Existing 2-ft to 3-ft shoulders

Consider widening the shoulders to 4-ft North Green Street from Sanford Street to North College Street

- *4 Lanes/35 mph/44-ft wide; AADT = 9,600*
- Curb and gutter
- Sidewalk on North side of road
- Consider sharrows

North Green Street from North College Street to N Sterling St

- *2 Lanes/25 mph/44-ft wide to 2 Lanes/20 mph/44-ft wide; AADT = 5,700 to 9,600*
- Curb and gutter
- Sidewalk on South side of road and multi-use trail on North side of road
- Consider directing westbound bicycle traffic to Morganton Greenway and sharrows on eastbound lane

North Green Street from South Sterling Street to North Sterling Street

- *2 Lanes/20 mph/35-ft wide to 2 Lanes/20 mph/44-ft wide to 1 Lane/20 mph/44-ft wide; AADT = 4,800*
- Curb and gutter, sidewalks (both sides), and onstreet parking
- This portion of South Green Street already has existing bike lanes
- No recommendations

South Green Street from South Sterling Street to East Union Street

- *2 Lanes/35 mph/32-ft wide to 2 Lanes/35 mph/52-ft wide to 2 Lanes/35 mph/37-ft wide; AADT = 7,800*
- Curb and gutter, sidewalks (both sides), and onstreet parking
- This portion of South Green Street already has existing bike lanes
- No recommendations

North Sterling Street from North Green Street to East Union Street

- *2 Lanes/35 mph/30-ft wide to 2 Lanes/35 mph/22-ft wide to 2 Lanes/35 mph/34-ft wide; AADT = 4,500 to 6,600*
- Curb and gutter, sidewalks (both sides), and onstreet parking
- This portion of North Sterling Street already has existing bike lanes
- No recommendations

South Sterling Street from East Union Street to S Green St

- *2 Lanes/35 mph/60-ft wide to 2 Lanes/35 mph/36-ft wide to 2 Lanes/20 mph/36-ft wide to 2 Lanes/20 mph/60-ft wide to 2 Lanes/35 mph/60-ft wide to 2 Lanes/35 mph/42-ft wide; AADT = 4,000 to 8,100*
- Curb and gutter, sidewalks (both sides from Union to Erwin St; sidewalk only on West side of road from Erwin to Green), and onstreet parking
- This portion of South Sterling Street already has existing bike lanes
- No recommendations

Route Segment 7

Project Extent: From Sanford Drive (Morganton) to Brown Mountain Beach Road
Project Total Length: 11.35 Miles

Current Conditions

Route Segment 7 is made of up of sections of North Green Street (NC 181) and NC 181 in Burke County. North Green Street is a 35, 45, and 55 mph, 2- and 4-lane minor arterial with AADT count average of 14,425 vehicles per day (vpd) and truck AADT average of 510. NC 181 is a 45 and 55 mph, 2-lane minor arterial with an AADT count average of 5,230 vpd and truck AADT average of 156. North Green Street is currently included in the State Transportation Improvement Plan (STIP U-5836) that will widen the existing roadway.

Justification

Route Segment 7 connects the City of Morganton with the Pisgah National Forest. This project also links with other Burke County high priority routes in Morganton that create connections to the Towns of Glen Alpine, Valdese, and Drexel. Green Street and Sterling Street are currently part of the NC Bicycling Highway system (NC 6/Piedmont Spur).

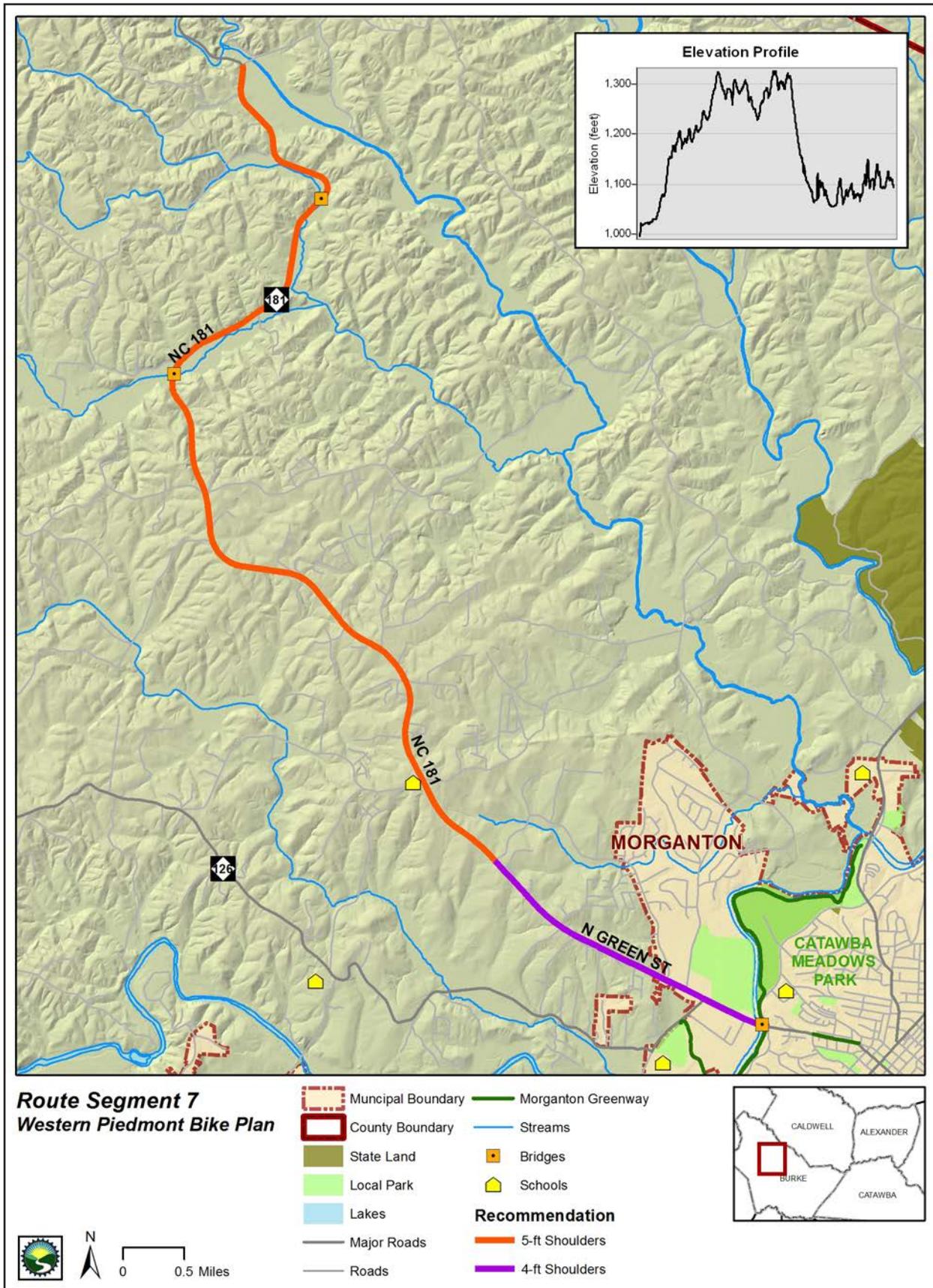
Recommendations

The recommendations for Route Segment 7 consists of 8.7 miles of 5-ft shoulders on NC 181 and 2.65 miles of 4-ft shoulders on North Green Street and NC 181.



Along North Green Street from St. Mary's Church Road to St. Mary's Church Road

Figure 3-19
Route Segment 7



Route Segment 7

North Green Street from Sanford Drive to St. Mary's Church Road

- *4 Lanes/45 mph/48-ft wide to 4 Lanes/45 mph/60-ft wide to 4 Lanes/35 mph/48-ft wide; AADT = 10,000 to 20,000*
- Wide bridge with no striped shoulder
- Center turn lane.
- 2-ft to 3-ft shoulders between bridge and St. Mary's Church
- Consider widening the shoulders to 4-ft

North Green Street from St. Mary's Church Road to St. Mary's Church Road

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 8,300 to 10,000*
- Inconsistent shoulder widths (2-ft to 3-ft)
- Consider widening the shoulders to 4-ft

NC 181 from St. Mary's Church Road to Brown Mountain Beach Road

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/55 mph/24-ft wide to 2 Lanes/45 mph/24-ft wide; AADT = 1,800 to 8,300*
- Inconsistent shoulder widths (2-ft to 3-ft)
- Consider widening the shoulders to 5-ft

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Route Segment 8

Project Extent: From US 70 (Connelly Springs) to Caldwell County

Project Total Length: 7.05 Miles

Current Conditions

Route Segment 8 is made of up of sections of Israel Chapel Road, Tomlinson Loop, Oak Ridge Church Road, Rhodhiss Road, and Burke Street in Burke County. Israel Chapel Road, Tomlinson Loop, and Oak Ridge Church Road are 35 mph, 2-lane local functional classified roads with an AADT count of 760 vpd. Rhodhiss Road and Burke Street are 25, 35, 45, and 55 mph, 2-lane minor arterials with an AADT count average of 4,850 vpd.

Justification

Route Segment 8 connects the Town of Connelly Springs to Caldwell County, and to a Caldwell priority route that extends the Caldwell County connection to the Towns of Granite Falls, Sawmills, and Hudson with the City of Lenoir. This project links with other Burke County high priority routes in Connelly Springs that create additional connections to Town of Valdese and Town of Rutherford College.

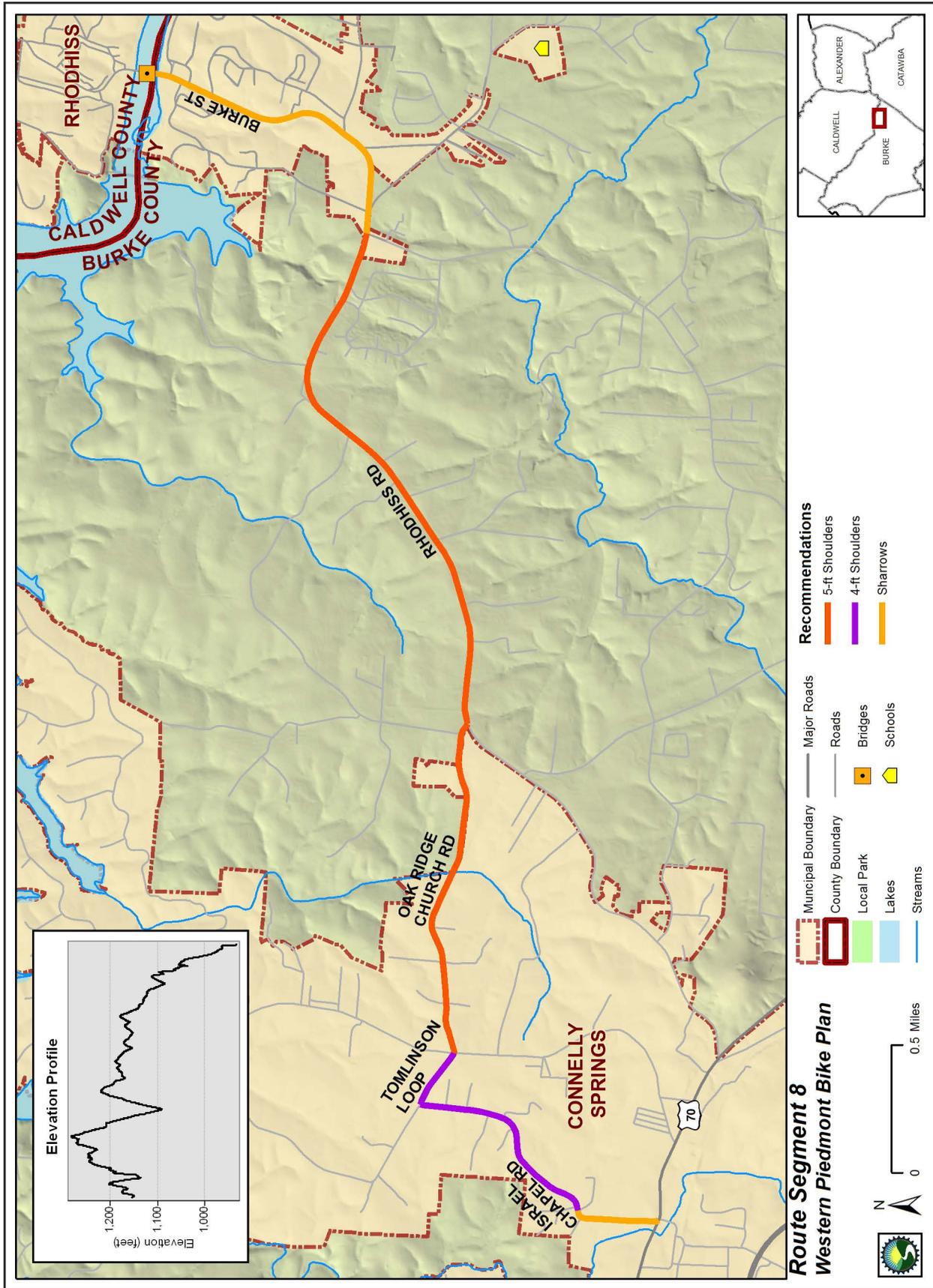
Recommendations

The recommendations for Route Segment 8 consist of 3.51 miles of 5-ft shoulders on Oak Ridge Church Road and Rhodhiss Rd; and 2.44 miles of sharrows on Israel Chapel Road and Burke Street; and 1.1 miles of 4-ft shoulders on Israel Chapel Road and Tomlinson Loop.



Along Rhodhiss Road from Oak Ridge Church Road to Icard Rhodhiss Road

Figure 3-20
Route Segment 8



Route Segment 8

Israel Chapel Road from US 70 to Hubert Park Avenue

- *2 Lanes/35 mph/22-ft wide to 2 Lanes/35 mph/18-ft wide; AADT = 800*
- No shoulders (hill slope on West side of road)
- Consider sharrows

Israel Chapel Road from Hubert Park Avenue to Tomlinson Loop

- *2 Lanes/35 mph/22-ft wide to 2 Lanes/35 mph/18-ft wide; AADT = 800*
- No shoulders.
- Consider widening the shoulders to 4-ft

Tomlinson Loop from Israel Chapel Road to Shady Grove Road

- *2 Lanes/35 mph/18-ft wide; AADT = N/A*
- No shoulders
- Consider widening the shoulders to 4-ft

Oak Ridge Church Road from Shady Grove Road to Rhodhiss Road

- *2 Lanes/35 mph/18-ft wide to 2 Lanes/55 mph/18-ft wide; AADT = 720*
- Narrow
- Consider widening the shoulders to 5-ft

Rhodhiss Road from Oak Ridge Church Road to Icard Rhodhiss Road

- *2 Lanes/45 mph/20-ft wide to 2 Lanes/55 mph/20-ft wide to 2 Lanes/35 mph/20-ft ; AADT = 4,000*
- Narrow
- No shoulders
- Consider widening the shoulders to 5-ft

Burke Street from Icard Rhodhiss Road to Caldwell County Line

- *2 Lanes/35 mph/20-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 5,700*
- No shoulders
- Narrow
- Consider sharrows

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Route Segment 9

Project Extent: From Burke County Line to Rocky Road (Gamewell)

Project Total Length: 3.07 Miles

Current Conditions

Route Segment 9 is made up of a section of Morganton Boulevard (US 64) in Caldwell County. Morganton Boulevard (US 64) is a 45 and 50 mph, principal arterial with an AADT count average of 8,100 vpd and truck AADT count of 670.

Justification

Route Segment 9 connects the Town of Glen Alpine to Burke County.

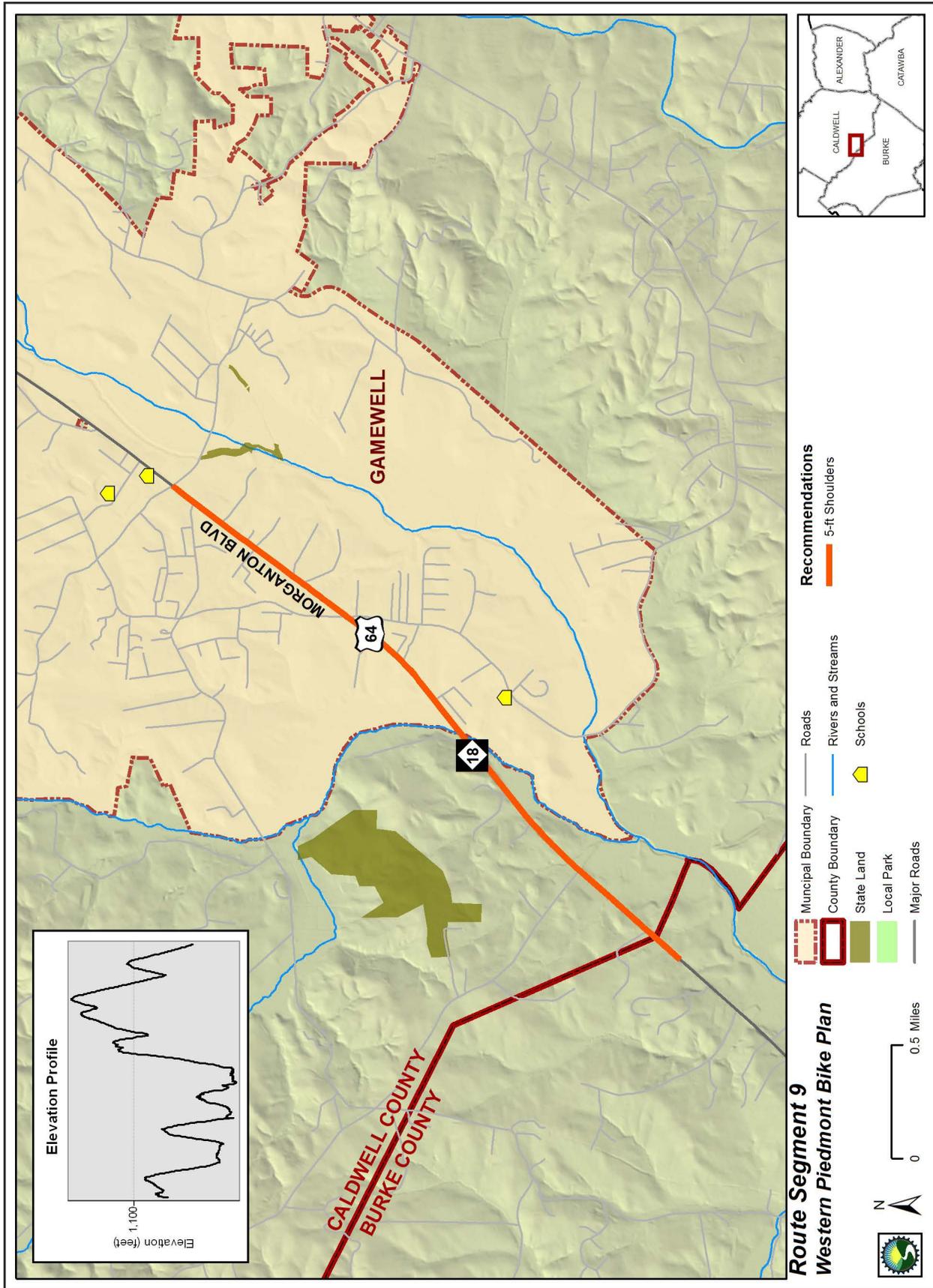
Recommendations

The recommendation for Route Segment 9 consists of 3.07 miles of signs and 5-foot shoulders on Morganton Boulevard (US 64).



Along Morganton Boulevard near intersection of Calico Road and Morganton Boulevard

Figure 3-21
Route Segment 9



Recommendations
5-ft Shoulders

Roads

Rivers and Streams

Schools

Municipal Boundary

County Boundary

State Land

Local Park

Major Roads

Route Segment 9
Western Piedmont Bicycle Plan

0 0.5 Miles



Route Segment 9

Morganton Boulevard from Rocky Road to Burke County Line

- *2 Lanes/45 mph/30-ft wide to 2 Lanes/50 mph/30-ft wide; AADT = 7,400 to 9,900*
- Existing 3-ft shoulders
- Consider widening the shoulders to 5-ft

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Route Segment 10

Project Extent: From Harper Avenue (Lenoir) to Burke County Line

Project Total Length: 13.87 Miles

Current Conditions

Route Segment 10 is made of up of sections of Northwood Street, Northwood Street (US 321A), Main Street (US 321A) in Hudson, US 321A, North Main Street (US 321A) in Granite Falls, Main Street (US 321A) in Granite Falls, Duke Street, Caldwell Street, and Burke Street in Caldwell County. Northwood Street is a 35 mph, 2-lane minor arterial with an AADT count of 4,130 vpd and truck AADT count average of 225. Northwood Street (US 321A) is a 2-lane and 4-lane minor arterial, a posted speed limit of 45 mph with an AADT count average of 7,000 vpd and truck AADT count average of 177. Main Street (US 321A) in Hudson, US 321A, North Main Street (US 321A), and Main Street (US 321A) in Granite Falls are 35 and 45 mph, 2-lane minor with an AADT count average of 7,640 vpd and truck AADT count average of 253. Duke Street, Caldwell Street and Burke Street are 35 mph, 2-lane minor arterials with an AADT count average of 5,850 vpd.

Justification

Route Segment 10 connects Burke County to the City of Lenoir and the Towns of Hudson, Sawmills, Granite Falls, and Rhodhiss. Additionally the projects connects Caldwell and Burke Counties to the NC Bicycling Highway System (NC 2/Mountains-to-Sea), and to a Burke County high priority project that extends the Burke connection to the Town of Connelly Springs. This route segment also provides a connection to the Downtowns of Lenoir, Hudson, and Granite Falls.

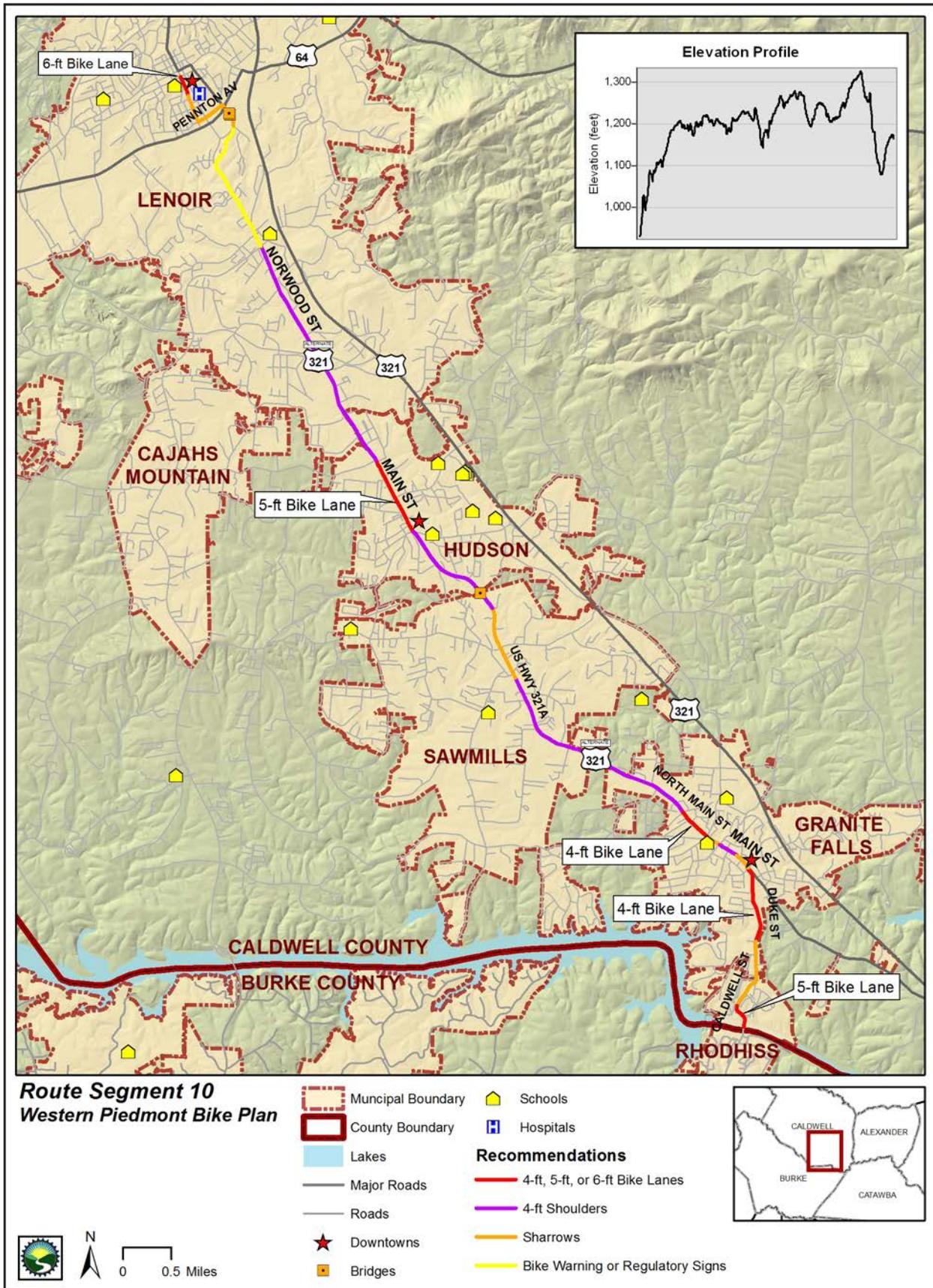
Recommendations

The recommendations for Route Segment 10 consist of 6.24 miles of 4-foot shoulders on Main Street, North Main Street, Norwood Street, and US 321A; and 2.46 miles of 4-foot bike lanes on Caldwell Street, Duke Street, Main Street, and North Main Street; and 2.98 miles of sharrows on Caldwell Street, Duke Street, Main Street, North Main Street, Norwood Street, Pennton Avenue, and US 321A; and 1.43 miles of bicycle warning or regulatory signs on Norwood Street



Along Caldwell Street in the Town of Rhodhiss at Burke and Caldwell County line.

