

CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

EXECUTIVE SUMMARY

2020



Acknowledgments

Thank you to the Steering Committee and local residents of the City of Boiling Spring Lakes for their involvement and support in this planning process and commitment to active transportation planning. This plan was funded through the North Carolina Department of Transportation Bicycle and Pedestrian Planning Grant Initiative.

Key Partners

The City of Boiling Spring Lakes

Cape Fear Rural Planning Organization

The North Carolina Department of Transportation (NCDOT) Division 3

NCDOT Integrated Mobility Division (IMD)

The City of Boiling Spring Lakes Steering Committee

Sharon Amrol-Davis, Resident

Greg Jordan, Chief of Police

Bichson Bush, Resident

Michael Mack, Public Works Director

Glen Davis, Resident

Michael Michaux, Local Business Owner

Mary Green, Parks & Recreation Director

Nicole Morgan, Planning & Zoning Administrator

Tom Guzulaitis, Commissioner

Patrick Flanagan, Cape Fear RPO Director

The purpose of this plan is to evaluate the existing pedestrian conditions within the City of Boiling Spring Lakes and recommend programmatic and infrastructure projects to improve safety, connectivity, and well-being. This effort was led by NCDOT's IMD, AECOM as the project consultant, and the locally appointed Steering Committee. The scope of the plan included: analysis of existing conditions and demographics, review of existing plans and policies, policy and program recommendations, infrastructure improvements and cost estimates, identification of funding sources, public input through a Steering Committee and public meetings, and implementation strategies.



NCDOT



City of Boiling
Spring Lakes



Consultant Team
AECOM Technical Services
of North Carolina



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BENEFITS OF A WALKABLE COMMUNITY



HEALTH

Active transportation infrastructure such as sidewalks, multiuse paths, and trails promote active living and improve health by providing residents with opportunities to exercise and integrate physical activity into their daily lives.



SAFETY

The need to improve safety for pedestrians is urgent. An average of 2,509 pedestrian crashes occurred across the state between 2011 and 2015. With high traffic volumes and crashes, pedestrian safety is a major concern that needs addressing through greater protections for active transportation users.



SUSTAINABILITY AND RESILIENCY

Active transportation infrastructure encourages stewardship of our natural resources by providing residents with a fossil fuel-free mode of transportation while also being developed in a way that is resilient to natural hazards such as stormwater and flooding.



ECONOMIC COMPETITIVENESS

Investing in pedestrian infrastructure returns economic benefits to communities through increased property values, patronage of local businesses, and tourism. Improving transportation choices in a community encourages better connectivity between people and places.



MOBILITY

As roads become increasingly congested, 'Complete Streets' that accommodate all modes of transportation help improve transportation efficiency.



QUALITY OF LIFE

Quality of life is influenced by factors that include, but are not limited to: commute options, access to recreation including parks and trails, safety, and economic competitiveness.