Figure 3-22
Route Segment 10



Route Segment 10

Caldwell Street from Burke County Line to Burch Street

- *2 Lanes/35 mph/36-ft wide; AADT = 5,300*
- Curb and Gutter
- Bridge width adequate for bicycles
- Bridge approaches would need improvements
- Bridge would require bicycle-safe rails
- Consider striping 5-ft bike lanes

Caldwell Street from Burch Street to Hickory Street

- *2 Lanes/35 mph/20-ft wide; AADT = 6,400*
- No opportunity for bicycle lanes
- Consider sharrows

Duke Street from Hickory Street to Everett Drive

- *2 Lanes/35 mph/18-ft wide; AADT = 6,400*
- No opportunity for bicycle lanes
- Consider sharrows

Duke Street from Everett Drive to US 321A

- *2 Lanes/35 mph/32-ft wide; AADT = 6,400*
- Curb and Gutter
- Consider striping 4-ft bike lanes

South Main Street (US 321A) from Duke Street to Park Square

- *2 Lanes/20 mph/70-ft wide; AADT = 8,500*
- On Street Parking (Downtown Granite Falls)
- Consider sharrows

North Main Street (US 321A) from Park Square to North Highland Avenue

- *2 Lanes/35 mph/38-ft wide to 2 Lanes/35 mph/32-ft wide; AADT = 7,900*
- Curb and Gutter

- Consider sharrows

North Main Street (US 321A) from North Highland Avenue to North Summit Avenue

- *2 Lanes/35 mph/32-ft wide; AADT = 7,900*
- Poles on east side are close to roadway.
- Curb and gutter
- Consider striping 4-ft bike lanes

North Main Street (US 321A) from North Summit Avenue to Jones Park Drive

- *2 Lanes/35 mph/24-ft wide to 2 Lanes/35 mph/20-ft wide; AADT = 6,900*
- No room for bicycle lanes
- If roadway is widened in the future, bicycle lanes should be provided

- Consider widening the shoulders to 4-ft

US 321A from Jones Park Drive to Town of Sawmills Townhall

- *2 Lanes/35 mph/20-ft wide to 2 Lanes/45 mph/20-ft wide; AADT = 6,800 to 7,200*
- No room for bicycle lanes
- No shoulders
- If roadway is widened in the future, bicycle lanes should be provided

- Consider widening the shoulders to 4-ft

US 321A from Sawmills Townhall to Holden Place

- *2 Lanes/35 mph/34-ft wide; AADT = 5,100*
- Sidewalk from Townhall to Mission Road
- No shoulders
- Consider sharrows

North Main Street (US 321A) from Eastview Street to Cedar Valley Road

- *2 Lanes/35 mph/20-ft wide to 2 Lanes/45 mph/20-ft wide; AADT = 4,900*
- No shoulders
- If roadway is widened in the future,

bicycle lanes should be provided

- Consider widening the shoulders to 4-ft

Main Street (US 321A) from Cedar Valley Road (Hudson) to Pleasant Hill Road (Hudson)

- *3 Lanes/35 mph/34-ft wide; AADT = 8,800 to 12,000*
- Extra lane could be eliminated to provide bicycle lane
- Consider striping 5-ft bike lanes

Main Street (US 321A) from Pleasant Hill Road to Swanson Road

- *2 Lanes/45 mph/24-ft wide; AADT = 7,300*
- If roadway is widened in the future, bicycle lanes should be provided
- Consider widening the shoulders to 4-ft

Norwood Street (US 321A) from Swanson Road to Hibriten Dr

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/35 mph/24-ft; AADT = 7,300*
- If roadway is widened in the future, bicycle lanes should be provided

- Consider widening the shoulders to 4-ft

Norwood Street (US 321A) from Hibriten Drive to Lakewood Circle

- *2 Lanes/35 mph/24-ft; AADT = 5,800*
- Roadway is too narrow for bicycle lanes
- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B

Norwood Street (US 321A) from Lakewood Circle to Pennton Ave

- *2 Lanes/35 mph/20-ft; AADT = 5,800*
- Roadway is too narrow for bicycle lanes
- Consider sharrows

Pennton Avenue from Norwood Street to Main Street

- *2 Lanes/35 mph/24-ft; AADT = 1,700*
- Sidewalk on North side of road from Norwood to Mulberry Street
- Curb and gutter from Mulberry to Main Street
- Consider sharrows

Main Street from Pennton Avenue to Grove Avenue

- *2 Lanes/25 mph/24-ft wide; AADT = N/A*
- Curb and Gutter, sidewalks
- Consider sharrows

Main Street from Grove Avenue to College Avenue

- *2 Lanes/25 mph/40-ft wide; AADT = N/A*
- Parallel parking is present on both sides. Parking is not being used. Lot parking is available
- Consider removing on street parking to add bike lanes
- Consider striping 6-ft bike lanes

Route Segment 11

Project Extent: From Harper Avenue (Lenoir) to Burke County Line

Project Total Length: 15.02 Miles

Current Conditions

Route Segment 11 is made up of up of a sections of Main Street in Lenoir, Valway Road (NC 90), Collettsville Road (NC 90), and Adako Road in Burke County. Main Street is a 35 mph, 2-lane and 4-lane minor arterial with an AADT count average of 4,550 vpd and truck AADT count average of 256. Valway Road is a 35 mph, 2-lane minor arterial with an AADT count of 2,000 vpd and truck AADT count of 68. Collettsville Road (NC 90) is a 35 and 55, mph 2-lane major collector with an AADT count average of 945 vpd and truck AADT count average of 62. Adako Road is a 55 mph, 2-lane minor collector with an AADT count of 670 vpd.

Justification

Route Segment 11 connects Burke County to the City of Lenoir, Downtown Lenoir, Caldwell/Burke County to the NC Bicycling Highway system (NC 2/Mountains-to-Sea), and to a Burke County high priority project that extends the Burke connection to NC 6/Piedmont Spur. Adako Road and Collettsville Road are currently part of the NC Bicycling Highway system (NC 2/Mountains-to-Sea).

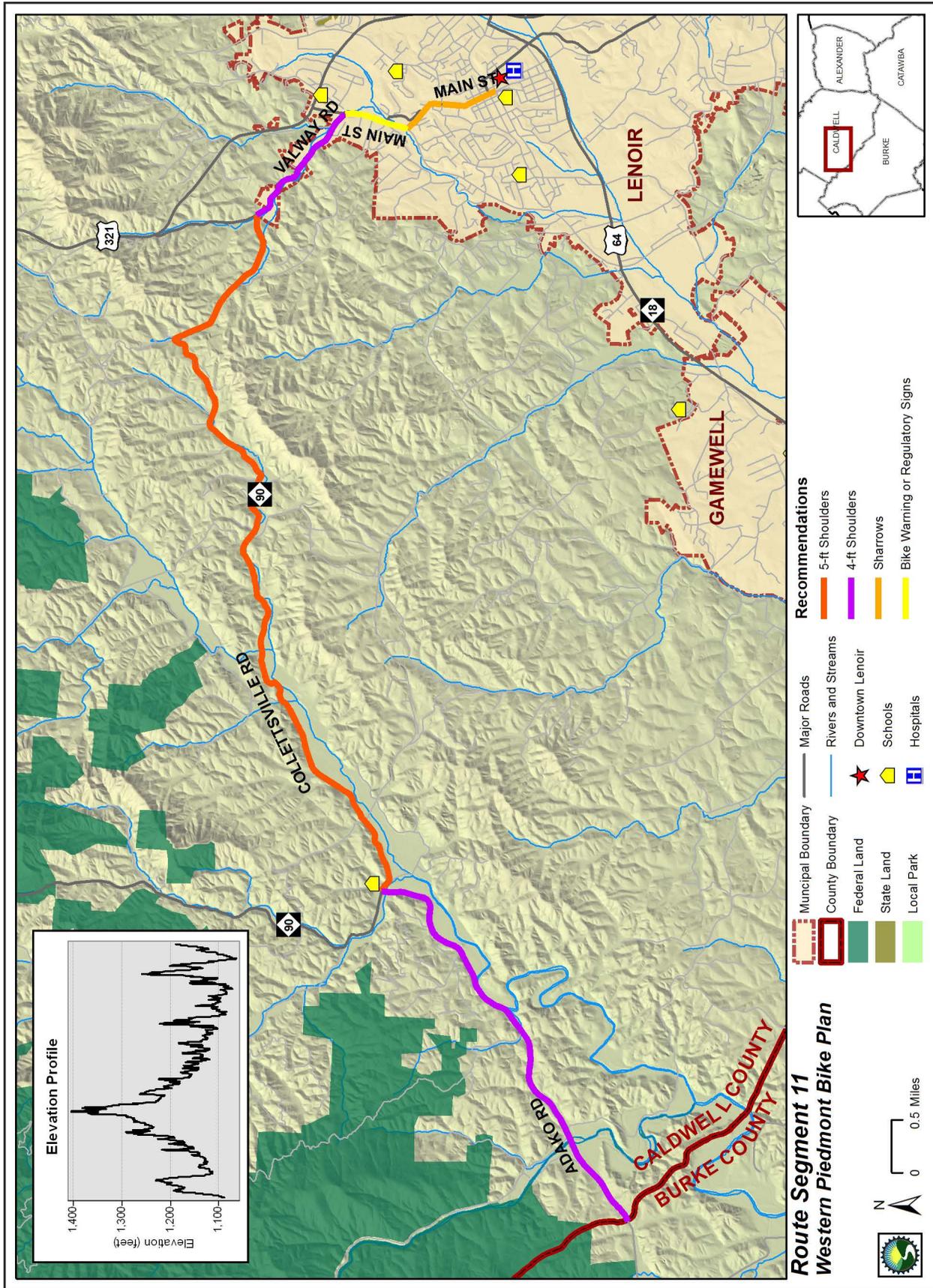
Recommendations

The recommendations for Route Segment 11 consist of 7.88 miles of 5-foot shoulders on Collettsville Road; 5.56 miles of 4-foot shoulders on Adako Road and Valway Drive; 0.97 miles of sharrows on Main Street; and 0.61 miles of bicycle warning or regulatory signs on Main Street in Lenoir.



Along On Collettsville Road between Adako Road and Abington Road

Figure 3-23
Route Segment 11



Route Segment 11

South Main Street from College Avenue to Harper Avenue

- 3 Lanes/25 mph/50-ft wide; AADT = N/A
- 2 Lanes southbound, one lane northbound
- Parallel parking is present on both sides.
- Consider sharrows

Main Street from Harper Avenue to Ashe Avenue

- 3 Lanes/25 mph/44-ft wide; AADT = N/A
- 2 lanes southbound, one lane northbound
- Parallel parking is present on both sides with curb extensions
- Consider sharrows

North Main Street from Ashe Avenue to American Legion Building

- 2 Lanes/20 mph/42-ft wide; AADT = 3,500
- Parallel parking is present on both sides.
- Consider sharrows

North Main Street from American Legion Building to Creekway Drive

- *2 Lanes/20 mph/24-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 3,000 to 3,500*
- Curb and gutter, striped shoulders
- Consider sharrows

North Main Street from Creekway Drive to Valway Road

- 4 Lanes/45 mph/60-ft wide; AADT = 8,900
- 5th Lane
- Curb and gutter
- Could use Old North Road as an alternate
- Consider Road Diet (3 Lanes with Bike Lanes)

- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B

Valway Road from North Main Street to Colletsville Road

- *2 Lanes/35 mph/24-ft wide; AADT = 2,000*
- No paved shoulders
- Consider widening shoulders to 4-ft

Colletsville Road from Valway Road to Adako Road

- *2 Lanes/55 mph/18-ft wide; AADT = 1,000*
- No paved shoulders
- Consider widening shoulders to 5-ft

Adako Road from Colletsville Road to Burke County Line

- *2 Lanes/35 mph/20-ft wide; AADT = 670*
- No paved shoulders
- Consider widening shoulders to 4-ft

Route Segment 12

Project Extent: From Wilkesboro Road (Lenoir) to Alexander County Line

Project Total Length: 9.84 Miles

Current Conditions

Route Segment 12 is made of up of a section of Taylorsville Road (US 64) in Caldwell County. Taylorsville Road is a 55 mph, 2-lane minor arterial with an AADT count average of 4,200 vehicles per day and truck AADT count of 400.

Justification

Route Segment 12 connects the City of Lenoir to Alexander County and to an Alexander County high priority project that extends the Alexander connection to the town of Taylorsville. Caldwell-1D is currently part of the NC Bicycling Highway system (NC 2/Mountains-to-Sea).

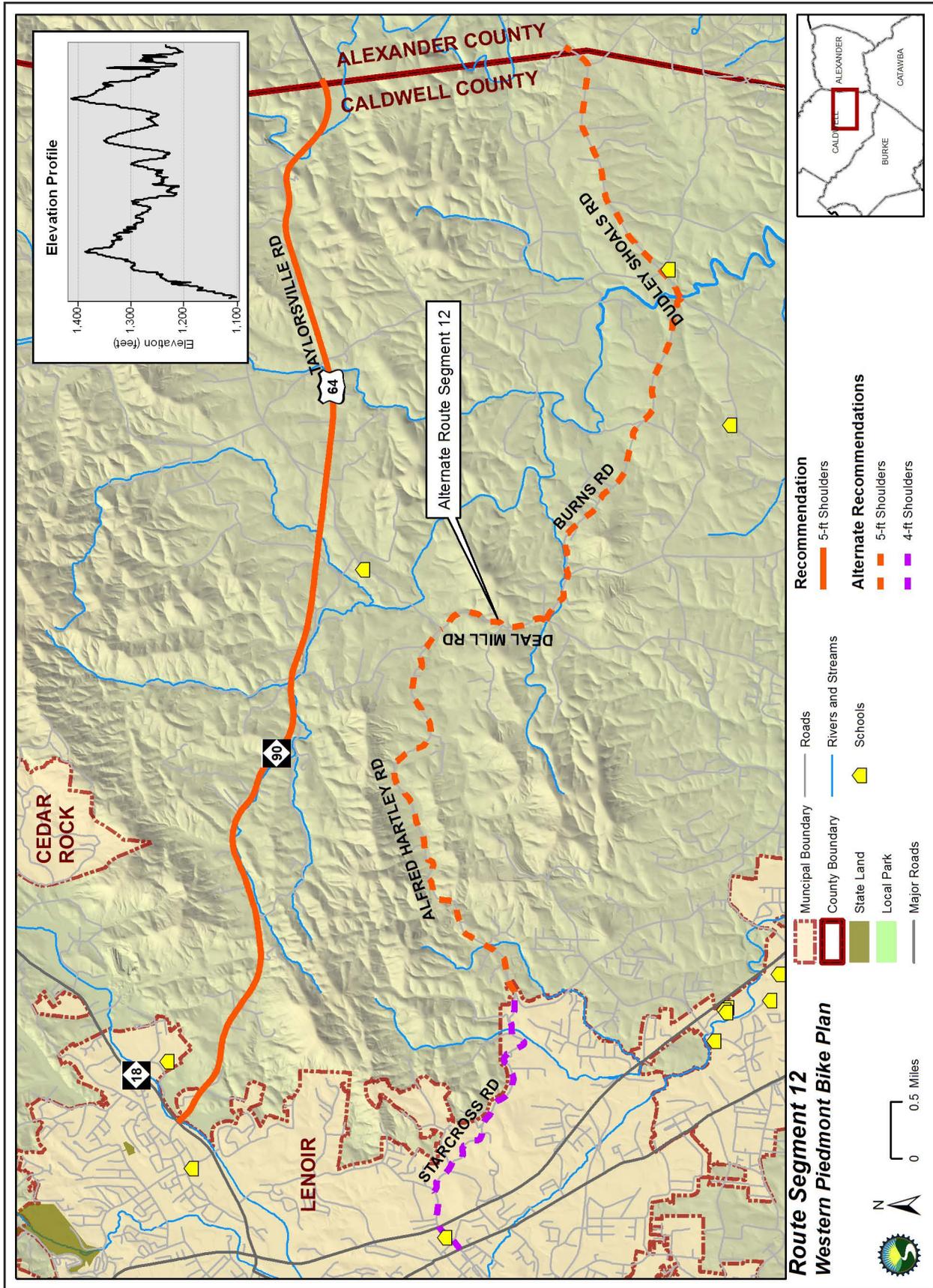
Recommendations

The recommendation for Route Segment 12 consists of 9.84 miles of 5-foot shoulders on Taylorsville Road (US 64).



Along Taylorsville Road near Caldwell and Alexander County line.

Figure 3-24
Route Segment 12



Route Segment 12

Taylorsville Road (US 64) from Wilkesboro Boulevard to Alexander County Line

- *2 Lanes/55 mph/24-ft wide; AADT = 2,800 to 5,800*
- 35 mph in city limits.
- No shoulders
- Consider widening the shoulders to 5-ft

Alternate Route Segment 12

Hibriten Dr from Norwood St to Star Cross Rd

- 2 Lanes/35 mph/20-ft wide, AADT = 3,200
- No paved shoulders
- Consider widening the shoulders to 4-ft

Starcross Rd from Hibriten Dr to Alfred Hartley Rd

- 2 Lanes/35 mph/16-ft wide to 2 Lanes/35 mph/20-ft wide, AADT = 970
- No paved shoulders
- Consider widening the shoulders to 4-ft

Alfred Hartley Rd from Star Cross Rd to Oak Hill School Rd

- 2 Lanes/35 mph/20-ft wide to 2 Lanes/55 mph/20-ft wide to 2 Lanes/55 mph/18-ft wide, AADT = 1,500
- No paved shoulders
- Consider widening the shoulders to 5-ft

Deal Mill Rd from Oak Hill School Rd to Burns Rd

- *2 Lanes/55 mph/20-ft wide, AADT = 770*
- *No paved shoulders*
- *Consider widening the shoulders to 5-ft*

Burns Rd from Deal Mill Rd to Dudley Shoals Rd

- *2 Lanes/55 mph/20-ft wide, AADT = 540*
- *No paved shoulders*
- *Consider widening the shoulders to 5-ft*

Dudley Shoals Rd from Burns Rd to Alexander County Line

- *2 Lanes/35 mph/18-ft wide to 2 Lanes/55 mph/18-ft wide, AADT = 1,000*
- *No paved shoulders*
- *Consider widening the shoulders to 5-ft*

Route Segment 13

Project Extent: From Zion Church Road to Alexander County Line

Project Total Length: 9.17 Miles

Current Conditions

Route Segment 13 is made up of sections of NC 127, South Center Street, North Center Street, 8th Avenue Northeast (NE), and 2nd Street NE in Hickory. Highway NC 127 is a 4-lane principal arterial with posted speed limits of 45 miles per hour with an AADT count average of 18,500 vpd and truck AADT count average of 770. South Center Street is a 2-lane and 4-lane major collector with posted speed limit of 35 miles per hour with an AADT count average of 3,500 vpd. North Center Street in downtown Hickory is 2-lane street with posted speed limit of 25 miles per hour with an AADT count of 3,100 vpd. North of 8th Avenue NE are 2nd Street NE (NC 127) and North Center Street (NC 127). Both are 4-lane principal arterials with a posted speed limit of 35 miles per hour with an AADT count average of 27,000 vpd.

Justification

Route Segment 13 connects the Town of Brookford to the City of Hickory and Alexander County. It also connects a Alexander County high priority project that extends the Alexander connection to the Town of Taylorsville and NC Bicycling Highway system (NC 2/Mountains-to-Sea) along with downtown. This project also links with other Catawba County high priority routes in downtown Hickory to create a network of other connections to Burke and Conover.

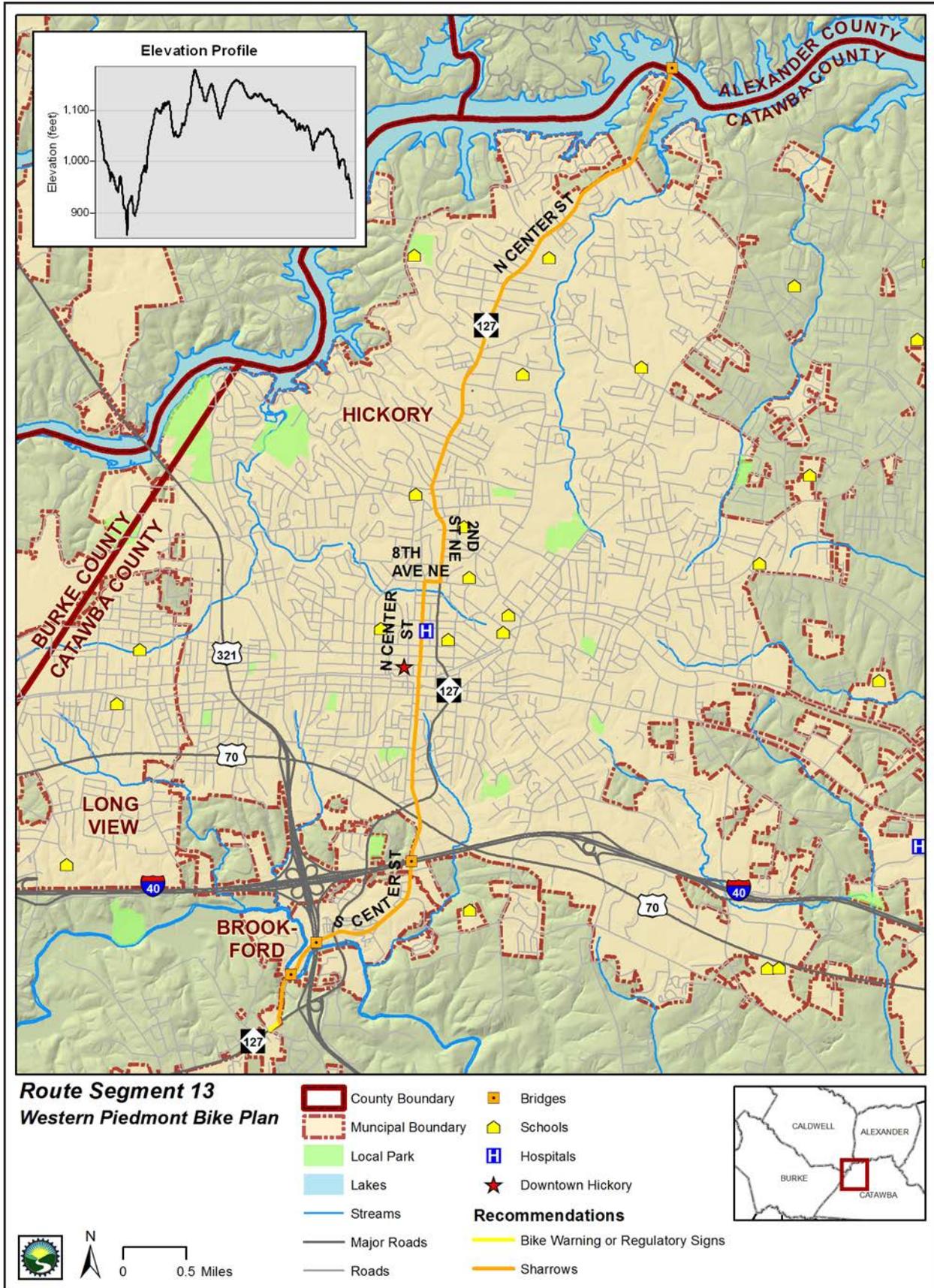
Recommendations

The recommendations for Route Segment 13 consists of 8.08 miles sharrows on 2nd Street NE (NC 127), 8th Avenue NE, North Center Street (downtown Hickory), North Center Street (NC 127), and South Center Street; and 1.09 miles of bicycle warning or regulatory signs on Brookford Boulevard (NC 127) and NC 127.



Along 2nd Street NE (NC 127) from 2nd Avenue NE to 16th Ave NW

Figure 3-25
Route Segment 13



Route Segment 13

South NC 127 from Zion Church Road to South Center Street

- 4 Lanes/45 mph/64-ft wide; AADT = 24,000
- Curb
- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B

South Center Street from NC 127 to Brookford Boulevard (NC 127)

- 2 Lanes/35 mph/24-ft wide; AADT = 300
- No shoulders from NC 127 to bridge going over Interstate 40, 1-ft to 2-ft shoulders pass bridge to Brookford Blvd
- Consider sharrows

South Center Street from Brookford Boulevard (NC 127) to Main Street NE

- 2 Lanes/35 mph/24-ft wide to 4 Lanes/35 mph/52-ft wide to 2 Lanes/20 mph/28-ft wide to 4 Lanes/25 mph/48-ft wide; AADT = 4,400 to 5,200
- Bridge over Interstate 40
- Curb and gutter from bridge over Interstate 40 to Main Street NE, Sidewalk from NC 127 to Main Street NE
- Consider sharrows

North Center Street from Main Street NE to 8th Avenue NE

- 4 Lanes/20 mph/48-ft wide to 2 Lanes/25 mph/30-ft wide; AADT = 2,500 to 3,100
- Curb and gutter, Sidewalk on both sides
- On Road parking (Downtown Hickory)
- Goes by Frye Regional Medical Center
- Consider sharrows

8th Avenue NE from North Center St to 2nd Street NE

- 2 Lanes/35 mph/26-ft wide; AADT = 4,300
- Curb and gutter, Sidewalk on North side of road
- Consider and sharrows

2nd Street NE (NC 127) from 8th Avenue NE to 16th Avenue NW

- 4 Lanes/35 mph/64-ft wide; AADT = 25,000
- 5th turn lane
- Curb and gutter
- Consider sharrows

North Center Street (NC 127) from 16th Avenue NW to Alexander County Line

- 4 Lanes/35 mph/64-ft wide to 4 Lanes/45 mph/64-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 14,000 to 36,000
- Curb and gutter
- Turns to 2 lanes south of bridge
- Mostly Commercial
- 5th turn lane
- Consider lowering speed limit to 35 mph
- Consider sharrows.

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Route Segment 14

Project Extent: From 39th St NW (Long View) to 9th Avenue NW (Hickory)

Project Total Length: 4.72 Miles

Current Conditions

Route Segment 14 is made up of sections of 1st Avenue Southwest (SW), 17th Street Northwest (NW), 2nd Avenue NW, 3rd Avenue NW, and 3rd Avenue Court NW. In Long View, 1st Avenue SW is a 2-lane, minor arterial with posted speed limits of 35 and 45 miles per hour; and has an average annual daily trip (AADT) count average of 5,433 vehicles per day (vph). In Hickory, 17 Street NW is a 2-lane street with a posted speed limit of 35 and an AADT count of 4,600. Heading toward downtown Hickory, 2nd Avenue NW is a 2-lane, minor arterial with posted speed limits of 25 mph and 35 mph with an AADT count average of 7,300 vph. In downtown Hickory, 3rd Avenue NW and 3rd Avenue Court NW are 2-lane minor arterials with posted speed limits of 25 mph and 35 mph with an AADT count of 5,300 vph.

Justification

Route Segment 14 connects the City of Hickory with the Town of Long View, linking Hickory with Burke County, and to a Burke County high priority project that extends the Burke connection to the Town of Hildebran. This project also links with other Catawba County high priority routes in downtown Hickory to create a network of other connections to Alexander County, Brookford, and eventually Conover.

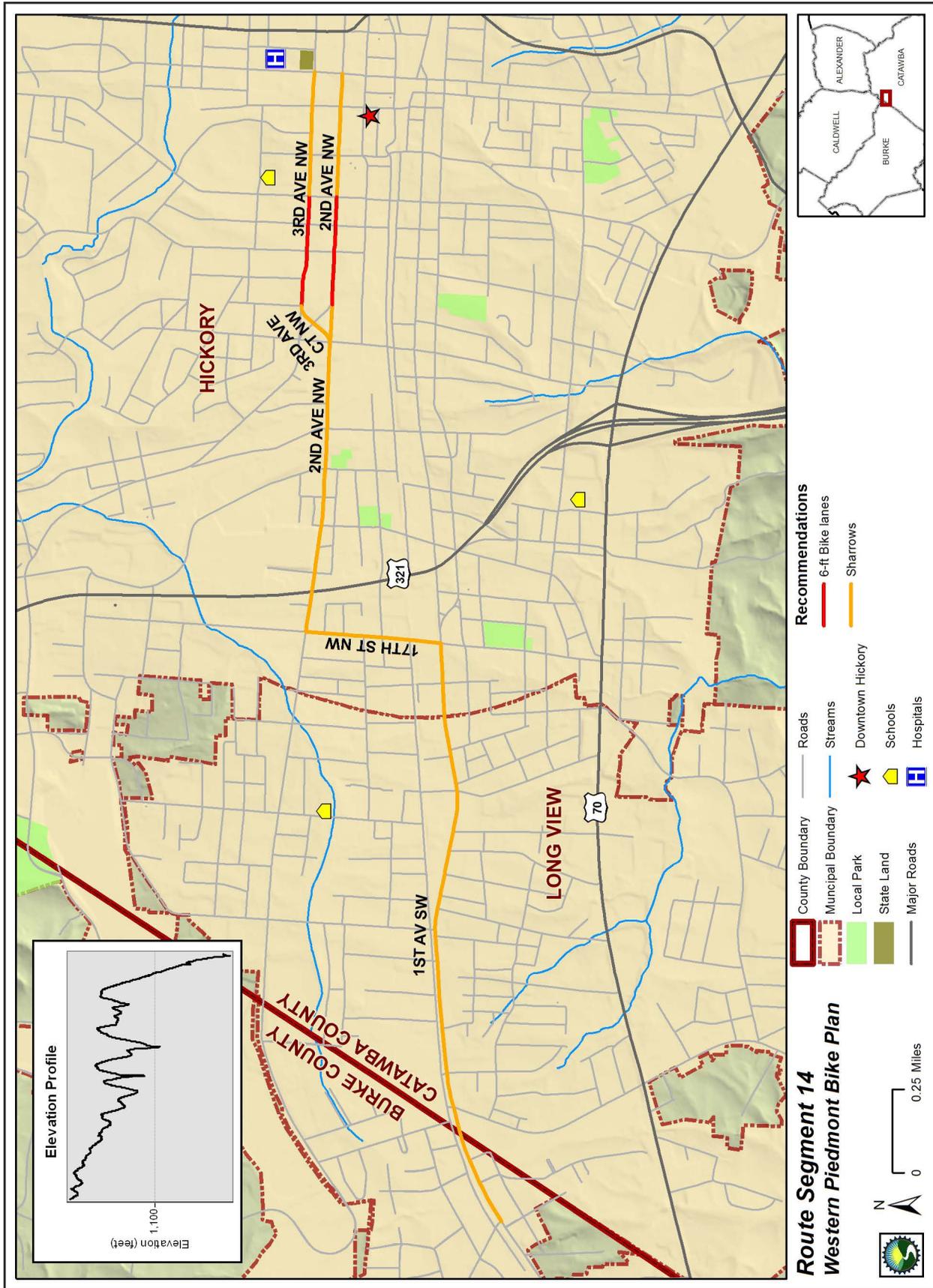
Recommendations

The recommendation for Route Segment 14 consists of 4.06 miles sharrows on 1st Avenue SW, 17th Street NW, 2nd Avenue NW, 3rd Avenue NW, and 3rd Avenue Court NW; and 0.66 miles of 4-ft bike lanes on 2nd Avenue NW and 3rd Avenue NW.