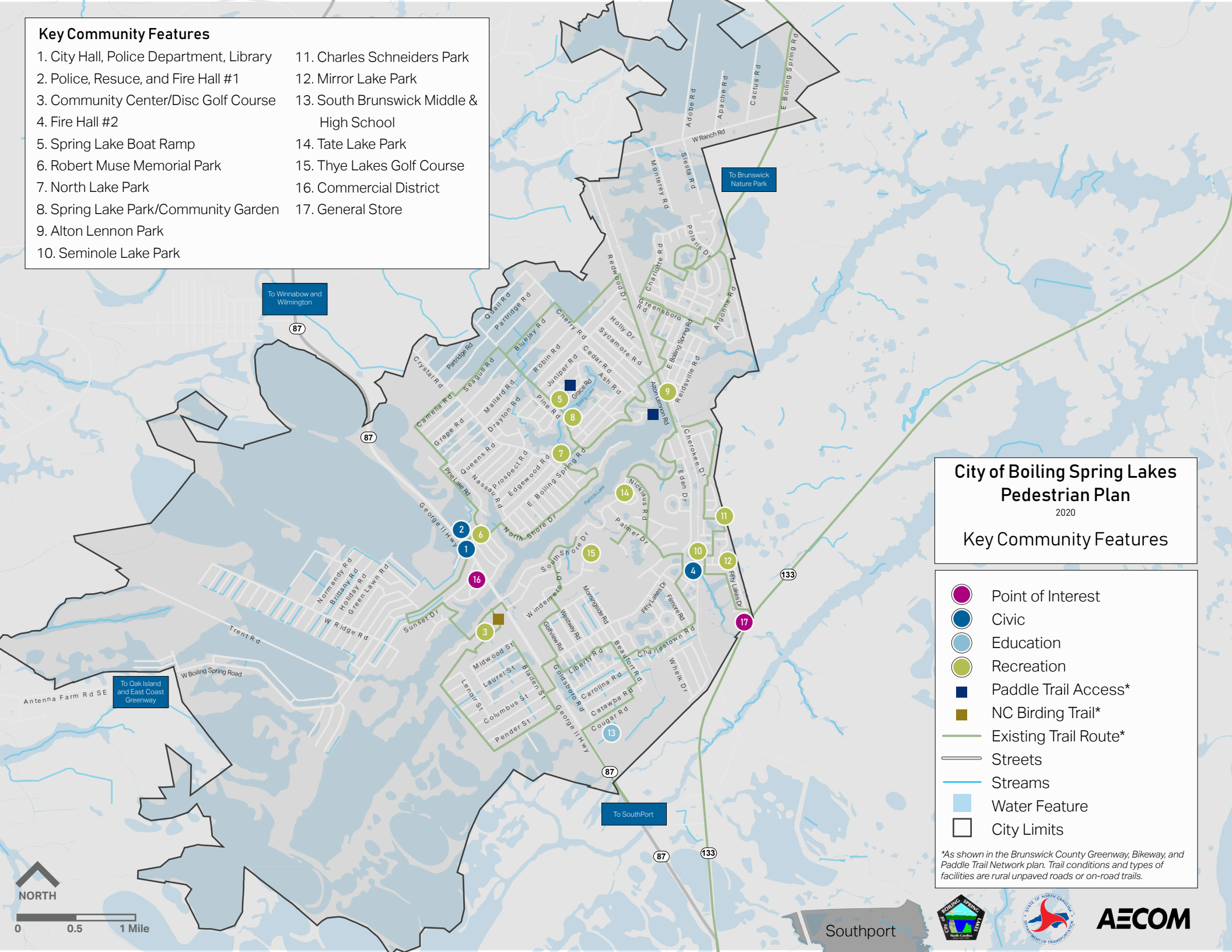
PEDESTRIAN PLAN OVERVIEW



The City of Boiling Spring Lakes is dedicated to improving its pedestrian infrastructure through a comprehensive planning effort. With an existing active transportation task force and strong City and Cape Fear Rural Transportation Planning Organization (Cape Fear RPO) support, the area is primed for multimodal improvements. The focus of the Comprehensive Pedestrian Plan (the Plan) is to define the vision and goals, outline recommendations, and identify programs and policies for implementing pedestrian infrastructure and amenities that increase multimodal connectivity, safety and quality of life. The Plan has been funded through a matching grant from the NCDOT Integration Mobility Division (IMD) with the City of Boiling Spring Lakes providing the matching funds. The grant provides funding for local governments to develop comprehensive active transportation plans focused on active transportation infrastructure. See the ***City of Boiling Spring Lakes Pedestrian Plan*** for more detail

Key Community Features

1. City Hall, Police Department, Library
2. Police, Rescue, and Fire Hall #1
3. Community Center/Disc Golf Course
4. Fire Hall #2
5. Spring Lake Boat Ramp
6. Robert Muse Memorial Park
7. North Lake Park
8. Spring Lake Park/Community Garden
9. Alton Lennon Park
10. Seminole Lake Park
11. Charles Schneiders Park
12. Mirror Lake Park
13. South Brunswick Middle & High School
14. Tate Lake Park
15. Thye Lakes Golf Course
16. Commercial District
17. General Store



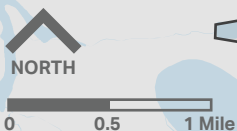
City of Boiling Spring Lakes Pedestrian Plan

2020

Key Community Features

- Point of Interest
- Civic
- Education
- Recreation
- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



Southport



AECOM

OVERVIEW

The City of Boiling Spring Lakes is located on North Carolina's eastern coast in Brunswick County, near Wilmington (22 miles) to the northeast and Caswell Beach, Oak Island, and Southport to the south (approximately 11 miles to the Atlantic Ocean). With a population of 5,372 (2010 US Census), the City boasts many recreational activities as well as shops and amenities. Incorporated in 1961, developers transformed a historic spring (formerly known as Bouncing Log Spring) via a dam to create a "paradise in the pines." The City gets its namesake from this natural boiling spring and is known for its eight parks and more than 50 natural and man-made lakes totaling ten miles of shoreline, making it a picturesque place to live and play. In recent years, major weather events including Hurricane Florence caused devastation to the community from flooding and breaching of the City's Sanford Dam located on Alton Lennon Drive.