Along 1st Avenue SW from 39th NW to 9th Street SW

Figure 3-26
Route Segment 14



Recommendations

- 6-ft Bike lanes
- Sharrows

Roads
Streams
Downtown Hickory
Schools
Hospitals

County Boundary
Municipal Boundary
Local Park
State Land
Major Roads

Route Segment 14
Western Piedmont Bicycle Plan

0 0.25 Miles

N

Route Segment 14

1st Avenue SW from 39th Street NW to 17th Street NW

- *2 Lanes/45 mph/24-ft wide to 2 Lanes/35 mph/24-ft wide; AADT = 5,200 to 6,900*
- Curb
- 1st Avenue in Longview – narrow, no room to widen, curb, inconsistent shoulder width
- South of road is sidewalk
- Consider sharrows

17 Street NW from 1st Avenue SW to 2nd Avenue NW

- *2 Lanes/35 mph/30-ft wide; AADT = 4,600*
- Curb and gutter; Sidewalk (from Main Avenue Drive NW to 2nd Avenue NW)
- Railroad
- Consider sharrows

2nd Avenue NW from 17th Street NW to 3rd Avenue Drive NW

- *4 Lanes/35 mph/40-ft wide to 2 Lanes/35 mph/30-ft wide; AADT = 6,200 to 9,400*
- Curb and gutter
- Intersects with US 321
- Railroad east of US 321
- Consider sharrows

2nd Avenue NW from 3rd Avenue Drive NW to 4th Street NW

- *2 Lanes/25 mph/30-ft wide; AADT = 6,300*
- One Way toward Downtown Hickory
- Curb and gutter; Sidewalk on both sides
- Consider striping 6-ft bicycle lanes

2nd Avenue NW from 4th Street NW to N Center St

- *2 Lanes/25 mph/30-ft wide; AADT = 6,400*
- On Street parking in Downtown Hickory
- Curb and gutter, Sidewalks on both sides
- Consider sharrows

3rd Avenue NW from N Center St to 4th Street NW

- *2 Lanes/25 mph/26-ft wide; AADT = 5,300*
- On Street parking in Downtown Hickory
- Curb and gutter, Sidewalks on both sides

- One way
- Consider sharrows

3rd Avenue NW from 4th Street NW to 8th Street NW

- *2 Lanes/25 mph/30-ft wide; AADT = 5,300*
- One Way away from Downtown Hickory
- Curb and gutter; Sidewalk on both sides
- Consider striping 6-ft bicycle lanes

3rd Avenue Court NW from 8th Street NW to 2nd Avenue NW

- *2 Lanes/35 mph/28-ft wide; AADT = 2,400*
- Curb and gutter, sidewalk
- Consider sharrows

Route Segment 15

Project Extent: From 6th Street NW (Hickory) to 2nd Street SW (Town of Catawba)

Project Total Length: 17.67 Miles

Current Conditions

Route Segment 15 is made up of sections of 8th Avenue Northeast (NE), 5th Street NE, 9th Avenue NE, 9th Avenue Place NE, 8th Street NE, Highland Avenue, US 70A, 1st Street W, 1st Street E, Conover Blvd E (US 70), US 70, West Main Street (US 70), Catawba Street, Old Catawba Street, 4th Avenue Southwest (SW), and 3rd Avenue SW in Catawba County. The City of Hickory's 8th Avenue NE and 5th Street NE are both 35 mph 2-lane major collectors with an AADT count average of 4,800 vpd. Hickory's 9th Avenue NE, 9th Avenue Place NE, and 8th Street NE are 35 mph 2-lane roads. Highland Avenue and US 70A are both 2-lane and 4-lane minor arterials with an AADT count average of 4,600 vpd. Conover's 1st Street W and 1st Street E are 2-lane and 4-lane minor arterials with posted speed limits of 20, 35, and 45 mph with an AADT count average of 14,750 vpd. Conover Boulevard E (US 70), US 70, and West Main Street (US 70) are 35, 45, and 55 mph minor arterials with an AADT count average of 6,900 vpd and truck AADT average of 652. Catawba Street, Old Catawba Street, and 4th Avenue SW are all 2-lane collectors with posted speed limits of 35, 45, and 55 mph and an AADT average of 1,500 vpd. The Town of Catawba's 3rd Avenue SW is a 35 mph minor arterial with an AADT count of 5,000 vpd.

Justification

Route Segment 15 connects the Cities of Hickory and Conover with the Towns of Claremont and Catawba. This segment goes by Lenoir-Rhyne University in Hickory and through Downtown Conover and Downtown Claremont. This segment also links with other Catawba County high priority routes in Hickory to create a network of other connections to Alexander County, Burke County, and the Town of Brookford.

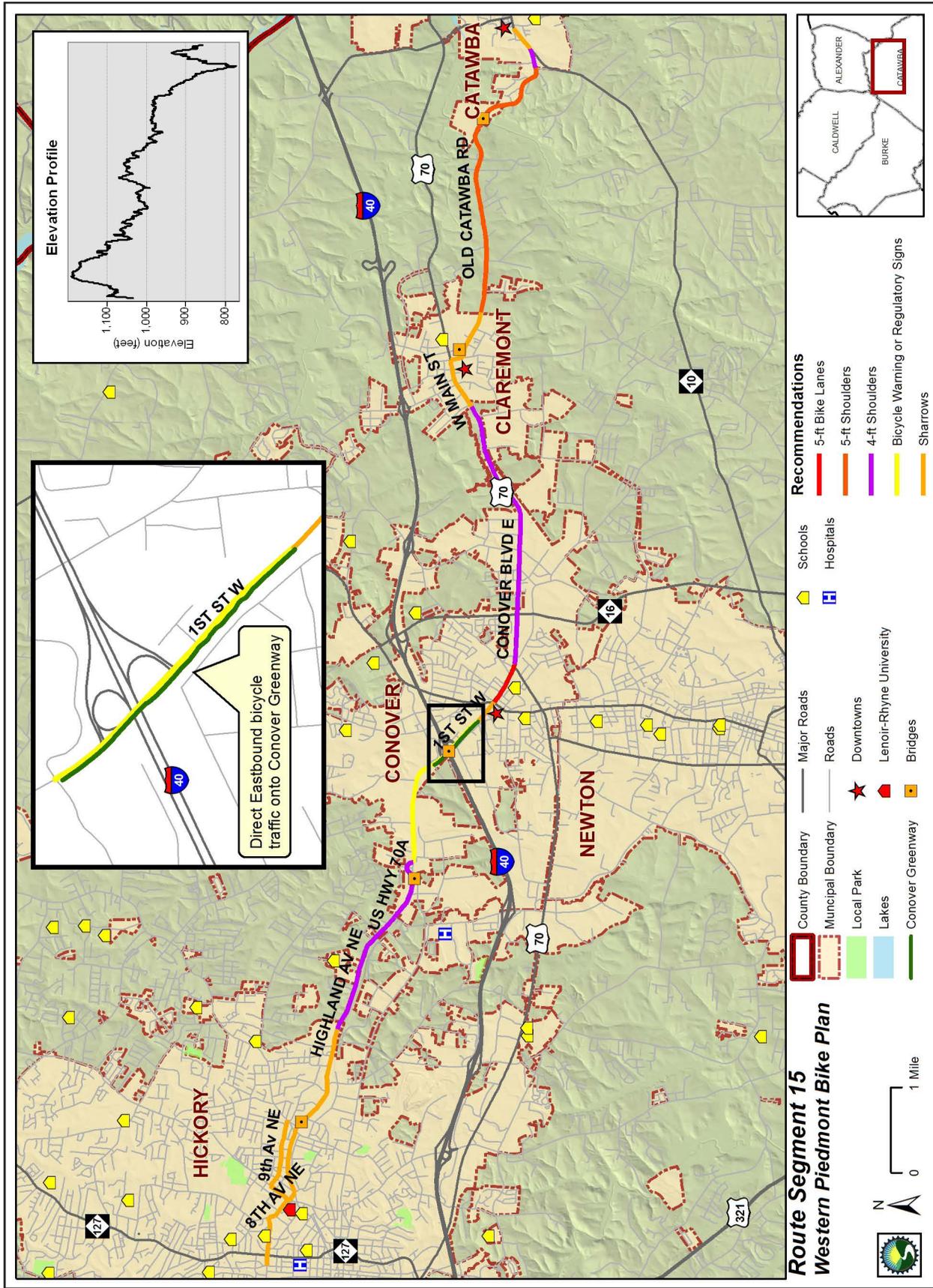
Recommendations

The recommendations for Route Segment 15 consists of 8.99 miles of 4-foot shoulders on 4th Avenue SW, Conover Boulevard E, US 70, Highland Avenue, Old Catawba Road, and US 70A; and 6.18 miles of sharrows on 1st Street W, 3rd Avenue SW, 5th Street NE, 8th Avenue NE, 8th Street NE, 9th Avenue NE, 9th Avenue Place NE, Catawba Street, Highland Avenue NE, S Depot Street, and W Main Street; and 1.99 miles of bicycle warning or regulatory signs on 1st Street W and direct Eastbound bicycle traffic on 1st Street W to the Conover Greenway; and 0.51 miles of 5-foot bike lanes on 1st Street E.



Along Old Catawba Street from Bethlehem Drive to 5th Street SW

Figure 3-27
Route Segment 15



Route Segment 15

8th Avenue NE from North Center Street to 5th Street NE

- 2 Lanes/35 mph/24-ft wide, AADT = 4,000
- Curb and Gutter, Sidewalks on both sides
- Median Divided
- On Street Parking (Lenoir-Rhyne University)
- Consider sharrows

5th Street NE from 8th Avenue NE to Stasavich Place NE

- 3 Lanes/35 mph/34-ft wide, AADT = 7,000
- Curb and Gutter, Sidewalks on both sides
- Lenoir-Rhyne University
- Consider sharrows

8th Avenue NE from Stasavich Place NE to Highland Avenue

- 2 Lanes/35 mph/62-ft wide to 3 Lanes/35 mph/36-ft wide, AADT = 7,000
- Curb and Gutter, sidewalks on both
- On Street Parking (Lenoir-Rhyne University)
- Consider sharrows

9th Avenue NE from 16th Street NE to 9th Street NE

- 2 Lanes/35 mph/24-ft wide, AADT = N/A
- Curb and Gutter, sidewalks on both sides
- One Way
- Consider sharrows

8th Street NE from 9th Street NE to Highland Avenue

- 2 Lanes/35 mph/30-ft wide to 4 Lanes/35 mph/ 50-ft wide, AADT = N/A
- Curb and Gutter, sidewalks on both sides
- One Way

- Consider sharrows

Highland Avenue from 8th Avenue to East of McDonald Parkway SE (Sherrill Furniture Company)

- 2 Lanes/35 mph/29-ft to 2 Lanes/45 mph/29-ft, AADT = 5,600 to 6,700
- Curb and Gutter to 18th Street NE
- Curb and Gutter from bridge to 23rd St Drive NE
- One Way from 8th Avenue to 16th St NE
- Bridge over McDonald Parkway – 2 Lanes with 3-ft shoulders
- No shoulder where curb and gutter isn't present
- Consider sharrows

Highland Avenue from East of McDonald Parkway SE (Sherrill Furniture Company) to Fairgrove Church Road SE

- 2 Lanes/45 mph/22-ft, AADT = 5,600 to 6,700
- No shoulder
- Consider widening the shoulder to 4-ft

US 70A from Fairgrove Church Road SE to 1st Street W

- 2 Lanes/35 mph/22-ft wide, AADT = 3,100
- Curb and Gutter from 1st W to Conwave Co (industry)
- No shoulder from Conwave to Fairgrove Church
- Consider widening the shoulder to 4-ft

1st Street W from US 70A to Punch Loop Road SW

- 4 Lanes/45 mph/60-ft wide, AADT = 16,000 to 19,000
- Curb and Gutter
- 5th turn lane

- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B

1st Street W from Punch Loop Road SW to end of Conover Greenway

- *4 Lanes/45 mph/60-ft wide to 2 Lane/35 mph/22-ft wide, AADT = 14,000 to 19,000*
- Curb and Gutter
- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B
- Consider directing Eastbound bicycle traffic to Conover Greenway

1st Street W from end of Conover Greenway to 2nd Avenue NE

- *2 Lanes/35 mph/22-ft wide to 4 Lanes/20 mph/54-ft wide, AADT = 14,000*
- Curb and Gutter
- On Street parking between 3rd Avenue NW and 1st Avenue NW
- Downtown Conover
- Consider sharrows

1st St E from 2nd Avenue NE to east of Rock Barn Road NE

- *4 Lanes/35 mph/60-ft wide to 2 Lanes/35 mph/22-ft wide, AADT = 6,900*
- Curb and Gutter
- Downtown Conover
- Consider road diet to create 5-ft bike lanes
- Consider sharrows if road diet isn't implemented

Conover Blvd E (US 70) from east of Rock Barn Road NE to Heart Drive

- *2 Lanes/45 mph/22-ft wide to 4 Lanes/45 mph/60-ft wide to 2 Lanes/45 mph/22-ft wide, AADT = 6,700 to 8,000*
- Curb and sidewalks between Rock Barn and Adrian Avenue

- No shoulders
- Consider widening the shoulders to 4-ft

US 70 from Heart Drive to west of Dogwood Drive

- *2 Lanes/45 mph/22-ft wide, AADT = 5,700*
- Minimal shoulders
- Consider widening the shoulders to 4-ft

West Main Street (US 70) from West of Dogwood Drive to Depot Street

- *2 Lanes/35 mph/22-ft wide, AADT = 5,700*
- Curb with some gutter
- Downtown Claremont with On Street Parking
- Consider sharrows

Depot Street from Main Street to Catawba Street

- *2 Lanes/35 mph/26-ft wide, AADT = N/A*
- Curb and some gutter and sidewalk
- Downtown Claremont with On Street Parking
- Consider sharrows

Catawba Street from Depot Street to Bethlehem Drive

- *2 Lanes/35 mph/19-ft wide, AADT = 2,300*
- Sidewalk on South side of road
- Some curb
- No shoulder on North side of road
- Consider sharrows

Old Catawba Street from Bethlehem Drive to 5th Street SW

- *2 Lane/45 mph/19-ft wide to 2 Lanes/55 mph/22-ft wide, AADT = 2,300*
- No shoulder
- Consider widening the shoulders to 5-ft

4th Avenue SW from 5th St SW to 3rd Avenue SW (NC 10)

- 2 Lane/35 mph/22-ft wide, AADT = 700
- No shoulder
- Consider widening the shoulders to 4-ft

3rd Avenue SW (NC 10) from 4th Avenue SW to 2nd Avenue SW

- *2 Lane/35 mph/22-ft wide to 2 Lanes/25 mph/22-ft wide, AADT = 4,500*
- Sidewalk on south side of road
- Minimal shoulder on North side
- Ends in Town of Catawba's Downtown
- Consider sharrows

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Route Segment 16

Project Extent: From Conover Blvd (Conover) to NC 10 (Newton)

Project Total Length: 5.27 Miles

Current Conditions

Route Segment 16 is made up of sections of Emmanuel Church Road, Mclin Creek Road, East 20th Street, Main Avenue, College Avenue and East D Street (NC 10) in Catawba County. Emmanuel Church Road, Mclin Creek Road, and East 20th Street are all 2-lane minor arterials with posted speed limits of 35, 45, and 55 mph and an AADT count average of 4,830 vpd. Main Avenue is a 20 and 35 mph, 2-lane minor arterial with an AADT average of 4,925 vpd and truck AADT count of 277. College Avenue is a 35 mph 2-lane minor arterial with an AADT average of 2,200 vpd and truck AADT average of 75. East C Street is a 2-lane road with a posted speed limit of 25 mph.

Justification

Route Segment 16 connects the City of Newton and Downtown Newton with the City of Conover. This project links with other Catawba County high priority routes in Conover that creates additional connections to the City of Hickory and to the Town of Claremont.

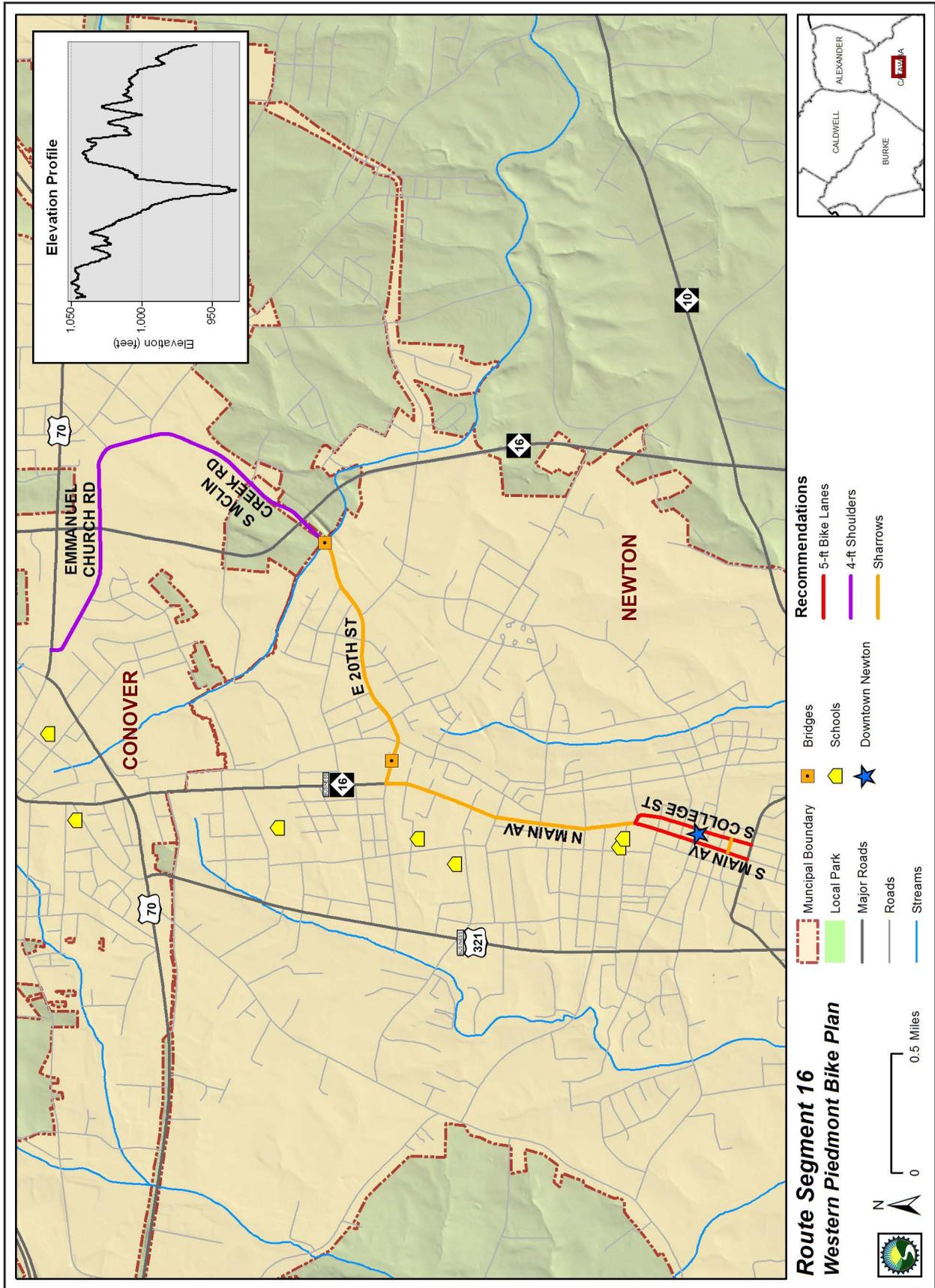
Recommendations

The recommendations for Route Segment 16 consists of 2.24 miles of sharrows on East 20th Street, North Main Street and East C Street; and 2.01 miles 4-foot shoulders on Emmanuel Church Road, and Mclin Creek Road; and 1.02 miles of 5-foot bike lanes on North Main Avenue, South Main Avenue, North College Avenue, and South College Avenue.



Along South College Avenue from East D Street (NC 10) to East A Street

Figure 3-28
Route Segment 16



Route Segment 16

Emmanuel Church Road from Conover Boulevard East to South Mclin Creek Road

- *2 Lanes/35 mph/36-ft wide, AADT = 7,100*
- No paved shoulders
- Consider widening the shoulders to 4-ft

South Mclin Creek Road from Emmanuel Church Road to Bridge

- *2 Lanes/45 mph/36-ft wide, AADT = 2,500*
- No paved shoulders (Emmanuel Church to Kesler Road SE)
- Wide paved shoulders (Kelser Road Southeast to Bridge)
- Bridge (1-ft striped shoulders)
- Consider widening the shoulders to 4-ft

East 20th Street from Bridge to North Main Avenue

- *2 Lane/35 mph/24-ft wide to 2 Lanes/35 mph/36-ft wide to 4 Lanes/35 mph/48-ft wide; AADT = 3,600 to 6,500*
- Wide enough at certain points for bike lanes
- Curb and Gutter
- Consider sharrows

North Main Avenue (Bus 16) from 20th Street to North College Avenue

- *2 Lane/35 mph/27-ft wide to 2 Lane/20 mph/27-ft wide to 2 Lane/35 mph/25-ft wide; AADT = 6,700*
- Curb, gutter, sidewalk
- On Street Parking (near Depot and Downtown Newton)
- One way (North College Avenue to West A Street)
- Consider sharrows

North Main Avenue (Bus 16) from North College Avenue to West A Street

- *2 Lanes/35 mph/40-ft wide to 2 Lanes/20 mph/40-ft wide; AADT = 3,200*
- Curb, gutter, sidewalk on both sides
- On Street Parking on both sides (Downtown Newton)
- One way
- Consider road diet to create 5-ft bike lanes

South Main Avenue (Bus 16) from West A Street to East D Street

- *2 Lanes/20 mph/40-ft wide; AADT = 2,600*
- Curb, gutter, sidewalk on both sides
- On Street Parking on both sides (Downtown Newton)
- One way
- Consider road diet to create 5-ft bike lanes

East C Street South Main Avenue to South College Avenue

- *2 Lane/20 mph/24-ft wide; AADT = N/A*
- Curb and gutter
- Downtown Newton
- Consider sharrows

South College Avenue from East D Street (NC 10) to East A Street

- *2 Lane/35 mph/36-ft wide to 2 Lane/35 mph/40-ft wide; AADT = 1,900*
- Curb, gutter, sidewalk
- On Street Parking (Downtown Newton)
- One way
- Consider road diet to create 5-ft bike lanes

North College Avenue from East A Street to North Main Street

- *2 Lane/35 mph/40-ft wide; AADT = 1,900*
- Curb, gutter, sidewalk

- On Street Parking (Downtown Newton)
- One way
- Consider road diet to create 5-ft bike lanes

Route Segment 17

Project Extent: From Highland Avenue (Hickory) to Alexander County Line
Project Total Length: 10.78 Miles

Current Conditions

Route Segment 17 is made up of sections of 16th Street Northeast (NE), 12th Avenue NE, Springs Road NE, Springs Road, and NC 16 in Catawba County. Springs Road NE, 16th Street NE, and 12th Avenue NE are all 4-lane minor arterials with posted speed limits of 35 and 45 mph and an AADT count average of 19,170 vpd. Springs Road is a 45 mph, 2-lane minor arterial with an AADT count average of 8,130 vpd. NC 16 is a 50 and 55 mph, 2-lane minor arterial with an AADT count of 13,000 vpd and truck AADT count average of 675.

Justification

Route Segment 17 connects the city of Hickory to Alexander County. This project links with other Catawba County high priority routes in Hickory that creates additional connections throughout Hickory and Conover.

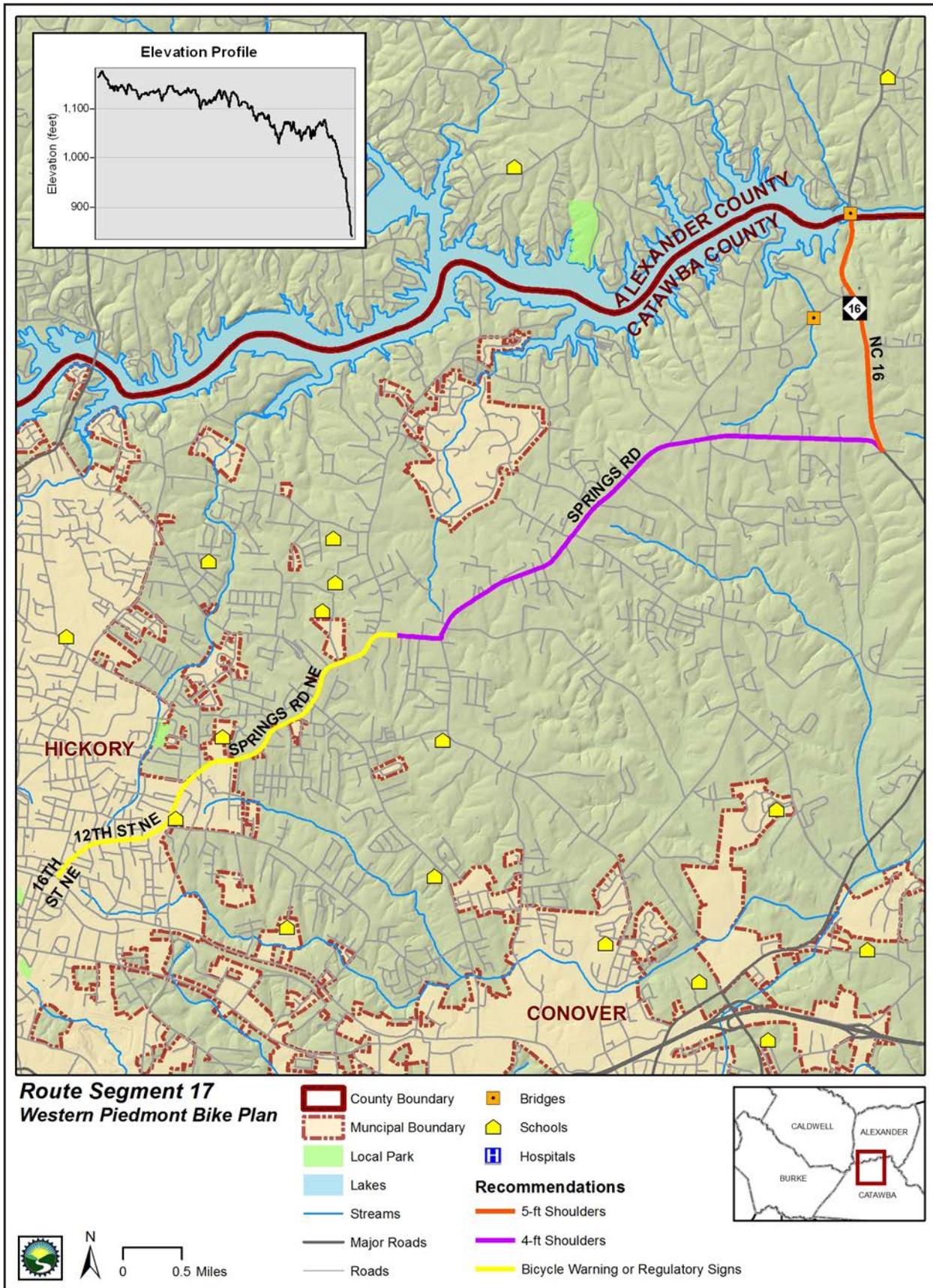
Recommendations

The recommendations for Route Segment 17 consist of 4.85 miles of signs and 4-foot shoulders on Springs Road ; and 3.83 miles of bicycle warning or regulatory signs on 16th Street NE, 12th Avenue NE, and Springs Road NE; and 2.1 miles of 5-foot shoulders on NC 16.