Boiling Spring Lakes has several community features (see Key Community Features map) that provide important services and enrich the quality of life for its residents. These features serve as potential pedestrian origins and destinations. The Steering Committee reported current pedestrian activity at the following locations: Lake Patricia, the commercial district on George II Highway, the community center, and South Brunswick Middle and High School. By improving connectivity between these locations and Boiling Spring Lakes' neighborhoods, residents would be more likely to walk. An infrastructure project's ability to provide connectivity to these origins and destinations was one variable used to prioritize projects.



DEMOGRAPHICS

The population of Boiling Spring Lakes was 5,703 people in 2016 and grew to 5,777 people in 2017, a 1.3 percent increase with a median age of 36.8. The minority population in the City is approximately 17.3 percent of the total population (1,679 people, calculated by subtracting White, Non-Hispanic population total from the total population) and is predominately white (82.8 percent), "some other race" (8.9 percent), or "two or more races" (6.3 percent) according to the U.S. Census, ACS. Individuals living below the poverty line in Boiling Spring Lakes comprise approximately 5.2 percent of the population.

In Boiling Spring Lakes, 4.6 percent of households have no vehicle available, 28.2 percent of households have one vehicle available, and 67.2 percent of households have two or more vehicles available.

An overwhelming majority of residents (83.7 percent) commute alone to work using a car. Fourteen (14.8) percent of residents' commute by carpool, while zero percent of the population of Boiling Spring Lakes walk, bike, or uses a form of public transportation to travel to work. The City's average travel time to work that is less than 15 minutes makes up 24.4 percent of the population.

These statistics show a higher dependency on vehicle usage in Boiling Spring Lakes as compared to both county and statewide figures. Supporting the development and use of transportation networks for active modes may provide an opportunity for a variety of commuting options to work, as well as enabling workforce participation by people with limited access to vehicles.

LAND USE AND DEVELOPMENT

The City of Boiling Springs is highly committed to preserving its natural resources for conservation and recreation. This is reflected through the ten recreational facilities dispersed throughout the City's boundaries. The City is largely residential and comprised of single-family homes. There are currently sections of unpaved roadways with no development. Additional single-family homes are anticipated to be constructed in these locations. The land use along NC 87 differs from the rest of the City and is commercial in character for a small portion of the roadway. The remainder of NC 87 is bordered by undeveloped land.

INFRASTRUCTURE

The City of Boiling Spring Lakes is located south of Leland and north of Oak Island. George II Highway (Highway 87), a two-lane highway, runs through

the center of the city intersecting with East Boiling Spring Road, Patricia Lake, Fifty Lakes Drive, and Cougar Road. The major roads in Boiling Spring Lakes, such as East Boiling Spring Road, George II Highway (Highway 87), and Cougar Road, are maintained by NCDOT. There is one private road (Bet Lane) and the City maintains the remaining residential streets (paved and unpaved).

EXISTING PEDESTRIAN FACILITIES

The City of Boiling Spring Lakes does not currently have pedestrian facilities along roadways, except for a partial sidewalk in front of City Hall along E Boiling Spring Road (see map, following). Some unpaved nature trails are available for recreational use at the Boiling Spring Lakes Community Center. Based on input from the Steering Committee, the absence of pedestrian facilities is notable and creates a dangerous environment for multimodal travel

in various locations. The schools are lacking pedestrian crossings for students walking from nearby neighborhoods. Additionally, there are many recreational and natural areas in the town that generate pedestrian activity but have no pedestrian facilities connecting to neighborhood streets.

VULNERABILITY TO STORM EVENTS

The City of Boiling Spring Lakes has already been impacted by extreme flooding and infrastructure failure after Hurricane Florence (2018), where five dams were breached. Sanford Dam was breached which caused subsequent breaches at North Lake, Pine Lake, Middle Dam, and Upper Dam (see map, following). These breaches not only caused flooding and lengthy detours during the storm but resulted in these major recreational assets to be drained. See Annual Flood Impact map, following.



EXISTING PLANS AND PROGRAMMED PROJECTS

The City of Boiling Spring Lakes has had multiple planning efforts that have contributed to preserving natural resources, recreational activities, and infrastructure development. The following documents were reviewed to understand the land use and regulatory environment in the City and the region: City of Boiling Spring Lakes Comprehensive Land Use Plan, Boiling Spring Lakes Planning Board Long Range Plan, 2018-2023 Parks, Recreation, and Open Space Master Plan for the City of Boiling Spring Lakes, Brunswick County Trail Plan, Brunswick

County Comprehensive Transportation Plan, Brunswick County CAMA Land Use Plan, Military Ocean Terminal Sunny Point (MOTSU) Joint Land Use Study (JLUS).

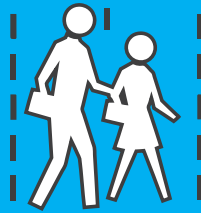
The preservation of recreational resources and dedication to quality of life are common themes in past planning efforts. This contributes significantly to the dedication the City of Boiling Spring Lakes has to its natural assets and promoting active transportation. See Existing Facilities map, following.

What we Heard:

Major Stakeholder Engagement Themes



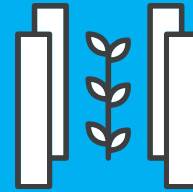
Address safety and security through pedestrian-focused infrastructure, policy, and programs



Design an active transportation network that accommodates all modes to connect the community



Incorporate projects, policies, and programs that encourage a safer relationship to the roadway



Incorporate green infrastructure into proposed projects to address stormwater and flooding



Enhance placemaking through code amendments that improve recreational access and urban design