Along 12th Street NE from 18th Street NE to 12th Avenue Drive NE

Figure 3-29
Route Segment 17



Route Segment 17

16th Street NE from Highland Avenue Northeast to 18th Street NE

- *4 Lanes/45 mph/64-ft wide, AADT = 17,000*
- Curb and Gutter
- Consider installing NCDOT approved bicycle warning (W11-1 and W16-1P) or regulatory signs (R4-11), sign information can be found in Appendix B

12th St NE from 18th Street NE to 12th Avenue Drive NE

- *4 Lanes/45 mph/64-ft wide, AADT = 16,000*
- Curb and Gutter
- Consider installing NCDOT approved bicycle warning or regulatory signs

Springs Road NE from 18th Street NE to Jeffrey Lane

- *4 Lanes/45 mph/64-ft wide, AADT = 13,000 to 21,000*
- Curb and Gutter
- Consider installing NCDOT approved bicycle warning or regulatory signs

Springs Road from Jeffrey Lane to NC 16

- *2 Lanes/45 mph/24-ft wide, AADT = 8,000 to 13,000*
- No shoulders
- Consider widening the shoulders to 4-ft

NC 16 from Springs Road to Alexander County

- *2 Lanes/50 mph/24-ft wide, AADT = 13,000*
- No shoulder
- Consider widening the shoulders to 5-ft

Tier 2 Segments

Figure 3-30
Route Segment 18

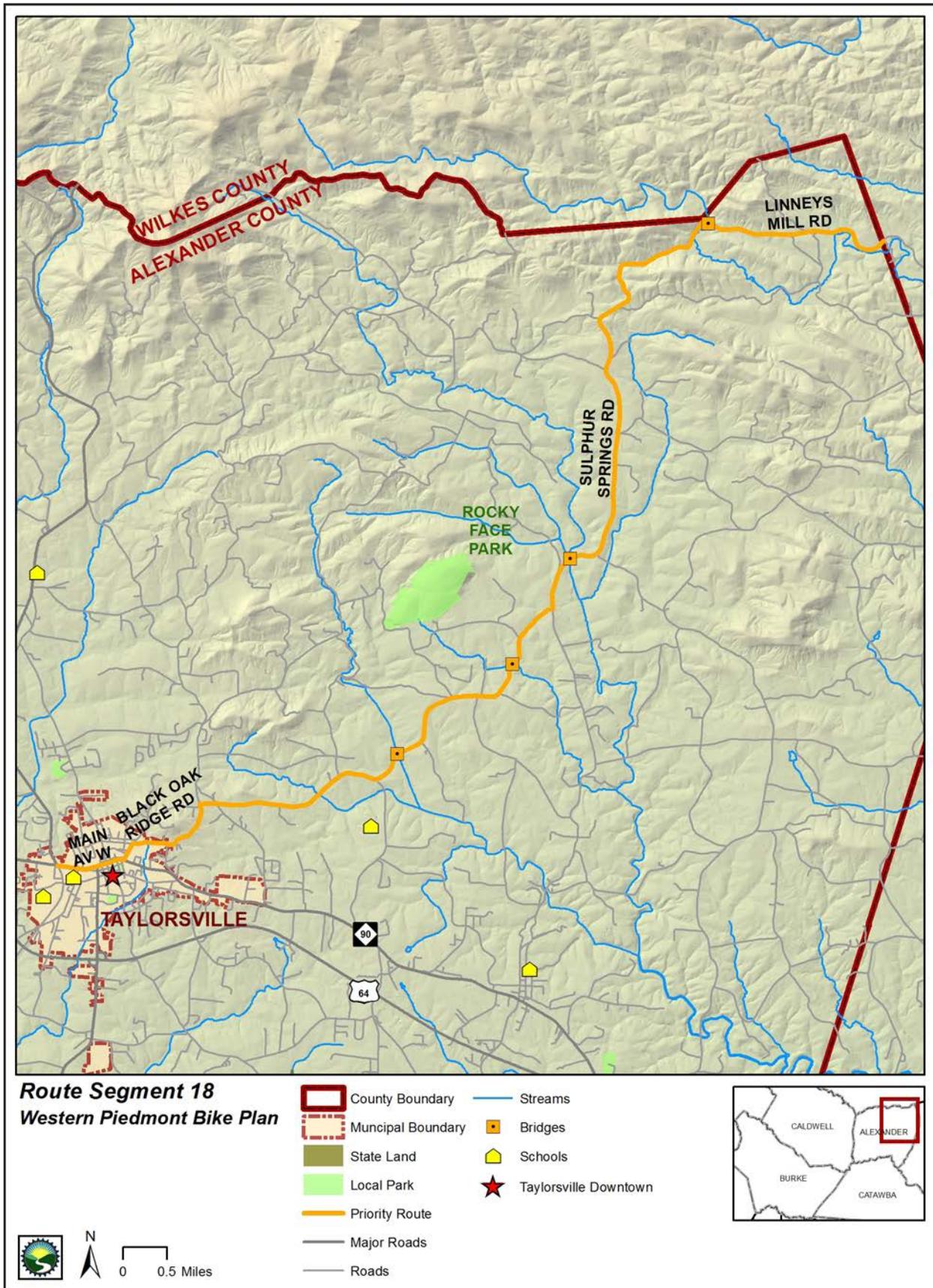


Figure 3-31
Route Segment 19

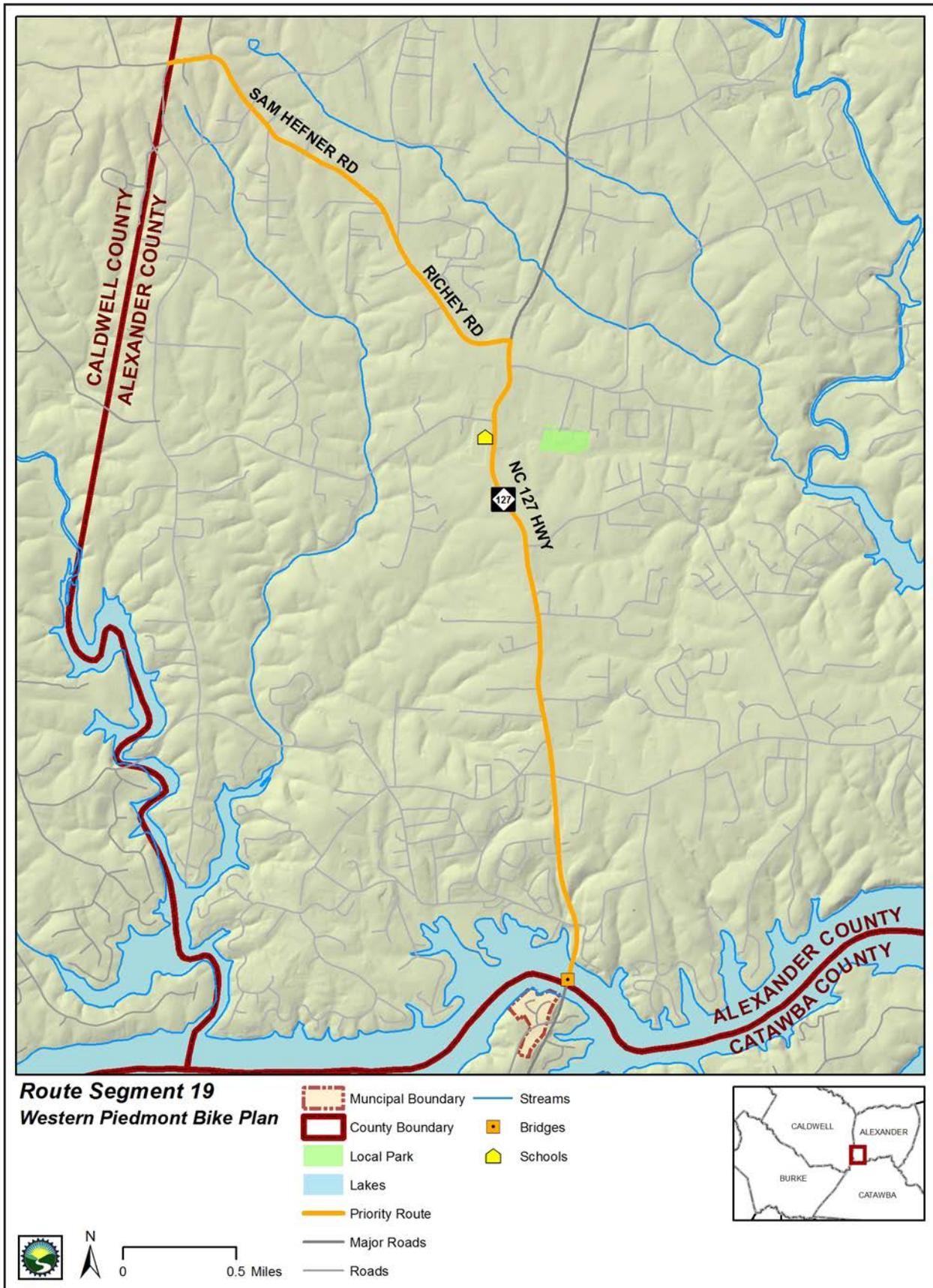


Figure 3-32
Route Segment 20



Figure 3-33
Route Segment 21

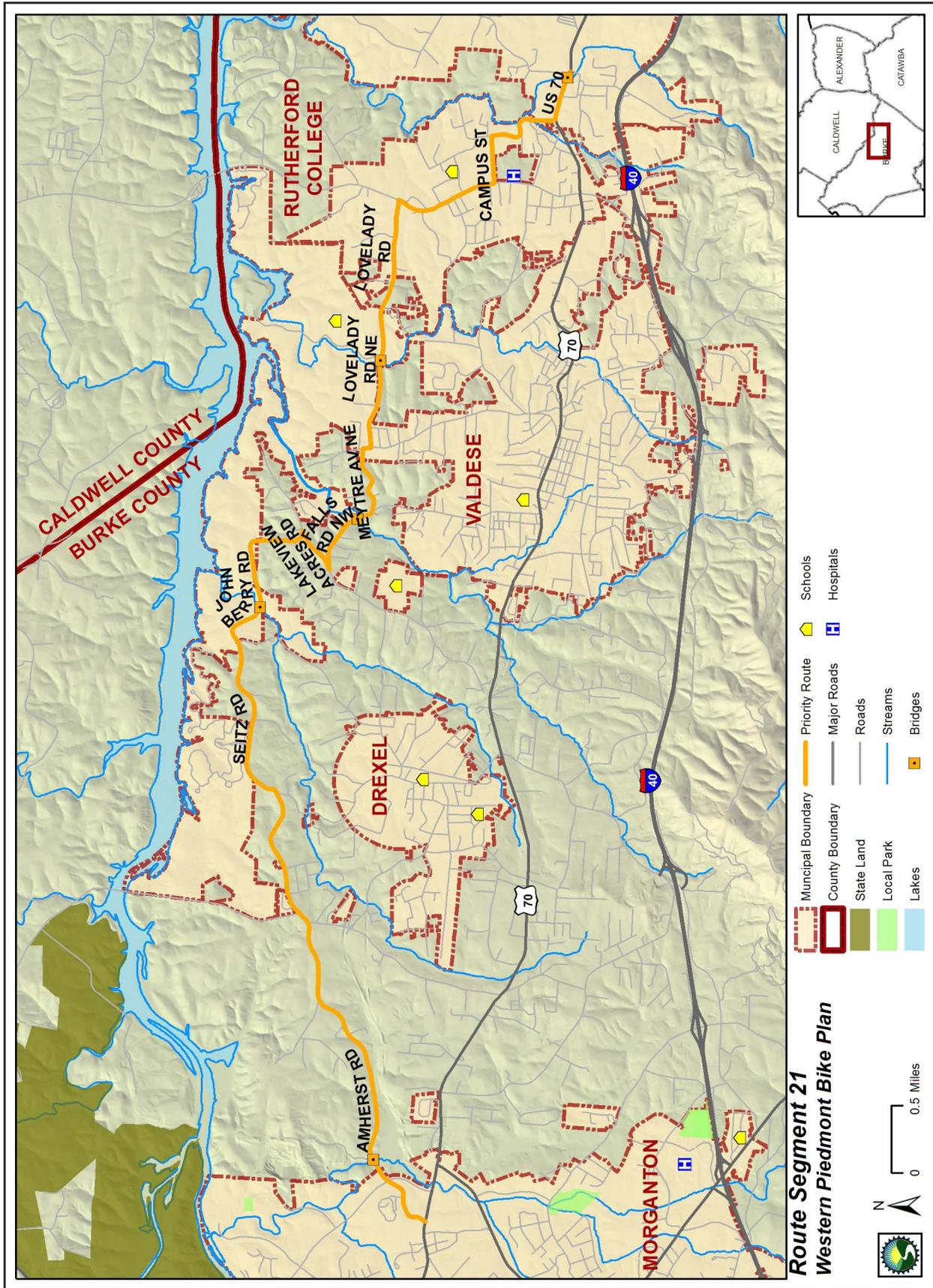


Figure 3-34
Route Segment 22

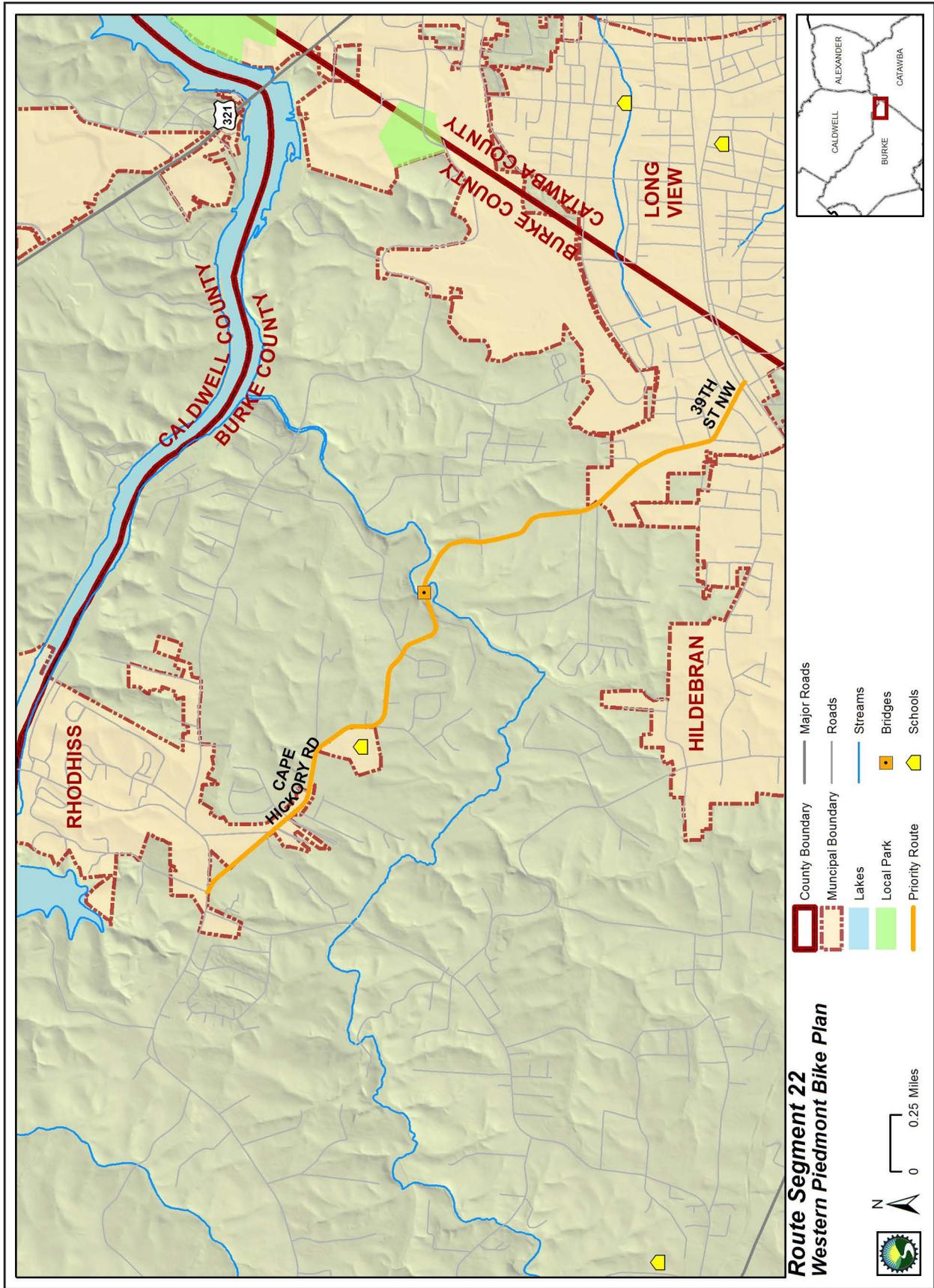


Figure 3-35
Route Segment 23

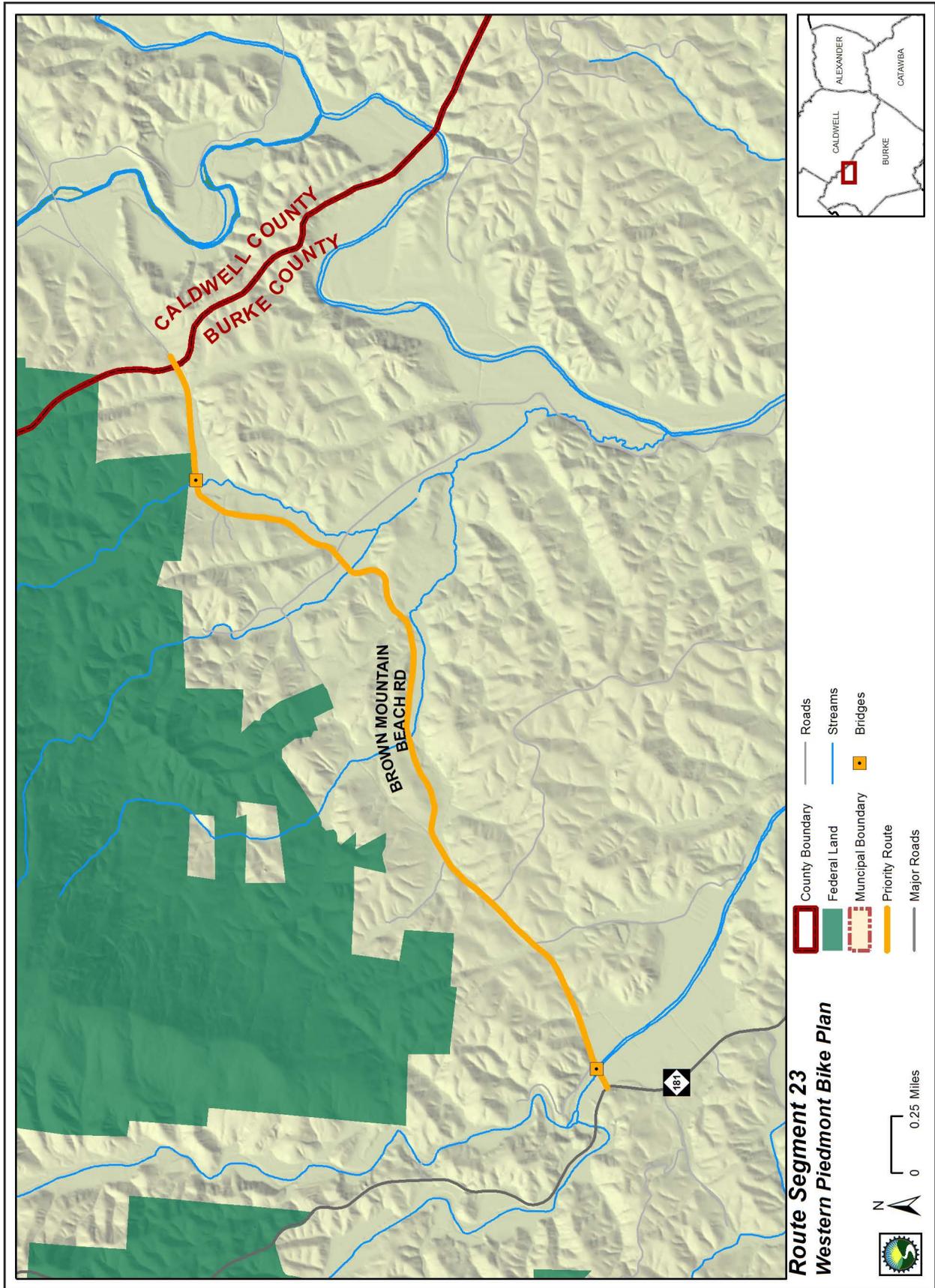


Figure 3-36
Route Segment 24

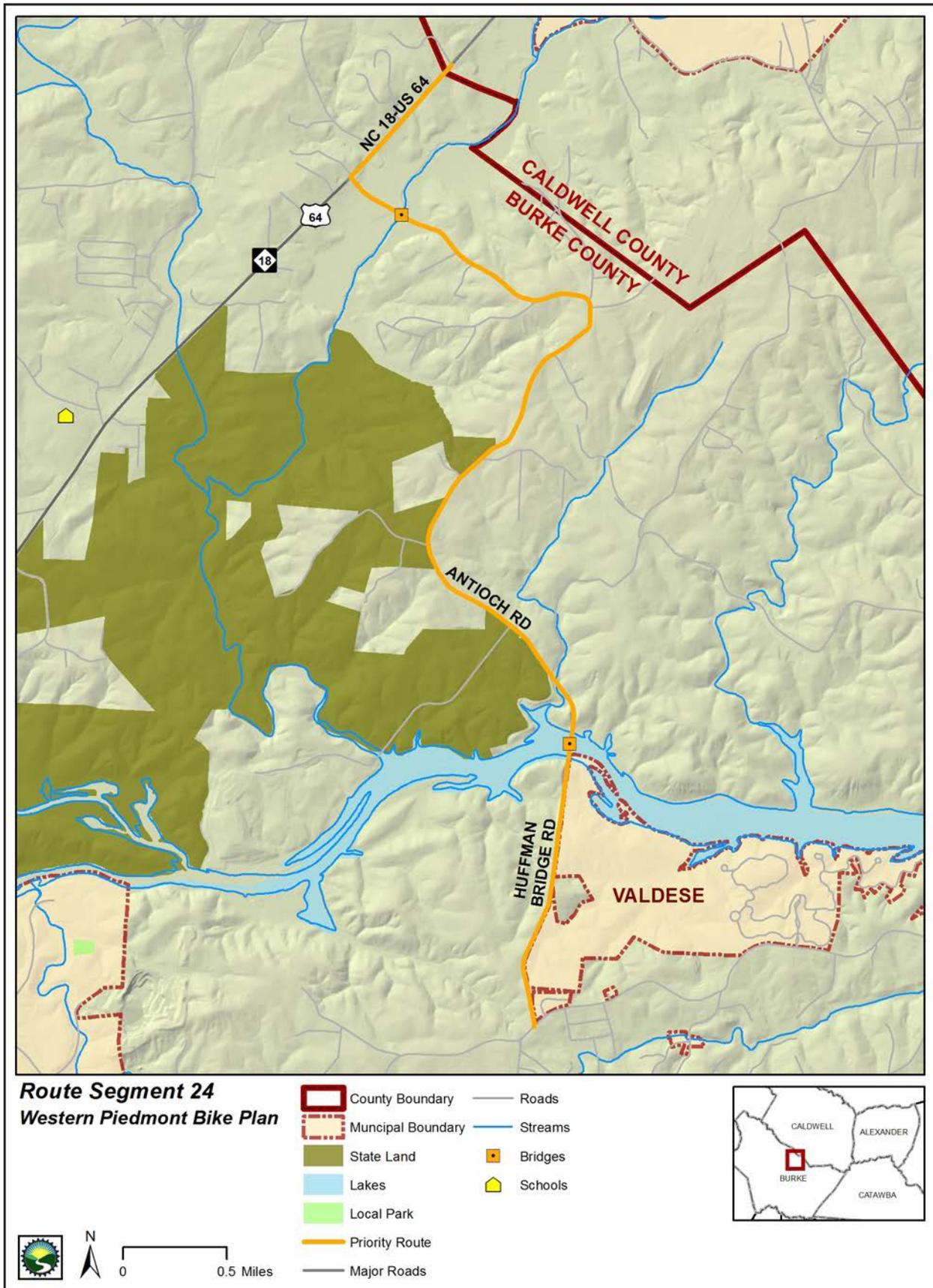


Figure 3-37
Route Segment 25

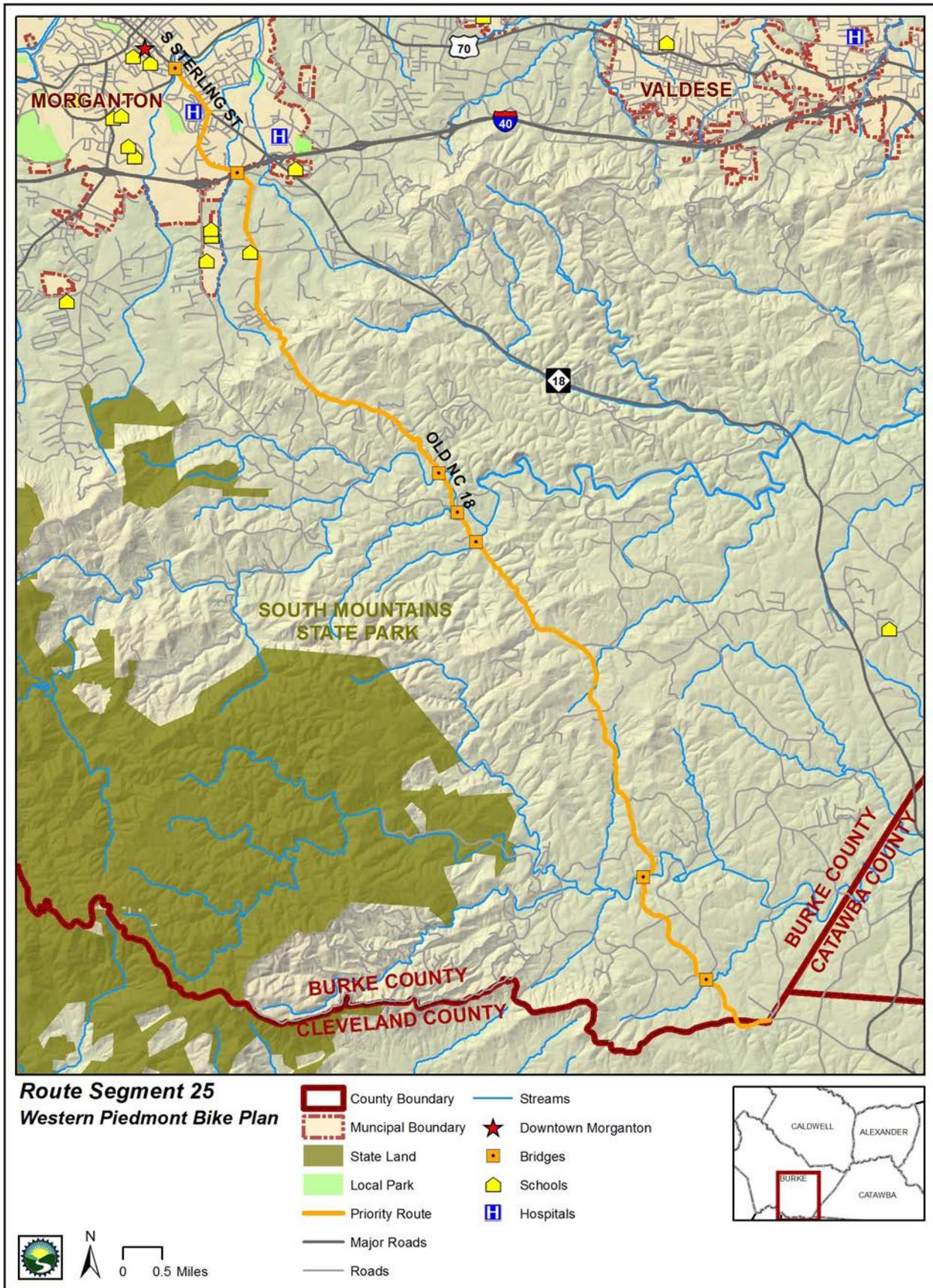


Figure 3-38
Route Segment 26

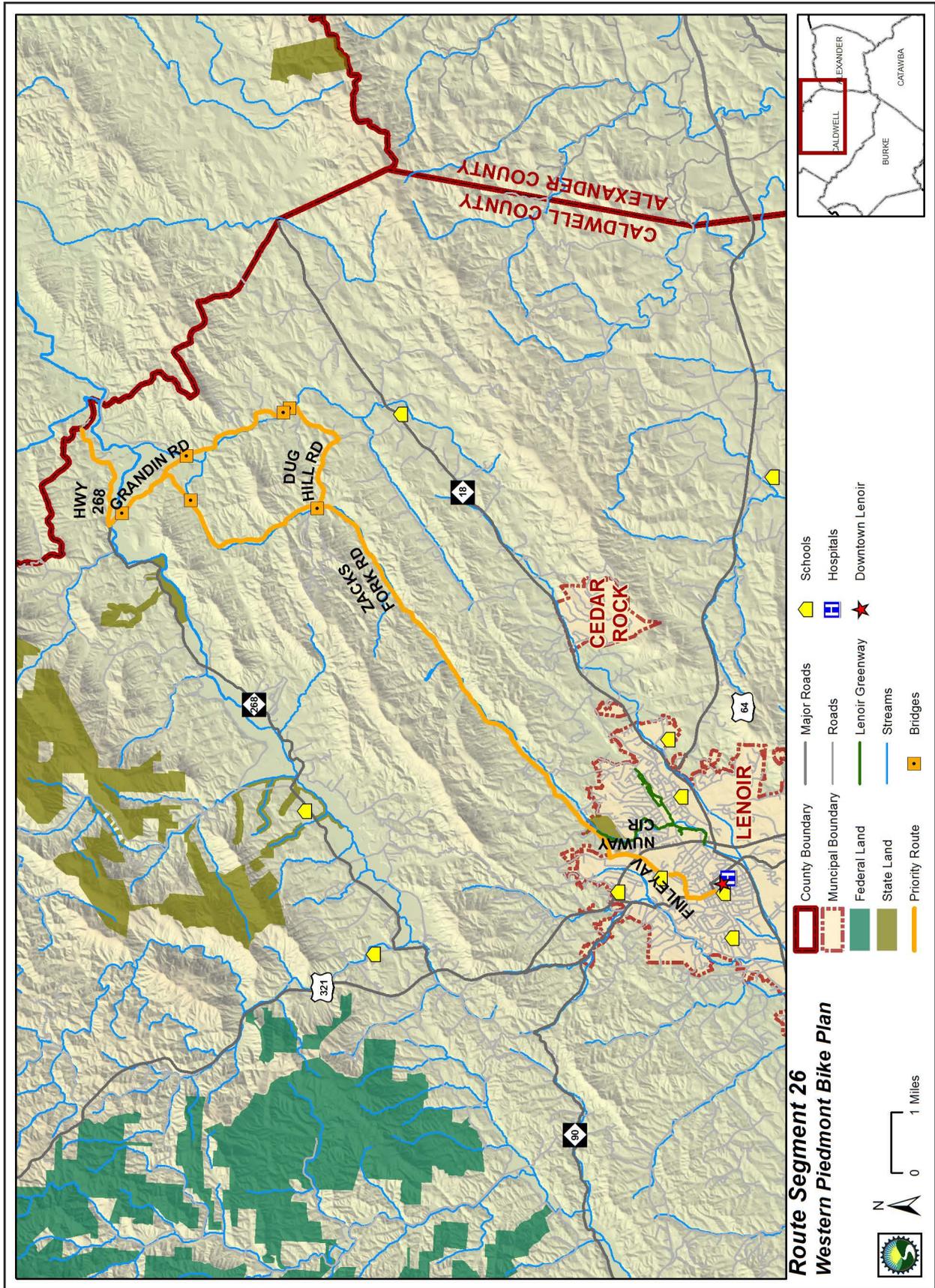


Figure 3-39
Route Segment 27

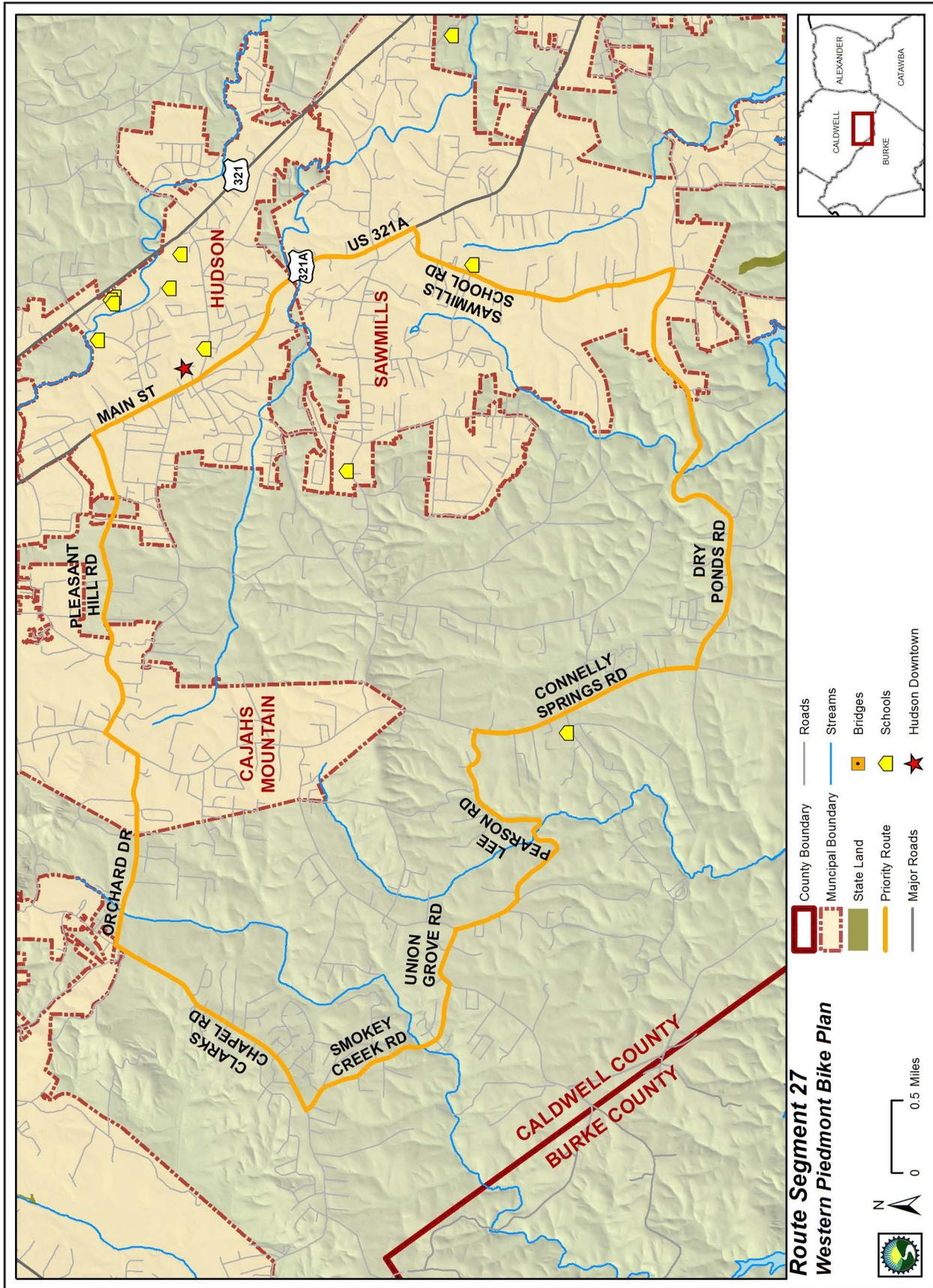


Figure 3-40
Route Segment 28

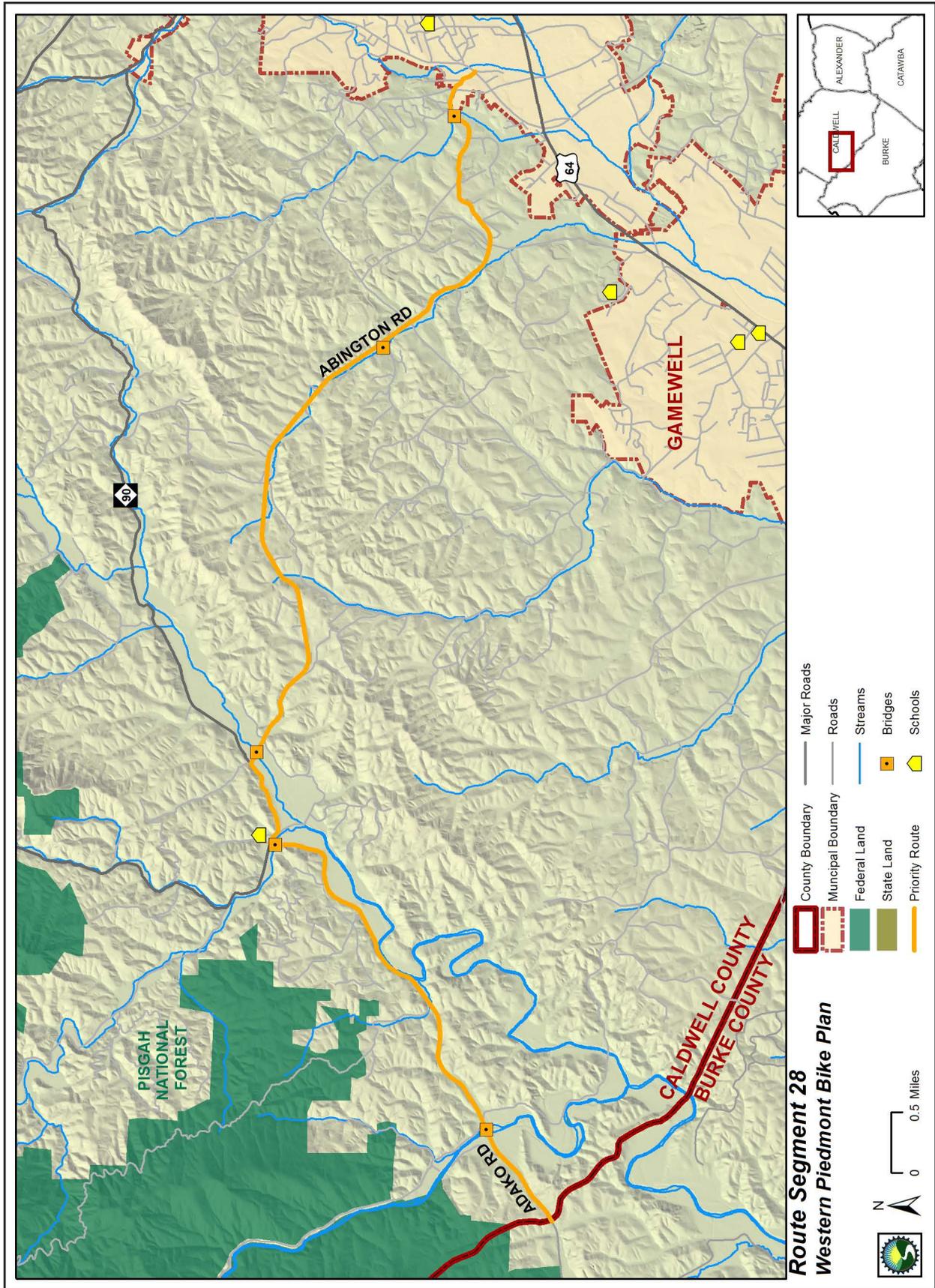


Figure 3-41
Route Segment 29

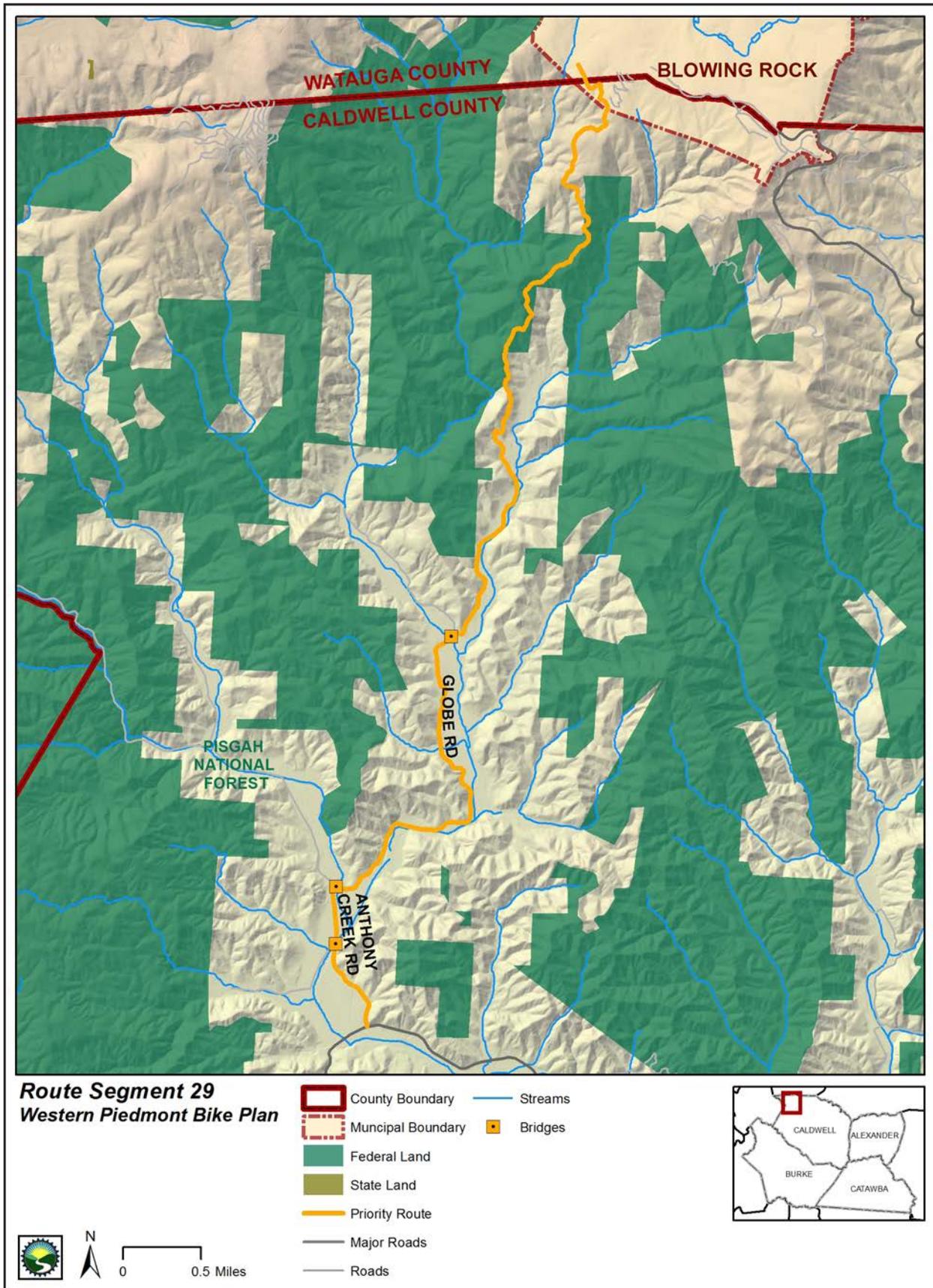


Figure 3-42
Route Segment 30

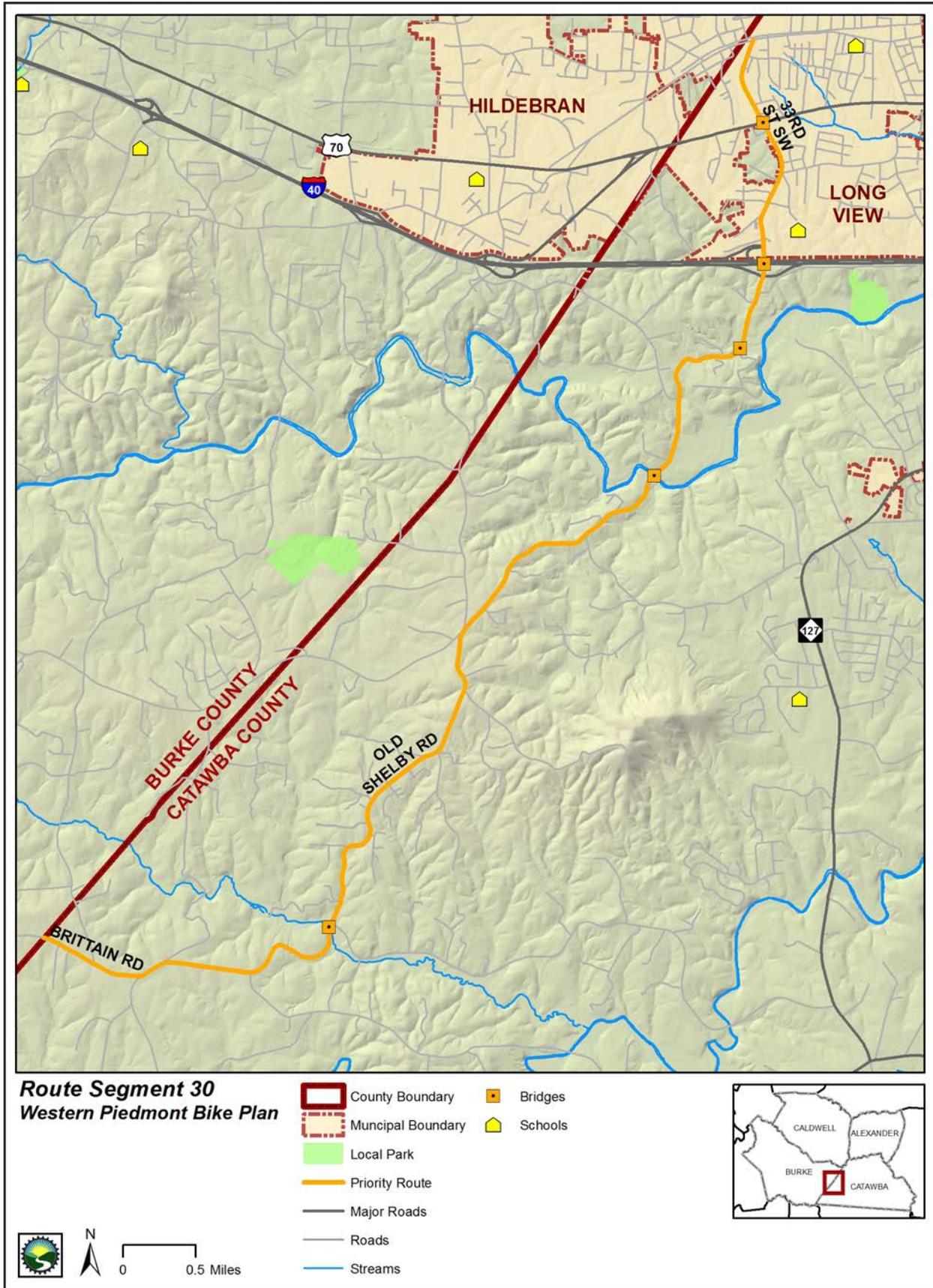


Figure 3-43
Route Segment 31

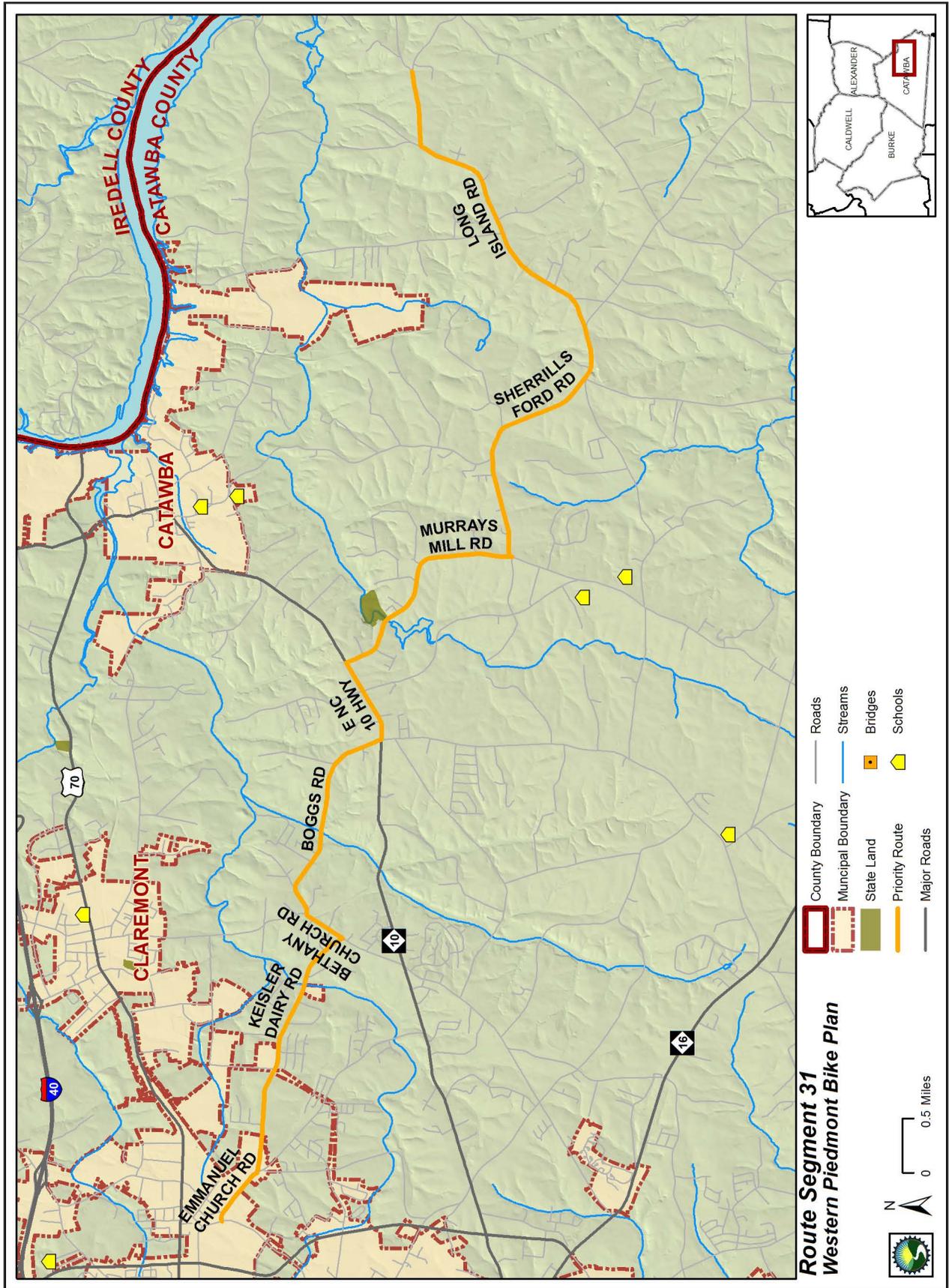


Figure 3-44
Route Segment 32

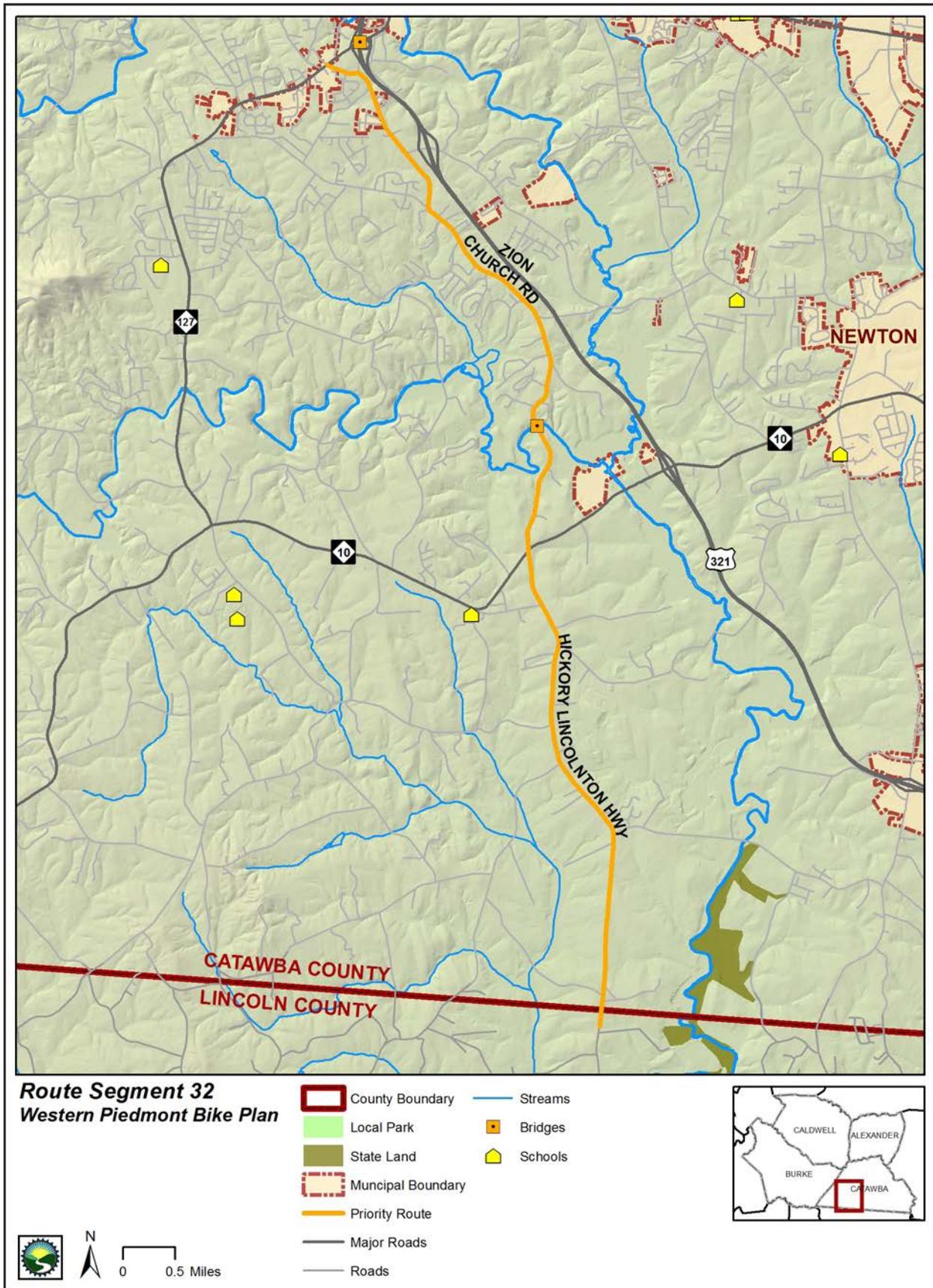
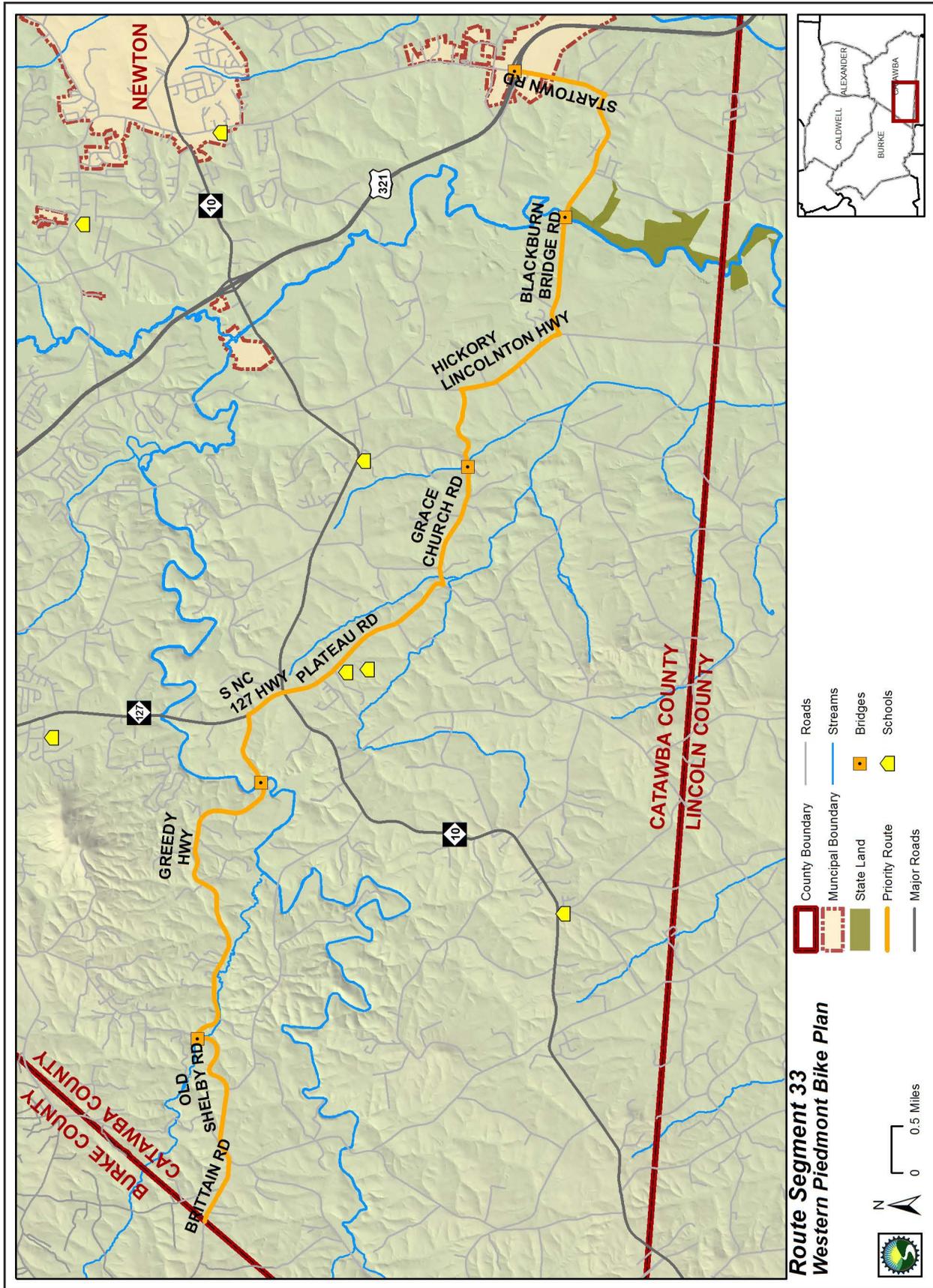


Figure 3-45
Route Segment 33

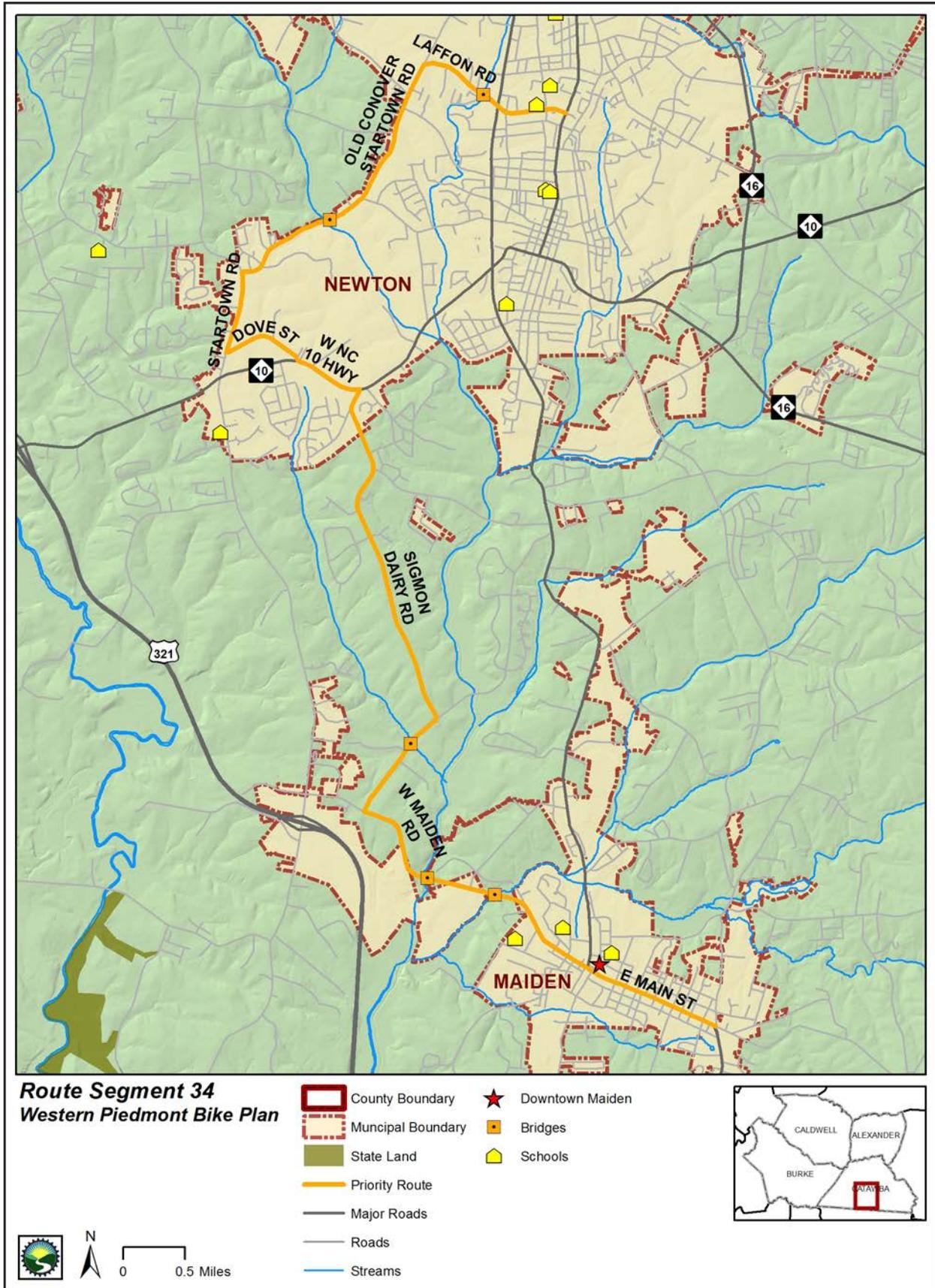


Route Segment 33
Western Piedmont Bike Plan



- County Boundary
- Municipal Boundary
- State Land
- Priority Route
- Major Roads
- Streams
- Bridges
- Schools

Figure 3-46
Route Segment 34



Tier 3 Segments

Figure 3-47
Alexander County Tier 3 Segments

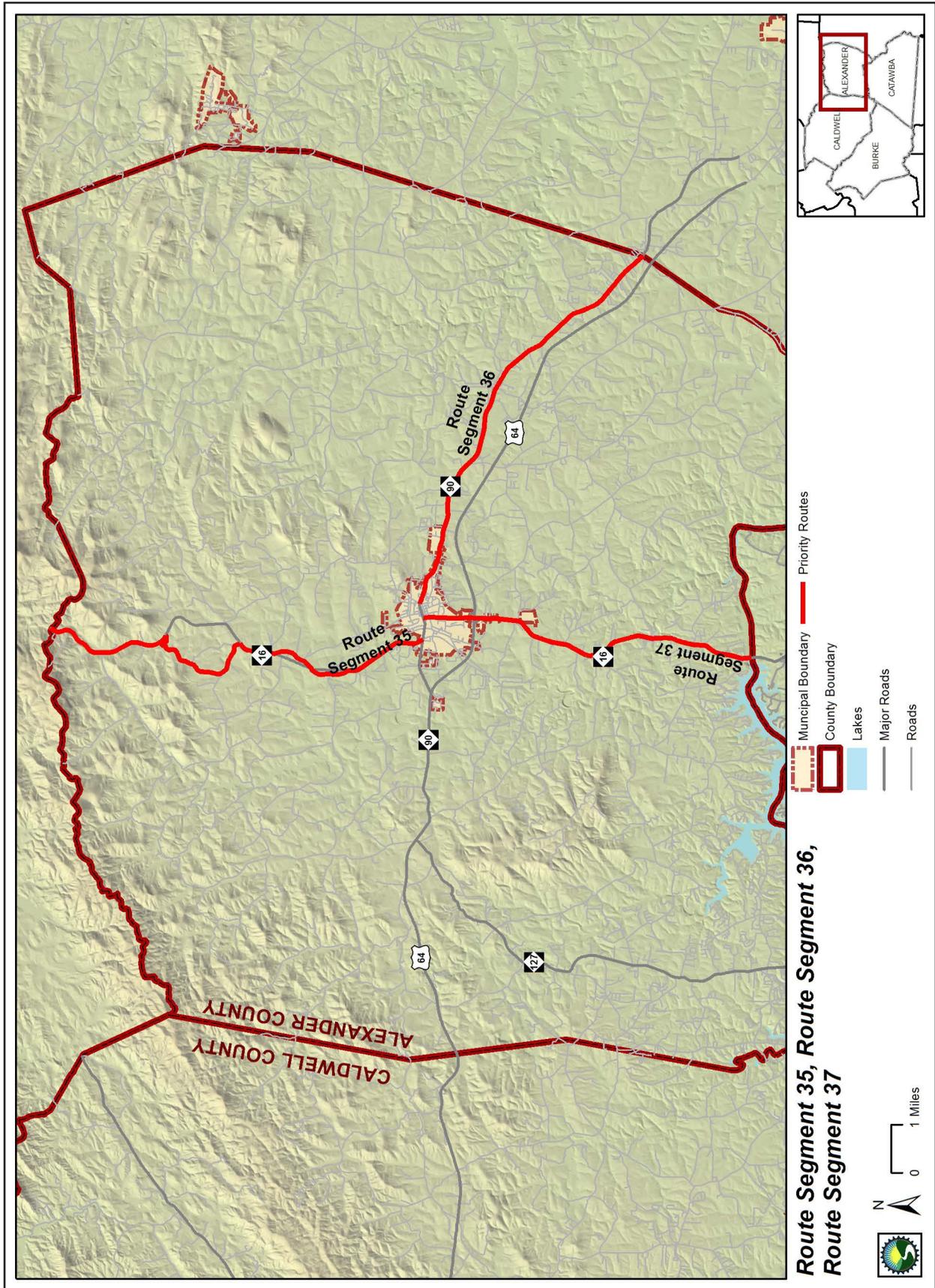