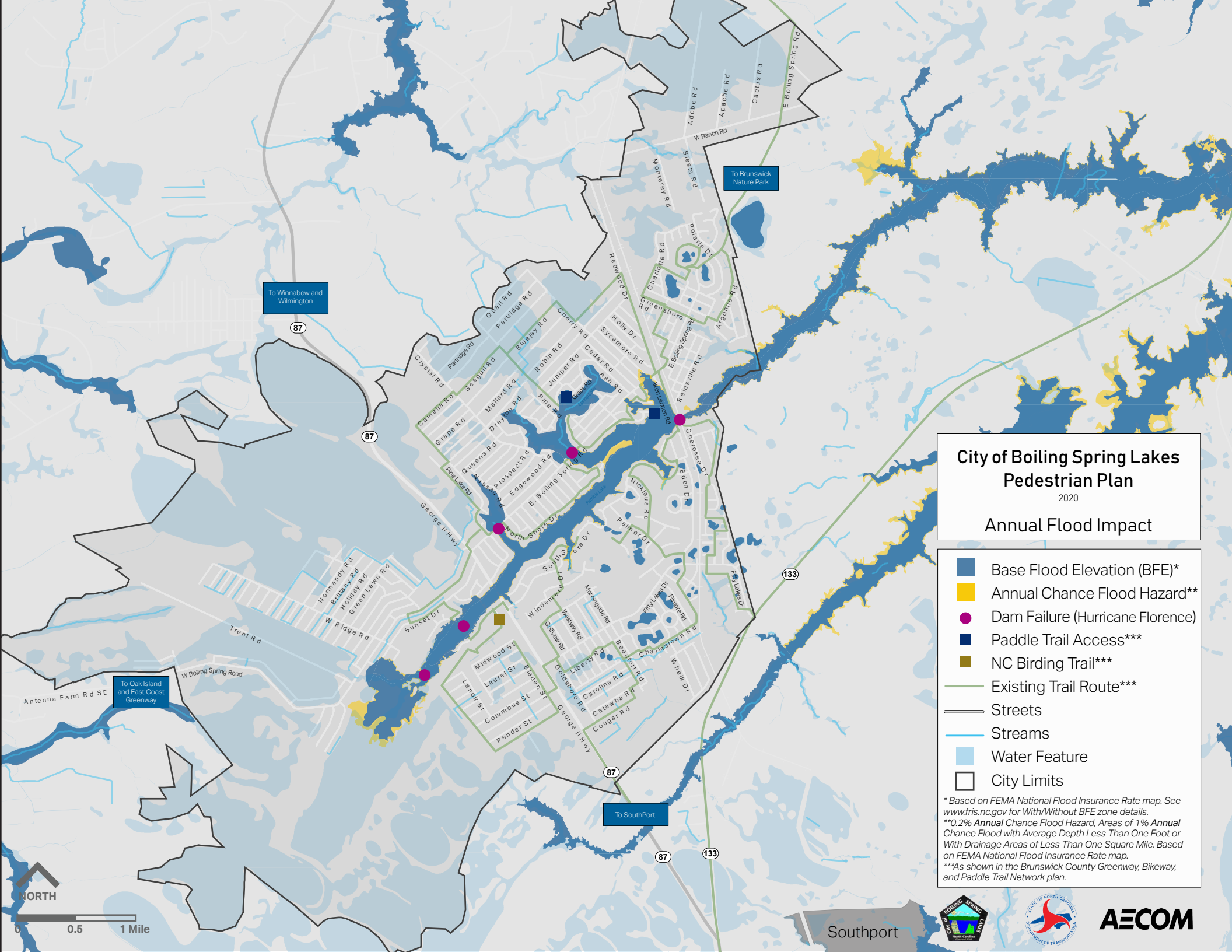


Create a plan that has clear action steps and a pathway toward implementation using policy measures

3 Steering Committee Meetings

2 In-Person + Virtual Public Engagements

1 Online + Paper Community Survey



City of Boiling Spring Lakes Pedestrian Plan 2020 Annual Flood Impact

- Base Flood Elevation (BFE)*
- Annual Chance Flood Hazard**
- Dam Failure (Hurricane Florence)
- Paddle Trail Access***
- NC Birding Trail***
- Existing Trail Route***
- Streets
- Streams
- Water Feature
- City Limits

* Based on FEMA National Flood Insurance Rate map. See www.fris.nc.gov for With/Without BFE zone details.
** 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with Average Depth Less Than One Foot or With Drainage Areas of Less Than One Square Mile. Based on FEMA National Flood Insurance Rate map.
*** As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan.





COMMUNITY VISION

“Boiling Spring Lakes will be a place that fosters community connectivity through multimodal transportation options, development of complete streets, and programs and policies that link City assets and resources to create a more walkable, attractive, and identifiable community.”

GOALS OF THE PLAN

ONE

Improve on-road pedestrian safety, with an emphasis on heavily used routes.

TWO

Create a network of multimodal transportation options for active and passive recreation that will enhance connections between community origins and destinations such as schools, stores, parks, and recreation.

THREE

Develop pedestrian projects that make land use, development, and transportation infrastructure more resilient to potential future flooding.

FOUR

Educate the community as to the benefits of pedestrian activity and applicable rules and regulations.

FIVE

Provide a hierarchy of recommended pedestrian policies and programmatic support services for a strategic action plan. Policies and development guidelines in coordination with past planning efforts and regulations that are consistent with the pedestrian master plan.

SIX

Outline funding opportunities that provide a clear pathway to building active transportation.

OBJECTIVES OF THE PLAN

ONE

Identify and develop pedestrian accommodations along Boiling Spring Lakes' roadways.

TWO

Survey the Boiling Spring Lakes' community in order to craft a pedestrian plan representative of the community.

THREE

Partner with diverse stakeholders to plan and hold events that advance active living.

FOUR

Identify policies that promote resiliency to mitigate impact of potential, future weather events.

FIVE

Implement policies and programs to improve pedestrian safety and educate the community.

SIX

Improve links between existing pedestrian infrastructure, organize and support programs and events on the benefits of pedestrian activity, and create incentives to encourage walking.



RECOMMENDATIONS



PROJECTS.POLICIES. PROGRAMS

INFRASTRUCTURE PROJECTS

Active transportation offers many benefits including improved health, reduced environmental impacts, and fewer financial commitments from decreased dependency on the automobile. The following outlines infrastructure, policy, and program improvements that are recommended to provide the City of Boiling Spring Lakes with a safe, accessible, and connected active transportation network.

PROJECT PRIORITIZATION

Project corridors were prioritized using a methodology developed specifically for Boiling Spring Lakes. The methodology was inspired by the NCDOT Prioritization 6.0 process, which is a data-driven process for prioritizing the funding of major transportation projects in the state. This Plan's prioritization methodology was intentionally based

on Prioritization 6.0 as the pedestrian infrastructure projects proposed for the City would most likely be funded through this process. See the City of Boiling Spring Lakes Pedestrian Plan document for more detail.

PROJECT COSTS

Costs for recommended pedestrian infrastructure projects were primarily estimated using NCDOT's Bicycle and Pedestrian Cost Estimation (BPCE) Tool, a report by The Pedestrian and Bicycle Information Center (PBIC), and capital costs from similar projects. The projects are anticipated to be implemented within existing right-of-way. The costs associated with any additional right-of-way needed for these projects are not included in these estimates. Estimated costs were adjusted to 2020 dollars by using an annual inflation factor of 3.5 percent. See the City of Boiling Spring Lakes Pedestrian Plan document for more detail.

Project Types: Spot + Linear

Spot Improvements



High visibility crosswalks are crosswalks marked with diagonal or longitudinal lines parallel to traffic flow, such as the ladder, continental or bar pair marking pattern.



Advance Yield Here To Pedestrians signs are placed in advance of the marked crosswalk along with the stop line or yield line to alert drivers.



Midblock crossings are typically located on low-volume, low-speed roadways and provide a safe crossing option indicated by pavement markings and/or signs.



Traffic calming studies investigate measures such as speed tables, share the road signage, stop signs, or neighborhood roundabouts that help address vehicular speeds and improve safety.



Pedestrian rapid flash beacons are pedestrian-activated devices used to warn and control traffic at an unsignalized location to assist pedestrians in crossing.



A curb ramp provides a combined ramp and landing to accomplish a change in level at a curb between the sidewalk and the street.

Spot Improvements



Infrastructure that supports water management through protection, restoration, or mimics the natural water cycle to improve stormwater drainage or flooding control.



Wayfinding includes comprehensive signage and/or markings to guide travelers to their destinations along preferred routes.



Lighting improvements for active transportation typically light poles, lampposts, or streetlamps, and should also consider dark sky lighting.

Linear Improvements



Sidewalks are the portion of a roadway right-of-way, beyond the curb or edge of roadway pavement, which is intended for use by pedestrians.



A paved shared use path designed to meet ADA standards for use by active transportation users, separated from the roadway by an open space, physical barrier, or right-of-way.



A boardwalk is an elevated footpath, walkway, or a low type of bridge that allows active transportation users to cross wet or marshy land.

Proposed Projects

1. NC 87 from City Hall to Cougar Rd
2. Fifty Lakes Drive
3. NC 87 to City Limits (South)
4. Alton Lennon Drive
5. Cougar Road
6. East Boiling Spring Road
7. NC 87 to City Limits (North)
8. Spring Lake Loop
9. City Connector
10. South Shore Drive
11. Tate Lake Park Loop
12. West Boiling Spring Road to East Coast Greenway and Oak Island
13. Rail to Trails
14. East Boiling Spring Road to Brunswick Nature Park