Figure 3-48
Burke County Tier 3 Segments

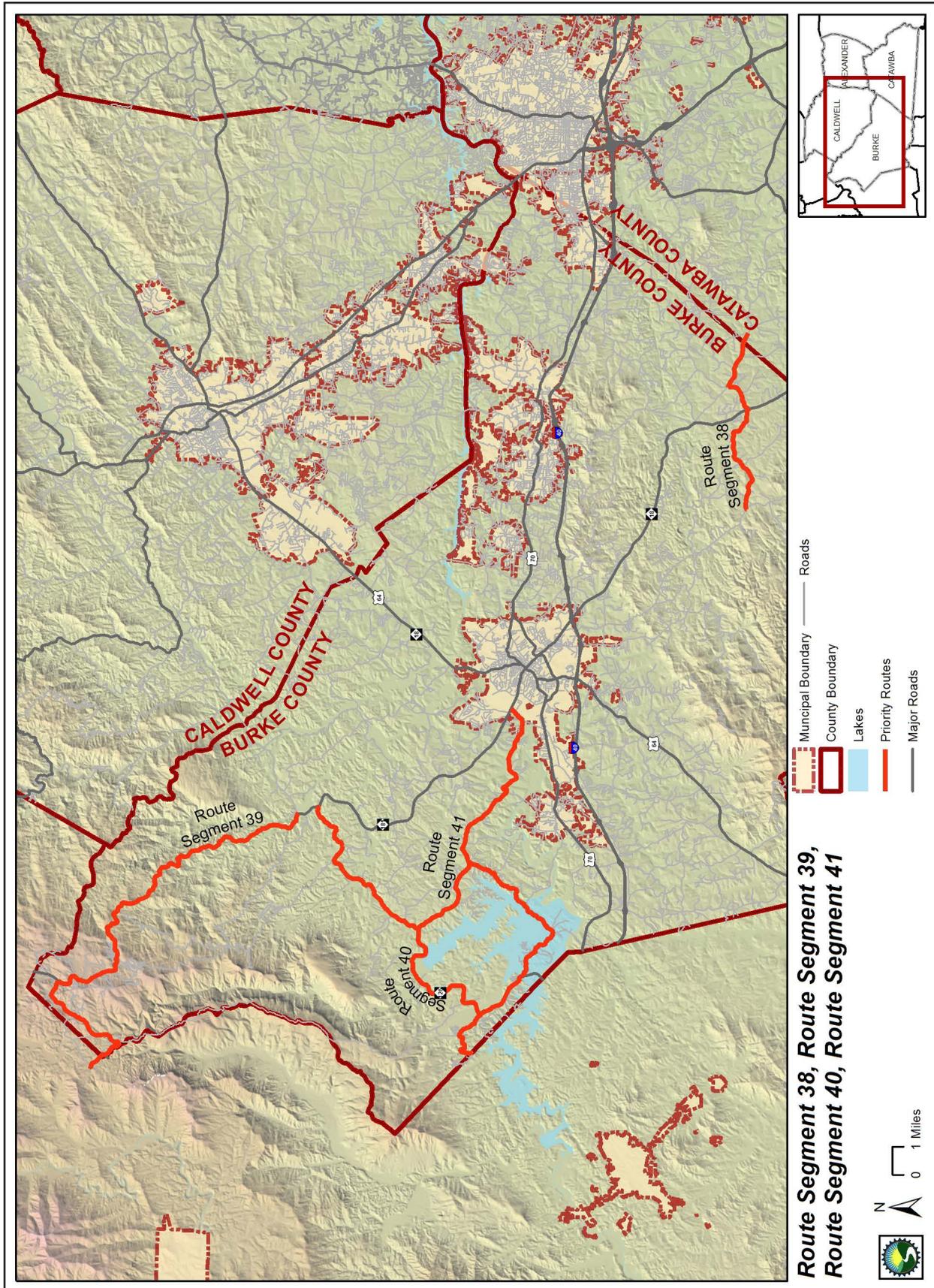


Figure 3-49
Caldwell County Tier 3 Segments

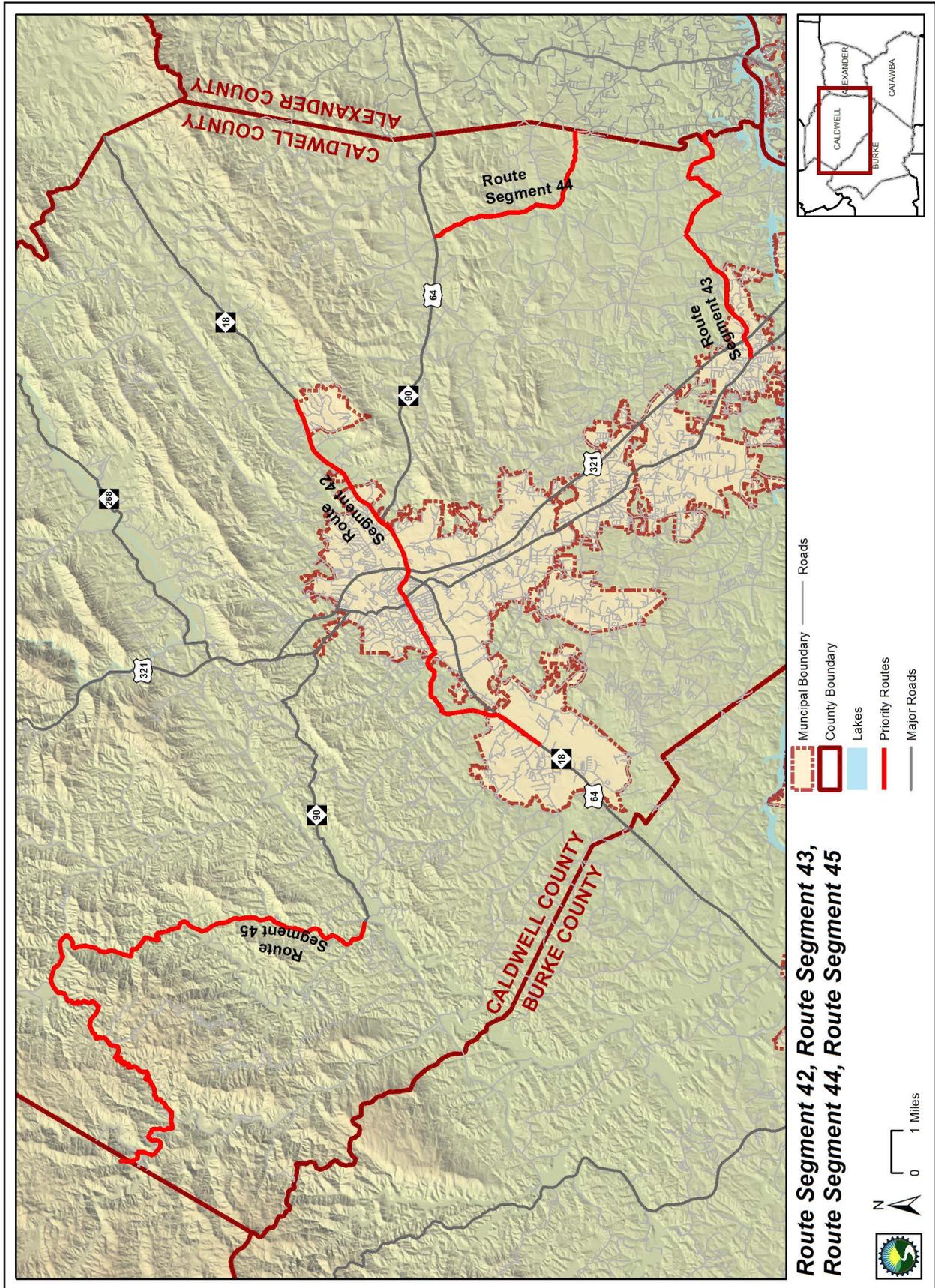
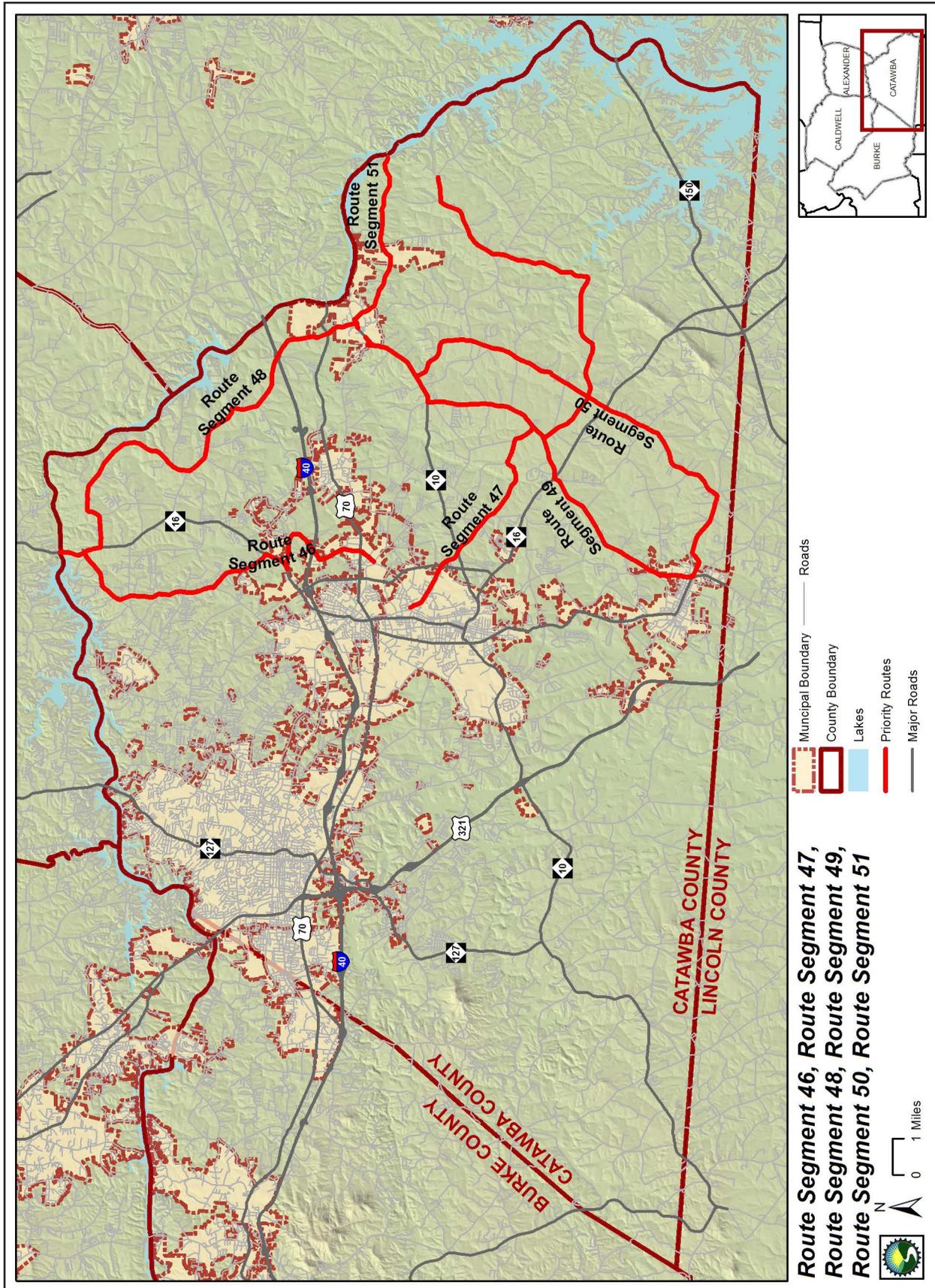


Figure 3-50
Catawba County Tier 3 Segments



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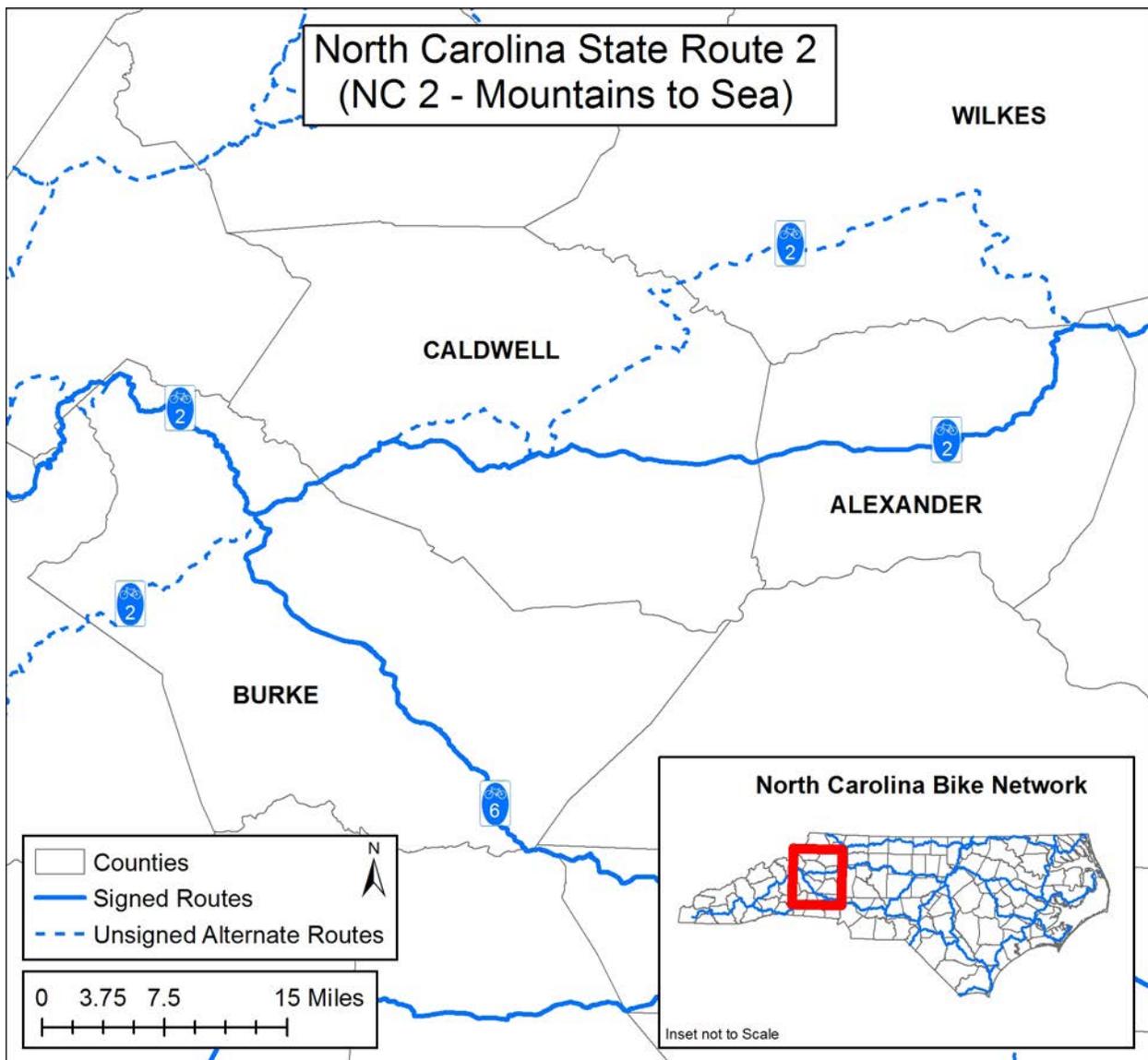


Chapter 4 Additional Bicycle Routes

North Carolina State Route 2

NCDOT’s Division of Bicycle and Pedestrian Transportation has a network of several signed bicycle routes throughout the state. North Carolina State Route 2 (NC 2), or Mountains-to-Sea Trail, is over 700 miles long, around 70 miles of it runs through Burke, Caldwell, and Alexander Counties using sections of NC 181, Brown Mountain Road, Adako Road, Abington Road, Collettsville Road, Harper Avenue, Wilkesboro Road, US 64, NC 90, Linneys Mountain Road, Black Oak Ridge Road, Rocky Springs Road, and Sulphur Springs Road completing a connection from Avery County to Iredell County. This section of NC Route 2 also connects to Morganton, Lenoir, and Taylorsville. A series of unsigned alternative routes, recommended in the State’s WalkBikeNC plan and adopted by NCDOT’s Board of Transportation, would change how the route enters Burke County, and would redirect Lenoir bicycle traffic to Wilkes County on NC 18, bypassing Alexander County. The current route is equipped with some “Share the Road” and directional signs at intersections.