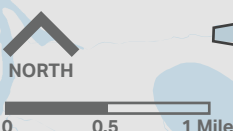
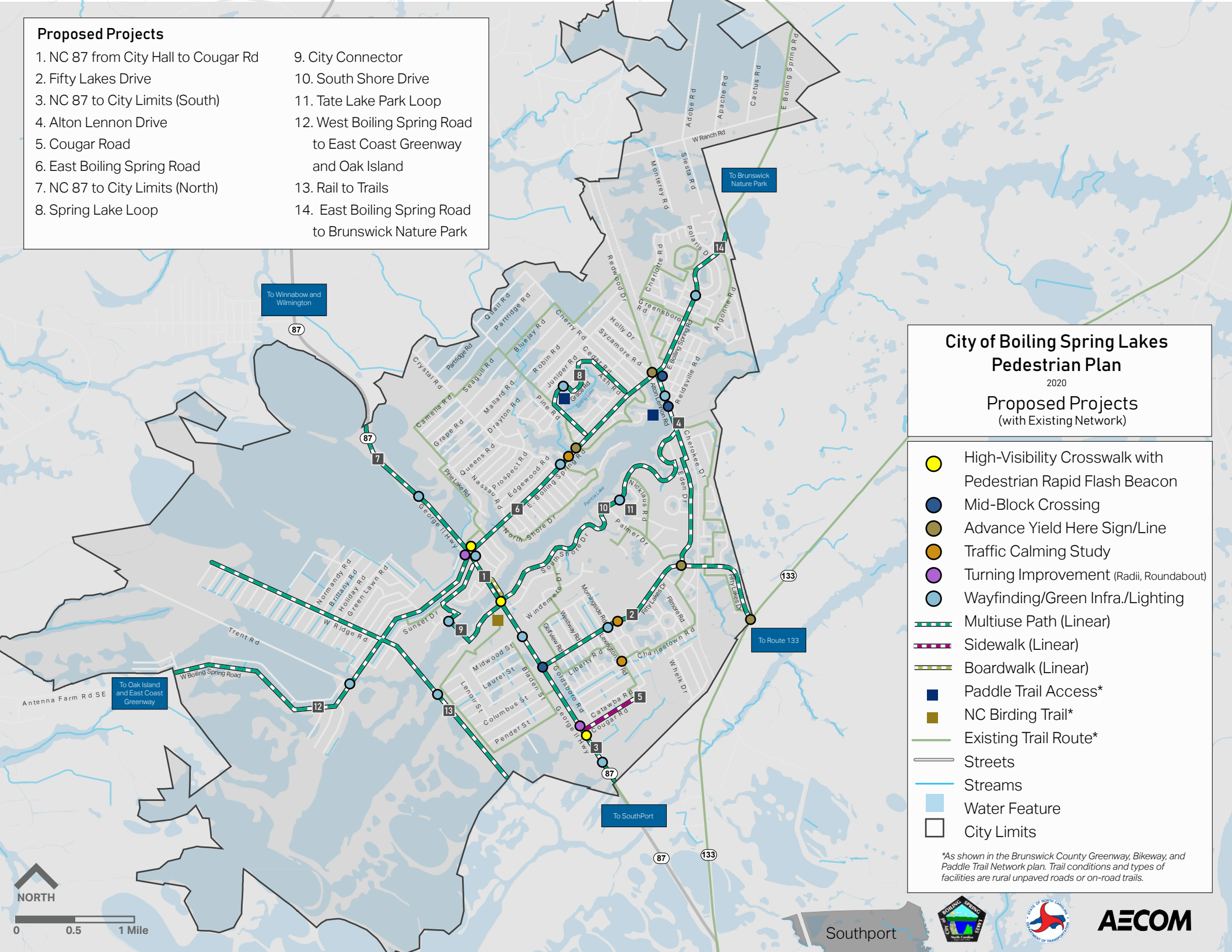
City of Boiling Spring Lakes Pedestrian Plan

2020

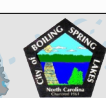
Proposed Projects (with Existing Network)

- High-Visibility Crosswalk with Pedestrian Rapid Flash Beacon
- Mid-Block Crossing
- Advance Yield Here Sign/Line
- Traffic Calming Study
- Turning Improvement (Radii, Roundabout)
- Wayfinding/Green Infra./Lighting
- Multiuse Path (Linear)
- Sidewalk (Linear)
- Boardwalk (Linear)
- Paddle Trail Access*
- NC Birding Trail*
- Existing Trail Route*
- Streets
- Streams
- Water Feature
- City Limits

*As shown in the Brunswick County Greenway, Bikeway, and Paddle Trail Network plan. Trail conditions and types of facilities are rural unpaved roads or on-road trails.



Southport



AECOM

INFRASTRUCTURE PROJECTS

Recommended improvements in this plan include multiuse paths along NC 87, major thoroughfares including Fifty Lakes Drive, Alton Lennon Drive, and East Boiling Spring Road, sidewalks along Cougar Road, and crossing improvements across the community.

All proposed projects are intended to provide safe connections between origins and destinations within the City while promoting exercise and mobility. The projects were developed through collaboration with the Steering Committee, field analysis, and public input. All pedestrian facility recommendations along NCDOT maintained roadways will require coordination with NCDOT Highway Division 3 as part of implementation. The following section outlines projects in detail, according to Tier 1, Tier 2, and Tier 3. Tiers are based on project prioritization.