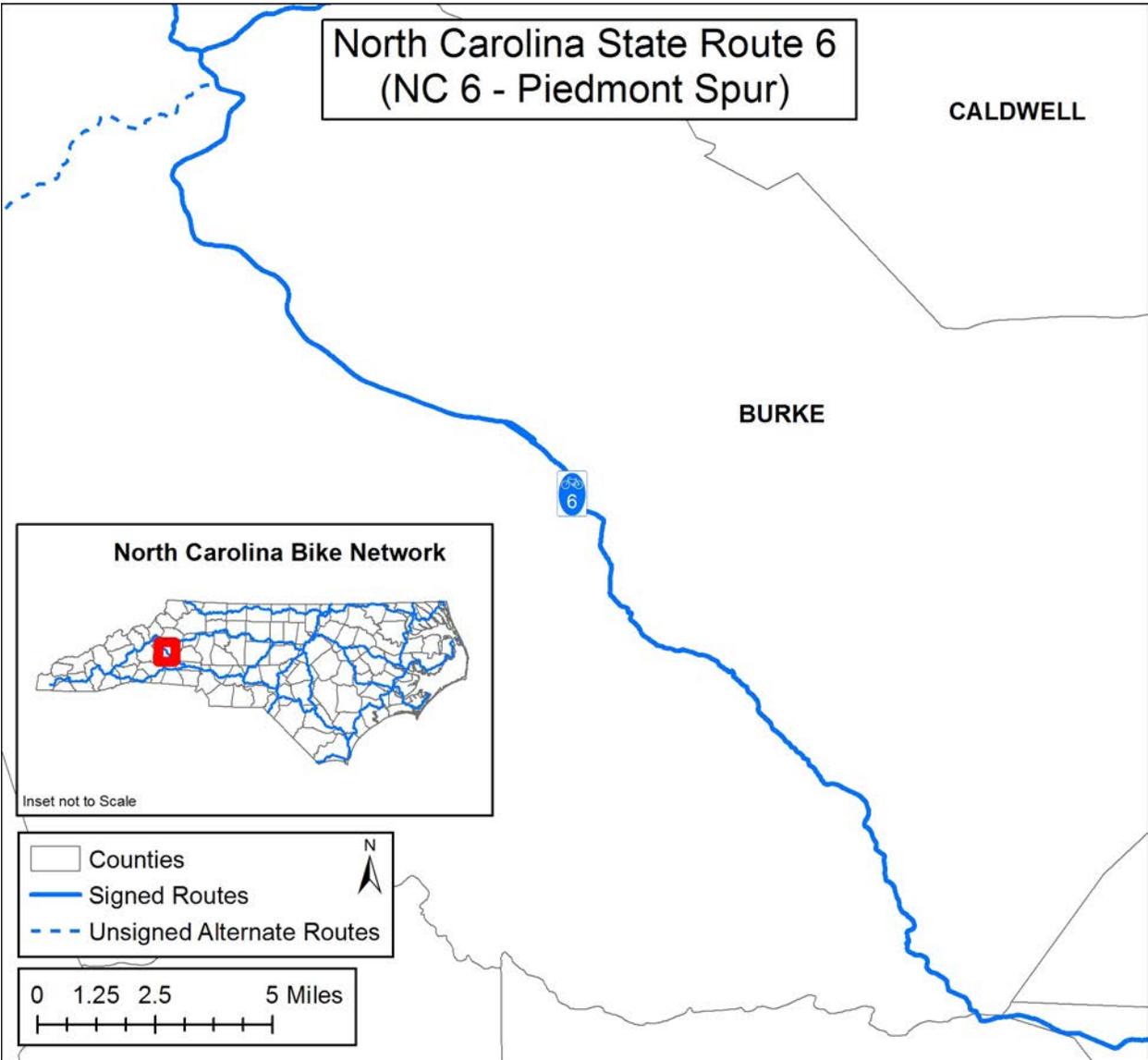
Figure 4-1



North Carolina State Route 6

The North Carolina State Route 6 (NC 6), or Piedmont Spur signed route, is over 200 miles long and around 30 miles runs through Burke County. NC 6 spurs off NC 2 north of Morganton creating a connection from Cleveland and Lincoln County. The Burke portion of NC 6 consists of NC 181 and Old NC 18. Like NC 2, unsigned alternative routes were recommended for NC 6 in the WalkBikeNC Plan but these would not affect Burke’s current route. The current signed route is equipped with some “Share the Road” and directional signs at intersections.

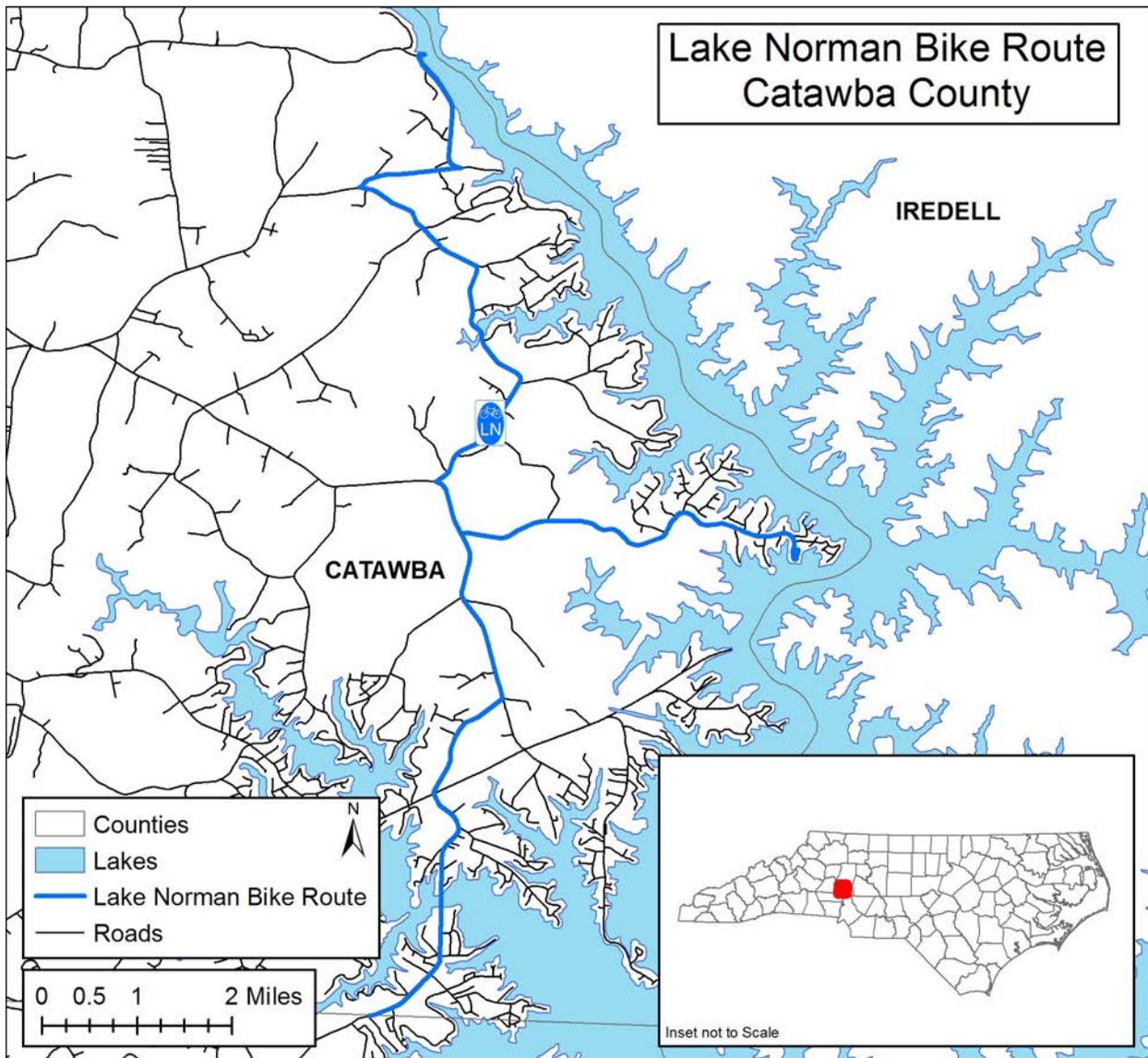
Figure 4-2



Lake Norman Bike Route

The Lake Norman Bike Route is a signed bike route around Lake Norman. The loop connects several cities and towns in Mecklenburg, Iredell, Catawba and Lincoln Counties to recreation around the lake such as fishing, camping, and site seeing. The plan established several signature routes like the Catawba Run in Catawba and Iredell County. Around 16 miles of the Catawba Run goes through eastern Catawba County that includes sections of Kale Road, Long Island Road, Mondo Road, Molly’s Backbone Road, Sherrills Ford Road, and Slanting Bridge Road.

Figure 4-3





Chapter 5

Off-Road Projects

Potential Greenway Projects

The Western Piedmont Region's natural geography offers good conditions and challenges for not only on-road bicycling but off-road as well. The mountains of Burke and Caldwell Counties could appeal to bikers seeking rough and higher terrain. The flat-to-rolling natural relief of Alexander and Catawba Counties could appeal to your more casual biker. The Region offers some options for off-road biking through trails and greenways but there's always potential for more. Such potential include the Overmountain Victory Trail and Carolina Thread Trail, plans like the Fonta Flora Loop Trail and Hickory Inspiring Spaces, NCDOT owned right-of-way, inactive railroads, and proposed greenways are all viable opportunities for more off-road corridors.

Overmountain Victory Trail

The Overmountain Victory Trail is a national historic trail that goes through Virginia, Tennessee, North Carolina, and South Carolina. The trail totals 330 miles of path used by patriot militia during the American Revolution. The Overmountain Victory system includes a Commemorative Motor Route, 87 miles of walkable pathways, and access to historic sites and museums that allow visitors a chance to relive the history of the 1780 Overmountain Men march. In North Carolina, the trail goes through Avery, Burke, Caldwell, McDowell, Polk, and Rutherford County. In Burke County, some of the public trails include Catawba River Greenway in Morganton and Paddy's Creek Trail at Lake James State Park. Some Burke historical points of interest include the Quaker Meadows-Charles McDowell House and Quaker Meadows Cemetery. Visitors can hike the Patterson School Overmountain Trail in Caldwell County and stop at either historic Fort Defiance or Fort Crider.

Potential WPBP Tie-in: Proposed Greenway along NC 18/US 64 (between Lenoir and Morganton) could provide future off-road alternatives for portions of Route Segment 1, Route Segment 9, Route Segment 24, and Route Segment 42.

Fonta Flora Loop Trail

The Fonta Flora Loop Trail (formerly Lake James Loop) is a planned recreation loop located in the Lake James region of Burke County. The trail will circle Lake James making its way through Lake James State Park, land owned by Duke Energy, and some residential properties. According to the Lake James Loop Trail Master Plan, the loop will be used for hiking and mountain biking, providing more opportunity for land activities around the Lake. It is proposed as being easy to moderate difficulty, with a natural surface, and between 23 and 27 miles long. The trail will include multiple access points and connections to other Lake James trails, points of interests, and overlooks.

Potential WPBP Tie-in: Proposed trails around Lake James could provide future off-road alternatives for the NC 126, N PowerHouse Rd, and Benfields Landing Rd portions of Route Segment 41.

Carolina Thread Trail

Starting in 2007, The Carolina Thread Trail (CTT) started looking at ways of combining various greenways, natural surface trails, and sidewalks for a large scale path network within the Carolinas. This regional system encompasses 15 counties which include Anson, Cabarrus, Catawba, Cleveland, Gaston, Iredell, Lincoln, Mecklenburg, Rowan, Stanly and Union counties within North Carolina and Cherokee, Chester, Lancaster and York counties in South Carolina. Once completed, the Thread Trail system will be 1,500 miles long, occupy 7,300 square miles, and ultimately provide a limitless line of multimodal travel through the involved counties. As of fall 2013, four Carolina Thread Trails have been established in Catawba County; the Conover Greenway, the Hickory Greenway, Murray's Mill/David Stewart Trail, and Newton Heritage Trail.

Potential WPBP Tie-in: Road ROW opportunities for CTT priority routes on Highland Ave, Blackburn Bridge Rd, Startown Rd, Maiden Rd, and Sherrills Ford Rd could provide future off-road alternatives for portions of Route Segment 15, Route Segment 33, Route Segment 34, and Route Segment 35.

Hickory

The City of Hickory has two paved trails at Geitner/Rotary Park and Glenn C. Hilton, Jr., Memorial Park. The Geitner trail is a 1.5 mile paved multi-use path that connects to several natural surface hiking and mountain biking trails. The asphalt trail can be used for walking, running, or biking and is striped for two directions of traffic. The City's greenway system is a combination of residential roadway (sections of 17 Ave NW and 10th St Blvd NW) and the paved trails of Hilton Park. This greenway is best suited for walking and running. Biking is possible on the road section but certain parts of Glenn Hilton prohibit bicycling and a large-wooden staircase connects 10th St Blvd NW to the paved trails of Glenn Hilton. As in the City of Conover, the Carolina Thread Trail has an established trail in Hickory, a 1.4 mile section with sidewalks and the Hickory Greenway. Hickory has a Bike and Pedestrian project (EB-5750) included in the State Transportation Improvement Plan (STIP) that is programmed for construction in 2023. This project includes the constructing of a greenway along Main Ave NE from 9th St NW to 7th Ave NE and pedestrian bridge over NC 127.

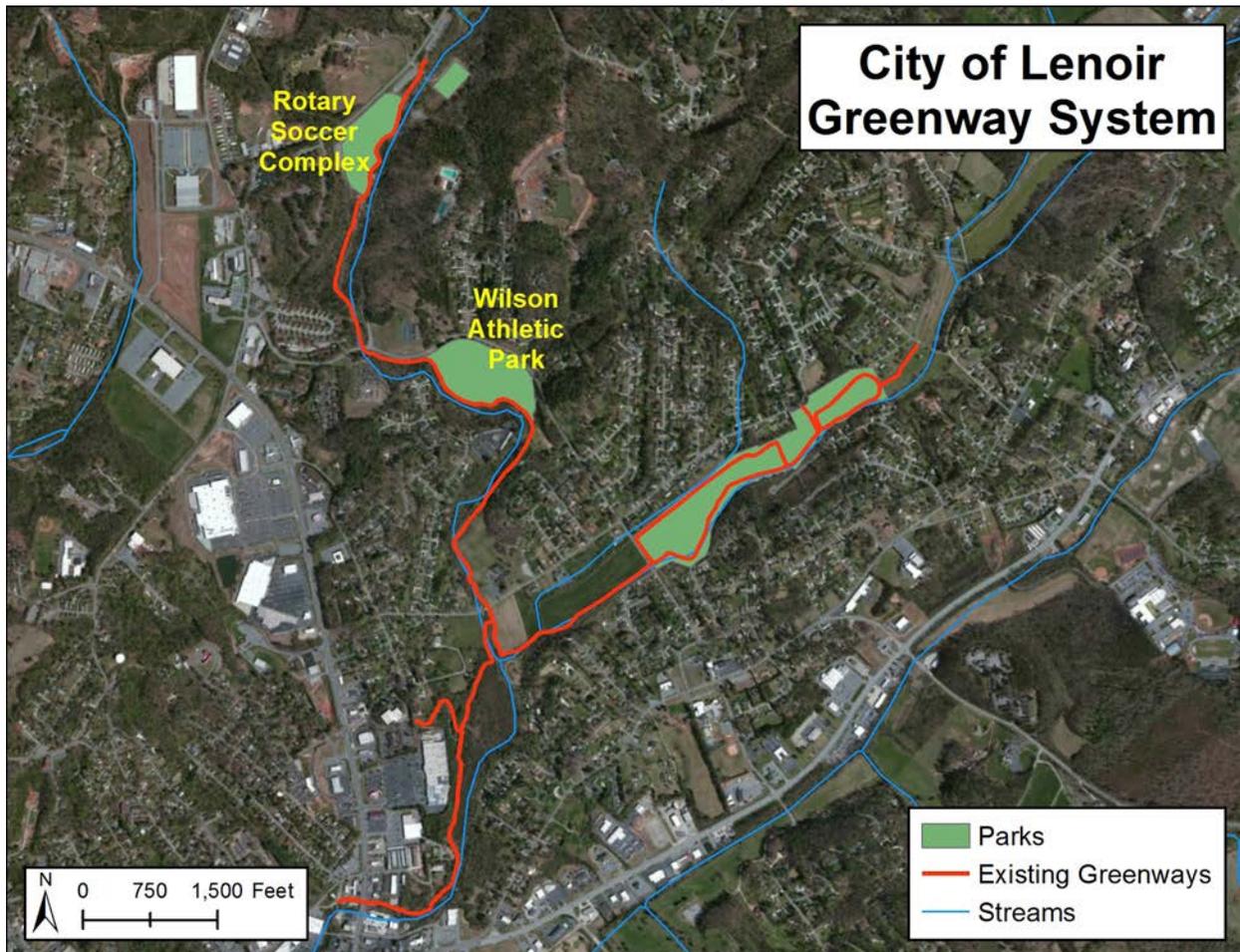
**Figure 5-2
Hickory Greenway**



Lenoir

The City of Lenoir existing greenway system is a 5.6 mile system of paved and gravel trails that allows running, walking, and biking. The greenway provides a connection between the Rotary Soccer Complex, T. Henry Wilson Athletic Park, and Caldwell County Library. In 2013, the City of Lenoir (sponsored through Caldwell County Pathways) received a grant from the NC Recreation Trails Program for the future construction of 7,250 feet of paved greenway that will connect the Google Data Center to the existing network. The City is currently in the process of acquiring land easements and construction of the greenway will start within the next five years.

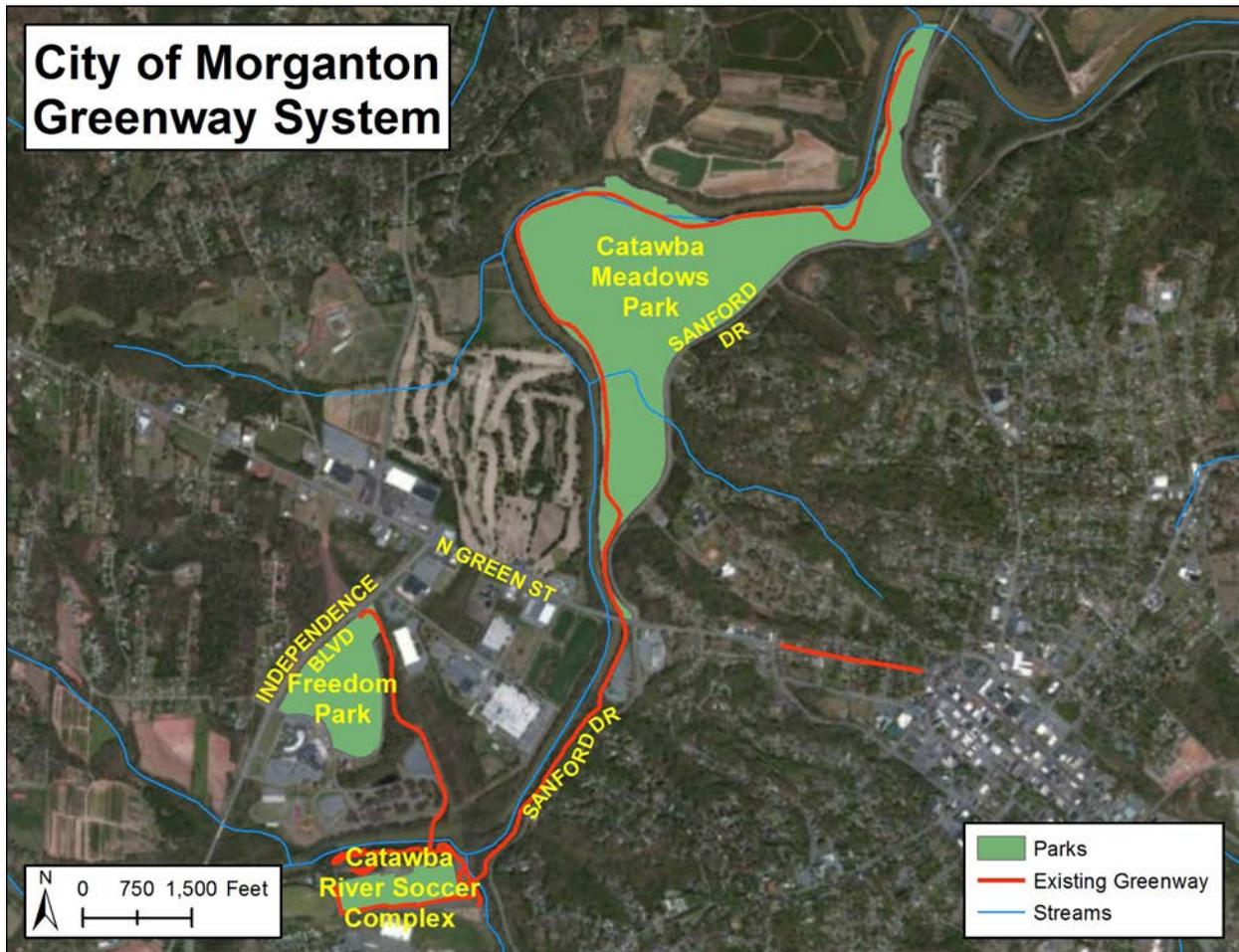
Figure 5-3
Lenoir Greenway



Morganton

The City of Morganton's existing greenway system is 4.8 total miles and consists of three different trails; the Catawba River Greenway is 3.8 miles long, the Freedom Park Greenway is 0.6 miles long, and the Downtown Greenway along Green Street is 0.4 miles long. These asphalt greenways can be used for walking, running, or biking. In July 2015, Morganton applied for STP-DA funding assistance for construction of a bicycle/pedestrian project through the Greater Hickory Metropolitan Planning Organization. This project includes the constructing of 0.58 miles of greenway from the existing Downtown Greenway to the Catawba River Greenway. Construction of this project is expected to start in either Fiscal Year 2016 or Fiscal Year 2017.

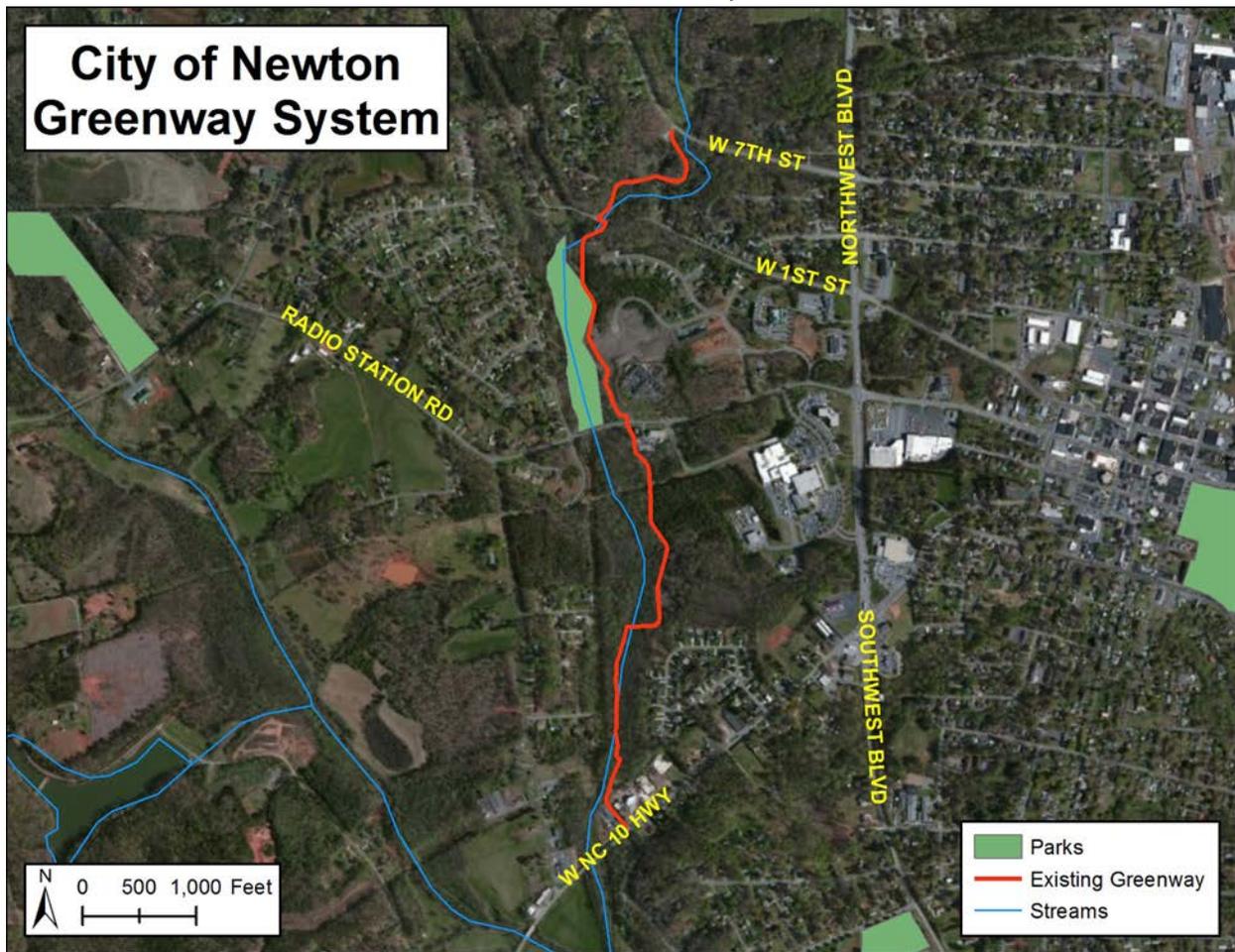
**Figure 5-4
Morganton Greenway**



Newton

The City of Newton's Heritage Trail Greenway is 1.5 miles long, paved, and is accessible from West 7th Street, Radio Station Road, and NC 10. The 0.8 mile portion between Radio Station and NC 10 is an established section of the Carolina Thread Trail. The greenway allows walking, running, and biking. The City has proposed another construction phase that would extend their greenway from NC 10 to their Southside Park in south Newton. The construction schedule of this project is still yet to be determined.

Figure 5-5
Newton Greenway



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Chapter 6 Implementation

Overview

The completion of the Western Piedmont Bicycle Plan (WPBP) is the first step towards creating a bicycle-friendly region. The implementation of the WPBP will require the assistance and ongoing participation from various citizen groups and government agencies. This chapter provides a direction for moving forward with a list of policy and program action steps, sample ordinances for local municipalities, an administrative structure, a list of possible funding sources, and a list of potential performance measures for monitoring future improvement.

First Steps

The first step towards implementation is the adoption of the WPBP. All four counties should adopt this plan and use it as a guiding document for improving bicycling conditions in the region. Having an adopted plan will help each county and local municipality when securing funding for specific projects.

The second step is to form the Greater Hickory Metropolitan Planning Organization’s Bicycle and Pedestrian (BiPed) Advisory Committee. The membership of the BiPed Advisory Committee should be members of the WPBP Steering Committee along with community advocates. The primary responsibility of the members should be campaigning for the changes outlined in this plan and any additional projects that may arise in the region. The BiPed Advisory Committee should also be the communication link between citizens, local government, and the Greater Hickory Metropolitan Planning Organization. It is also recommended that the BiPed Advisory Committee hold meetings every quarter and become responsible for starting the educational activities recommended by this plan.

Administrative Structure

The figure below presents an organizational structure for plan implementation. All of the groups and agencies shown in this diagram will be necessary to successfully implement the extensive program, policy, and infrastructure recommendations of the WPBP.

**Figure 6-1:
Administrative Structure**



Action Steps

**Table 6-1:
Action Steps**

Task	Lead Agency	Support	Phase
Present Plan to Western Piedmont Council of Governments Policy Board for approval.	Greater Hickory MPO	N/A	Short Term (2015)
Approval and adoption of WPBP by counties.	County Planners	WPCOG Planning Staff	Short Term (2015)
Start public outreach efforts to promote the plan to residents.	Greater Hickory MPO	County and Municipal Planners; Advocates	Short Term (2015-2016)
Establish the Western Piedmont Bicycle and Pedestrian (BiPed) Advisory Committee.	Western Piedmont Bicycle Plan Steering Committee	Western Piedmont Council of Governments Planning Staff	Short Term (2016)
Set up regional BiPed website.	Western Piedmont BiPed Advisory Committee	Greater Hickory MPO	Short Term (2016)
Update website with bicycling information as it becomes available.	Western Piedmont BiPed Advisory Committee	Western Piedmont Council of Governments Staff	Continuous/Ongoing
Schedule time to evaluate projects with Greater Hickory MPO and each highway division.	Greater Hickory MPO	Western Piedmont BiPed Advisory Committee	Short Term (2016-2017)
Establish central bicycle facility database.	Greater Hickory MPO	County and Municipal Planners	Continuous/Ongoing
Publish biennial performance report.	Greater Hickory MPO	Western Piedmont BiPed Advisory Committee	Long Term (2016-2040)
Create an online form to recommend a bicycle facility improvement.	Greater Hickory MPO	County and Municipal Planners	Short Term (2016-2017)
Update the Western Piedmont Bicycle Plan.	Greater Hickory MPO	Western Piedmont BiPed Advisory Committee	Mid-Term (2019)
Identify and Secure Funding Sources.	Greater Hickory MPO	Western Piedmont BiPed Advisory Committee	Short Term (2015-2017)
Complete recommended Tier 1 projects.	Greater Hickory MPO	County and Municipal Planners	Mid-Term (2016-2020)
Research and develop long-term funding strategy.	Greater Hickory MPO	Western Piedmont BiPed Advisory Committee	Short Term (2016-2017)
Establish Safe Routes to Schools (SRTS) programs across the region.	School Districts	WPCOG Planning Staff, BiPed Advisory Committee, SRTS Staff	Short Term (2016-2017)

**Table 6-1:
Action Steps, cont.**

Task	Lead Agency	Support	Phase
Work towards municipalities achieving the "Bicycle Friendly Community Designation" by the League of American Bicyclists.	County and Municipal Planners	Western Piedmont BiPed Advisory Committee	Short Term (2016-2017)
Educate interested staff members and advocates on bicycle related issues.	WPCOG Planning Staff	Western Piedmont BiPed Advisory Committee	Short Term (2016)
Develop online and hard-copy maps and brochures about bicycling in the region.	WPCOG Planning Staff	Western Piedmont BiPed Advisory Committee	Short Term (2015-2016)
Work towards local governments coordinating with NCDOT on the roadway resurfacing schedule and to incorporate bicycle road improvements when resurfacings happen.	NCDOT Division Offices	Municipalities, and Counties	Short Term (2016-2017)
Establish facility inspection and maintenance standards.	NCDOT Division Offices	Municipalities, and Counties	Short Term (2016-2017)
Hold local workshops for NCDOT bicycle safety and educational programs. (Ex: Walk For Me NC)	NCDOT	GHMPO, Municipalities, and Counties	Short Term (2016-2017)
Provide additional training for law enforcement officers on rights and responsibilities of all road users.	Local Police Departments	GHMPO, Municipalities, and Counties	Long Term (2016-2040)
Promote Bike Month.	Western Piedmont BiPed Advisory Committee	County and Municipal Planners	Short Term (2016-2017)
Encourage the organization of open street events throughout the year.	Western Piedmont BiPed Advisory Committee	County and Municipal Planners	Short Term (2016-2017)
Incorporate WPBP into long-range transportation, land-use, and comprehensive planning.	Greater Hickory MPO	County and Municipal Planners	Short Term (2016-2017)
Revise municipal and county codes of ordinances.	County and Municipal Planners	Western Piedmont BiPed Advisory Committee	Short Term (2016-2017)
Consider Complete Streets policy.	County and Municipal Planners	Greater Hickory MPO	Short Term (2016-2017)
Start wayfinding signage program.	Western Piedmont BiPed Advisory Committee	Greater Hickory MPO	Short Term (2016-2017)

Partnership Opportunities

The Action Steps will be carried out by partnerships between various organizations and groups including regional planning organizations, municipal governments, local nonprofits, county health departments, civic organizations, business owners, and law enforcement agencies. Creating strong partners in the regional effort to improve bicycling infrastructure and awareness will help spread the message about the importance of bicycling in the community and lead to effective programs in the future.

Potential partner for implementation of the Western Piedmont Bicycle Plan include:

- Bicycling clubs (on-road and off-road)
- Chambers of Commerce
- County departments of social services
- Downtown associations
- Economic development corporations
- Hospitals, medical centers, and their foundations
- Local bicycle shops
- Local non-profits
- Major employers
- Municipal engineering, planning, recreation, and police departments
- North Carolina Department of Commerce
- NCDOT's Division 11, 12, and 13
- NCDOT's Division of Bicycle and Pedestrian Transportation
- Public health departments
- Public school systems
- Service clubs
- Sheriff departments
- Tourism authorities
- Universities and community colleges
- Veteran groups
- Western Piedmont Council of Governments

Program Policies and Recommendations

Infrastructure improvements alone will not be enough to help expand the use of bicycling

within the Western Piedmont region. Programs and policies are additional elements critical to encouraging and supporting bicycling activity.

Safe Routes to School

Safe Routes to School is a national and international movement to enable and encourage children, including those with disabilities, to walk and bicycle to school. SRTS programs are comprehensive efforts that look at ways to make walking and bicycling to school a safer and more appealing transportation alternative, thus encouraging a healthy and active lifestyle from an early age.

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. SRTS programs consider infrastructure enhancements to provide a safe physical environment for bicycling and walking. These programs also emphasize non-infrastructure approaches to educate and encourage communities on how to safely take advantage of walking and bicycling opportunities in their neighborhoods. More information can be found here: <http://www.ncdot.gov/download/programs/srts/SRTS.pdf>.

Professional Development Courses

Professional development courses provide training to planners and engineers who might not otherwise have the background or experience in developing bicycling facilities. This can be successful in institutionalizing knowledge of bicycle facility design and create an organizational culture that values bicycling.

Potential topics could include the following:

- Pedestrian and bicycle facilities standards
- Americans with Disabilities Act compliance
- Complete Streets implementation and

policies

- Greenway design
- Assisting law enforcement agencies on traffic safety campaigns

Facility Inspection and Maintenance

Establishing the minimum standards for bicycle facilities will assist all users in use of a particular facility in the safest way possible. The counties and municipalities within the Western Piedmont region should come together to inspect bicycling facilities and set the minimum standards for their maintenance. This can include replacing outdated or damaged signs, replacing old pavement markings, cleaning up debris, repaving streets, repairing potholes, replacing drainage grates, and evaluating the placement of rumble strips. For more information, visit: <https://www.fhwa.dot.gov/publications/research/safety/pedbike/05085/pdf/lesson16lo.pdf>.

The Greater Hickory MPO working with its members should also be aware of potential resurfacings or maintenance on NCDOT roadways. Working with the division office, this is typically considered a good time to incorporate bicycle facility improvement recommendations. Information about NCDOT's 3-year roadway resurfacing schedule can be found here: <https://connect.ncdot.gov/resources/Asset-Management/Pages/HMIPDIV.aspx>.

Roadway Retrofitting

The majority of streets within the Western Piedmont have been designed only for automobile traffic. For this reason, many of these streets will need to be retrofitted to safely accommodate bicycle and pedestrian traffic. Several retrofitting options exist such as lane reconfiguration, roadway widening, and lane narrowing. The best type of retrofitting will depend on several roadway characteristics such as existing bicycle facilities, automobile traffic volume, roadway width, current speeds, and available right-of-way.

A useful guide for retrofitting decisions is NCDOT's Complete Streets Guidelines. Complete streets are streets designed to be safe and comfortable for all users, including pedestrians, bicyclists, transit riders, motorists, and individuals of all ages and capabilities. These streets generally include sidewalks, appropriate bicycle facilities, transit

stops, right-sized street widths, context-based traffic speeds, and are well-integrated with surrounding land uses. For more information, visit: <http://completestreetsnc.org/>.

For more information on general facility design, visit: <http://www.pedbikeinfo.org/planning/facilities.cfm>.

For an index of roadway design resources, visit: http://www.pedbikeinfo.org/planning/facilities_designresourceindex.cfm.

Wayfinding and Signage Program

The Western Piedmont region should develop and install standardized, branded wayfinding signs to support the character of the region and contribute to its economic development. A clear wayfinding system should direct bicyclists to key destinations, entertainment venues, and restaurants. In addition to helping bicyclists, these directional signs will also assist automobile drivers and pedestrians. The design of these signs should reflect the local character of the particular community and be selected for longevity and ease of maintenance.

According to the "Urban Bikeway Design Guide" (2014) published by the National Association of City Transportation Officials (NACTO), the benefits of wayfinding is that it:

- Familiarizes users with the bicycle network.
- Identifies the best routes to destinations.
- Overcomes a "barrier to entry" for infrequent bicyclists.
- Signage that includes mileage and travel time to destinations may help minimize the tendency to overestimate the amount of time it takes to travel by bicycle.
- Visually indicates to motorists that they are driving along a bicycle route and should use caution.
- Passively markets the bicycle network by providing unique and consistent imagery throughout the jurisdiction.

For more information from the "Urban Bikeway Design Guide," visit: <http://nacto.org/publication/>

[urban-bikeway-design-guide/](#).

For additional information on wayfinding, visit: http://www.pedbikeinfo.org/planning/facilities_bike_wayfinding.cfm.

Police Officer Bicycle Training

The majority of law enforcement professionals do not receive specific bicycle training focused on state laws or safety. Police education courses can help officers assist in improving public safety and enforce existing laws effectively by providing the necessary training. This training should include information about laws and statutes concerning bicycling, information about bicycle crash types and their causes, crash prevention, and enforcement techniques.

For more information, visit: <http://www.pedbikeinfo.org/programs/enforcement.cfm>.

“Watch for Me NC” Campaign

The Watch for Me NC program involves both safety and educational messages directed toward drivers, pedestrians and bicyclists, and enforcement efforts by area police to crack down on some violations of traffic safety laws. Local programs are typically led by municipal, county, or regional government staff with the involvement of pedestrian and bicycle advocates, city planners, law enforcement agencies, engineers, public health professionals, elected officials, school administrators and others. For more information, visit: <http://watchformenc.org/>.

Let’s Go NC

This is an educational program that teaches elementary age children how to walk and bike safely, giving them the essential skills that they need to enjoy a healthy and active lifestyle.

Let’s Go NC! A Pedestrian and Bicycle Safety Skills Program is an all-in-one package of lesson plans, materials, activities and instructional videos that encourages children to learn about and practice fundamental skills that build safe habits. For more information, visit: <http://www.ncdot.gov/bikeped/safetyeducation/letsгонс/>.

Regional Bicycling Website

A problem for many current and potential bicyclists in the region is the lack of information about bicycle related activities, businesses, organizations, and laws. A one-stop bicycle website should include some of the following:

- Bicycling events and outreach efforts
- Current laws and statutes
- Riding groups, racing teams, advocacy groups
- Bicycle shops
- Current projects
- Maps and brochures
- Relevant contact information for the public
- Agendas and minutes from the Western Piedmont BiPed Advisory Committee

Open Street Events

The purpose of these events is to encourage bicycling in a community by periodically closing off selected streets to automobile traffic. This creates a safe place for bicyclists of all abilities to travel and can be coordinated in relation to other community events.

For more information, visit: <http://openstreetsproject.org/resources/>.

Funding Sources

This section outlines potential funding sources for the projects identified in this plan document. Funding can come from federal, state, and local sources and be used for a variety of activities including: programs, planning, design, implementation, and maintenance. Funding discussed in this section only reflects what is available at the time of this writing. The funding amounts available, funding cycles, and programs are subject to change.

Federal Funding Sources

Federal funding originating from the United States Department of Transportation (USDOT) is typically directed through state agencies to local governments independent of state budgets and usually requires a local match. The following section lists possible Federal funding sources that could be used for bicycle improvements.

Moving Ahead for Progress in the 21st Century (MAP 21)

MAP-21 (P.L. 112-141) was signed into law July 6, 2012. It funds surface transportation programs

with over \$105 billion for fiscal years (FY) 2013 and 2014 and is the first multi-year transportation authorization enacted since 2005. MAP-21 is a performance-based surface transportation program that builds on highway, transit, bike and pedestrian policies and programs established in 1991. The act replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU).

Funding from MAP-21 is administered statewide by the North Carolina Department of Transportation (NCDOT) and regionally by the Greater Hickory Metropolitan Planning Organization (GHMPO). Federal funding is intended for projects related to surface transportation that are either capital improvement or safety and education programs. For more information, visit: <http://www.dot.gov/map21> or <https://www.fhwa.dot.gov/map21/>

Locally Administered Projects Program

The Locally Administered Projects Program (LAPP) was adopted by the Greater Hickory Metropolitan Planning Organization (GHMPO) to prioritize and program all projects in the region to use federal funding that is the responsibility of the GHMPO. This process will involve a once-a-year call for all local highway, transit, bicycle and pedestrian projects, and will result in an annual program of projects added to the GHMPO's Metropolitan Transportation Improvement Program (MTIP).

Surface Transportation Program – Direct Attributable

In addition to apportioning Surface Transportation Program (STP) funds to each state for the state's entire Federal-aid system; Moving Ahead for Progress in the 21st Century (MAP-21) allocates STP Direct Attributable (STP-DA) funds directly to any Metropolitan Planning Organization (MPO) that is designated as a Transportation Management Area (TMA). STP funds have broad latitude for use on metropolitan transportation planning and projects along with and in support of the Federal-aid system per 23 U.S. C. 133. Specific eligibility criteria and guidance can be found through the Federal Highways Administration (www.fhwa.dot.gov).

Transportation Alternatives Program

The Transportation Alternatives Program (TAP) was authorized under Section 1122 of Moving Ahead

for Progress in the 21st Century Act (MAP-21) and is codified at 23 U.S.C. sections 213(b), and 101(a)(29). Section 1122 provides for the reservation of funds apportioned to a state under section 104(b) of title 23 to carry out the TAP. The national total reserved for the TAP is equal to 2 percent of the total amount authorized from the Highway Account of the Highway Trust Fund for Federal-aid highways each fiscal year. (23 U.S.C. 213(a))

The TAP provides funding for programs and projects defined as transportation alternatives, including:

- Construction, planning, and design of on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation.
- Construction, planning, and design of infrastructure-related projects and systems that will provide safe routes for non-drivers, including children, older adults, and individuals with disabilities to access daily needs.
- Conversion and use of abandoned railroad corridors for trails for pedestrians, bicyclists, or other non-motorized transportation users.

LAPP Funding Details

As a Transportation Management Area (TMA), the Greater Hickory Metropolitan Planning Organization (MPO) will receive a direct allocation of approximately \$2,700,000 in Surface Transportation Program Direct Attributable (STP-DA) and \$200,000 in Transportation Alternatives Program (TAP) funding annually.

Congestion Mitigation/Air Quality

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter (PM 2.5) which reduce transportation-related emissions. These federal dollars can be used to build bicycle and pedestrian facilities, but facilities that are purely recreational are not eligible. Catawba County is currently the only county in the region eligible to receive CMAQ funding.

For more information, visit: <https://connect>.

ncdot.gov/projects/planning/Pages/CongestionMitigationAirQualityNC.aspx.

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) state program provides matching grants to help states and local communities protect parks and recreation resources. Running the gamut from wilderness to trails and neighborhood playgrounds, LWCF funding has benefited nearly every county in America, supporting over 41,000 projects. This 50:50 matching program is the primary federal investment tool to ensure that families have easy access to parks and open space, hiking and riding trails, and neighborhood recreation facilities. Over the life of the program, more than \$3 billion in LWCF grants to states has leveraged more than \$7 billion in nonfederal matching funds.

For more information, visit: <http://www.lwcfcoalition.org/north-carolina.html>.

State Funding Sources

State Transportation Improvement Program

NCDOT's State Transportation Improvement Program (STIP) is based on the 2013 Strategic Transportation Investments (STI) bill which contains the new Strategic Mobility Formula assigning all modal projects into one of three separate categories: State-wide Mobility, Regional Impact, and Division Needs. All bicycle projects are placed into the Division Needs category and are ranked on several criteria by both the Greater Hickory MPO and the NCDOT division. The highest ranked projects are likely to be included in the STIP for eventual funding. The STIP is a federally mandated transportation planning document that details transportation improvement prioritized by stakeholders. Projects are scheduled over the coming ten years and the STIP is updated every two years.

For more information, visit: <http://www.ncdot.gov/strategictransportationinvestments/>.

Safe Routes to School Program

An outline of the North Carolina grant program and funding information is shown below.

- State usage: 70 to 90 percent for infrastructure projects, and 10 to 30 percent for non-infrastructure programs and activities.

- No local funding match required: 100% federally funded.
- Eligible recipients include state, local and regional agencies, and non-profit organizations.
- Jurisdictional levels for the grant are school level, school system or region-wide, and state-wide.
- Primary beneficiaries must be K-8th grade students.
- Infrastructure projects must be within two miles of a school and on public property or private land with legal public-access easements.
- Funding is through a reimbursable grant process - not a "cash up front" process.
- This is a grant program administered by North Carolina Department of Transportation.
- Award recipients must comply with federal and state funding requirements.

For more information, visit: http://www.communityclinicalconnections.com/What_We_Do/Active_Routes_To_School/index.html.

Highway Safety Improvement Program (HSIP)

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic process that identifies, reviews, and addresses specific traffic safety concerns throughout the state. This systematic process is both competitive and data-driven. A project may be evaluated based on its crash history and field study. The funds are administered by the NCDOT Transportation Mobility and Safety Unit.

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

North Carolina Parks and Recreation Trust Fund

The Parks and Recreation Trust Fund (PARTF) provides matching grants to local municipalities of several million dollars a year to fund the acquisition, development, and renovation of recreational areas. Local governments can request a maximum of \$500,000 with each application; however, special consideration will be given to projects requesting

\$250,000 or less.

For more information, visit: http://www.ncparks.gov/About/grants/partf_main.php.

Adopt-a-Trail Program

The Adopt-a-Trail Program provides funds from the state to local governmental agencies and non-profit organizations to be applied to related promotional, informational, new trail construction, trail renovation, adjacent facilities, and land acquisition through willing sellers. A total of \$108,000 is available per year, with a \$5,000 maximum grant amount per applicant.

For more information, please visit: http://www.ncparks.gov/about/grants/trails_main.php.

Clean Water Management Trust Fund

The Clean Water Management Trust Fund (CWMTF) established in 1996 is available to state agencies, local governments, and non-profit conservation groups to fund projects that specifically address water pollution issues. Eligible plans include projects contributing to a network of riparian buffers and greenways. No match is required by local municipalities; however, the "suggestion" of a match is highly recommended.

For more information, visit: <http://www.cwmtf.net/a/index.html#home.html>.

NCDOT Bicycle & Pedestrian Planning Grant Initiative

The Bicycle Planning Grant Initiative began in 2004 and is an annual matching grant program for developing comprehensive bicycle and pedestrian plans to statewide municipalities (and counties with populations less than 25,000). As of 2015, approximately \$4 million has been allocated to 164 municipalities. Funded plans represent a comprehensive, rather than singular, strategy for expanding bicycle and pedestrian opportunities. Proposals are judged in geographical groups to ensure equitable distribution of funds.

For more information, visit: <https://connect.ncdot.gov/municipalities/PlanningGrant/Pages/default.aspx>.

Local Funding

Municipalities often plan for the funding of bicycle facilities or improvements through development of Capital Improvement Programs (CIP). Typical capital

funding mechanisms include: capital reserve funds, capital protection ordinances, municipal street districts, tax increment financing, taxes, fees, and bonds. A number of these categories are described below.

State Street-Aid (Powell Bill Funds)

Annually, State Street-Aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by G.S. 136-41.1 through 136-41.4. The general statutes require that a sum equal to ten and four-tenths percent (10.4%) of the net amount after refunds are disbursed to the qualifying municipalities. The statutes also provide that funds be disbursed to the qualified municipalities on or before October 1st and January 1st, thereby allowing sufficient time after the end of the fiscal year for verification of information and determining proper allocations and preparation of disbursements. Powell Bill funds can be expended only for the purposes of maintaining, repairing, constructing, reconstructing or widening of any street or public thoroughfare within the municipal limits or for planning, construction, and maintenance of bikeways, greenways or sidewalks.

For more information, visit: <https://connect.ncdot.gov/municipalities/state-street-aid/>.

Municipal Bonds

A popular way for communities to finance bicycle and greenway projects is using municipal bonds. Several types of bond options are available such as revenue bonds, general obligation bonds, and special assessment bonds. As an example, in November of 2014, citizens of Hickory voted for \$40 million in bonds to help implement their Inspiring Spaces plan which was adopted by Hickory's City Council. The plan outlines the locations for new greenways, in addition to other roadway improvements throughout the city.

Tax Increment Financing

Project Financing Bonds, also known as Tax Increment Financing (TIF), allows municipalities to use future gains in taxes to finance the current improvements that will create those gains. Tax Increment Financing typically occurs within designated development financing districts that meet certain economic criteria approved by a local governing body. Streets and streetscapes are specifically authorized for TIF funding in North Carolina.

For more information about TIFs in North Carolina, visit: <https://www.sog.unc.edu/programs/tif>.

Taxes

Communities have the option to raise money for either general transportation programs or specific projects through self-imposed increases in taxes. Some examples of taxes that could be used for bicycle infrastructure include excise, occupancy, property, or sales taxes.

Private Funding

Lowes Foundation

Lowes offers open-ended grants for projects such as bicycle facilities and trails. Interested local governments may apply for Lowe's Community Partners Grants, Hometown Grants, and Small Grants (less than \$2,000). For more information, visit: <http://responsibility.lowes.com/apply-for-a-grant> or contact Lowes Customer Care at 1-877-465-6937.

Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation is the largest foundation in the United States devoted to improving the health and health care of all Americans. One area of the foundation's grant making is focused on promoting healthy communities and lifestyles.

For specific grant information, visit: <http://www.rwjf.org/en/how-we-work/grants.html>.

Performance Measures

Several performance measures should be monitored to determine the amount of progress being made toward achieving the goals and policies of the WPBP. The measures summarized in Table 6-1 are intended to quantify the overall goals of the WPBP and objectives described in Chapter 1. These performance measures will be reviewed and updated in the future to ensure that the region continues to use the best available metrics to assess WPBP implementation.

**Table 6-2:
Selected Performance Measures**

Performance Measure	Corresponding Action Step	2015 Baseline	Target	Frequency	Responsibility
Number of Bicycle Route Maps Distributed	1.i.	0	n/a	Every Quarter	Greater Hickory MPO
Number of Bicycle Route Website Visits	1.i.	0	TBD	Every Quarter	Greater Hickory MPO
Participants in Bike to Work Rides	1.e.	TBD	TBD	Every Year	Greater Hickory MPO & Local Advocacy Groups
Number of Bicycling Events / Participants in Bicycling Events	2.d.	TBD	TBD	Every Year	Greater Hickory MPO
Schools with Safe Routes to Schools Programs	1.e.	0	TBD	Every Year	Greater Hickory MPO & Local Advocacy Groups
Safe Routes to Schools Events and Number of Participants	1.e.	0	TBD	Every Year	Greater Hickory MPO & Local Advocacy Groups
Membership of County-wide Bicycle Task Forces	1.n.	0	TBD	Every Year	Greater Hickory MPO & Local Advocacy Groups
Bicycle Counts at Benchmark Locations	n/a	0	TBD	Every Year	Greater Hickory MPO & NCDOT
Bicycle Miles Traveled	n/a	0	TBD	Every Year	Greater Hickory MPO & NCDOT
Bicycling Mode Share	n/a	0.20%	1.5% by 2025	Every 5 Years	Greater Hickory MPO via U.S. Census

**Table 6-2:
Selected Performance Measures, cont.**

Performance Measure	Corresponding Action Step	2015 Baseline	Target	Frequency	Responsibility
Miles of Designated Bicycle Routes	1.f., 1.g.	117 miles	TBD	Every Year	Greater Hickory MPO
Miles of Bikable Shoulders/Bicycle Lanes	1.f., 1.g.	7 miles	TBD	Every Year	Greater Hickory MPO
Miles of Greenways	1.b., 1.f., 1.g.	13 miles	TBD	Every Year	Greater Hickory MPO
Miles of Signed Bicycle Routes/ Share-the-road Routes	1.f., 1.g., 1.k	TBD	TBD	Every Year	Greater Hickory MPO
Percentage of Bicycle Facilities Addressed from Plan	1.f., 1.g.	0	TBD	Every Year	Greater Hickory MPO
Percent of Center-line Miles that are Considered a "Complete Street"	1.d., 1.f., 1.g.	6 miles	TBD	Every 2 Years	Greater Hickory MPO
Percent of Population within 1/2 mile of an On-road Bicycle Facility	1.f.	13,562 persons	TBD	As Available	Greater Hickory MPO
Percent of Population within 1/2 mile of a Shared-use Path or Greenway	1.f.	12,229 persons	TBD	As Available	Greater Hickory MPO
Bicycle Parking Availability at Public Transportation Stops	1.h.	0	5 by 2018	Every Year	Greater Hickory MPO & Greenway Public Transportation
Municipalities with Bicycle Supportive Ordinances and Policies	1.b.	0	TBD	Every Year	Greater Hickory MPO
Municipalities with Bicycle Facility Master Plans	1.b.	0	10 by 2020	Every 2 Years	Greater Hickory MPO
Incorporation of WPBP Recommendations with Other Municipal, Corridor & Regional Plans	1.b.	0	n/a	Ongoing	Greater Hickory MPO
Incorporation of WPBP Recommendations into Design and Construction Projects	1.b.	0	n/a	Ongoing	Greater Hickory MPO
Report on Progress of WPBP Recommendations and Performance Measures	n/a	0	n/a	Every 2 years	Greater Hickory MPO
Number of Bicycle Crashes	1.a.	20 Per Year	0	Every Year	NCDOT
Bicycle Rack Usage on Public Transportation	1.h.	0	TBD	Monthly	WPCOG & Greenway Public Transportation
Expand On-Road Directional Signage Around Greenways	2.b.	0	TBD	As Available	GHMPO & Local Municipalities
Number of People Trained Through NCDOT's "Watch for Me" campaign.	3.a., 1.o.	0	TBD	As Available	Greater Hickory MPO & NCDOT

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