Map ID	PROJECT CORRIDOR	TIER
1	NC 87 from City Hall to Cougar Road	Tier 1
2	Fifty Lakes Drive	
3	NC 87 to City Limits (South)	
4	Alton Lennon Drive	
5	Cougar Road	
6	East Boiling Spring Road	Tier 2
7	NC 87 to City Limits (North)	
8	Spring Lake Loop	
9	City Connector	Tier 3
10	South Shore Drive	
11	Tate Lake Park Loop	
12	W. Boiling Spring Rd. to ECG/Oak Island	
13	Rails to Trails	
14	E. Boiling Spring Rd. to Brunswick Nature Park	

PROJECT CORRIDOR 1: NC 87 from City Hall to Cougar Road

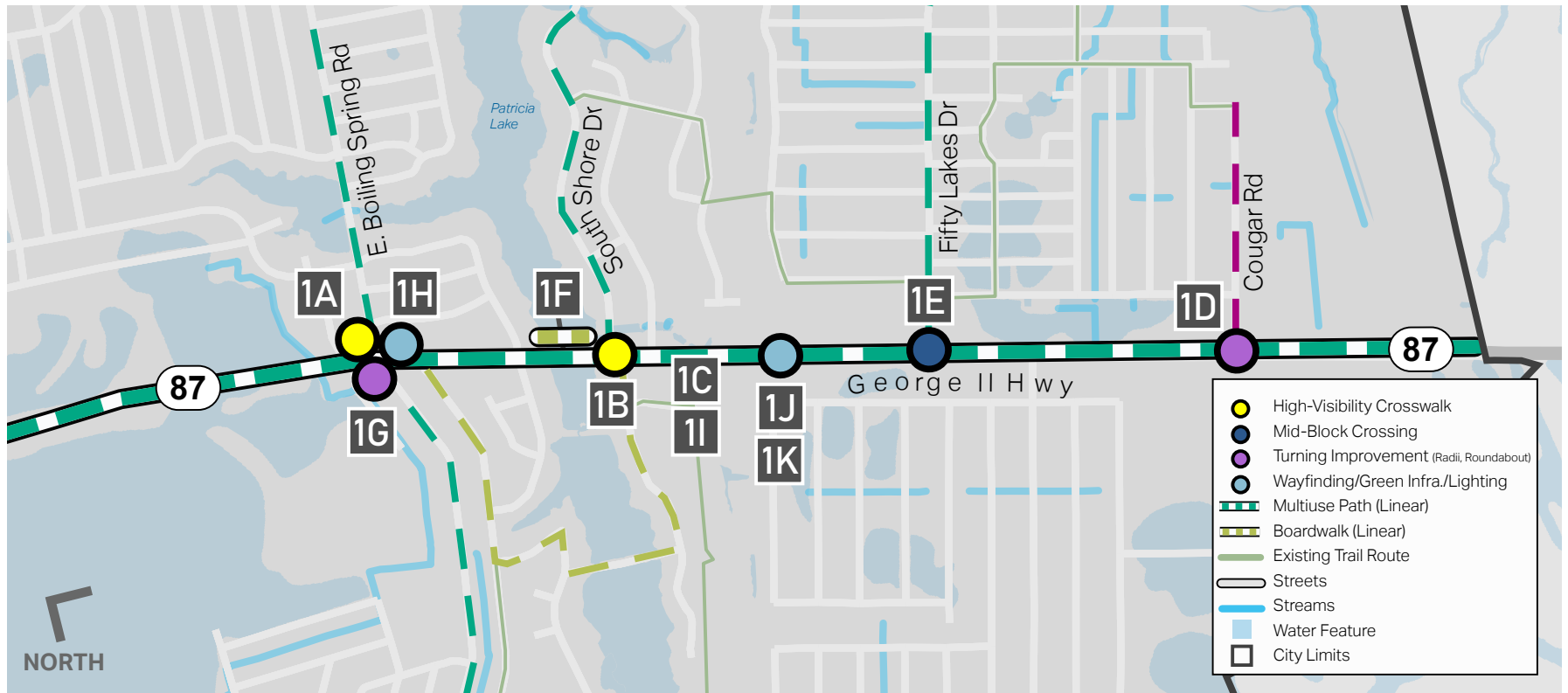
Conceptual rendering



As NC 87 currently lacks pedestrian accommodations including sidewalks, crosswalks, and signals, the installation of improved active transportation enhancements such as pedestrian crosswalks and a multiuse path would promote activity amongst residents and connectivity within the City. This would also provide an alternative way for residents to travel to the businesses and recreational opportunities in this area. There are eleven projects proposed for this section of NC 87, organized according to short, medium, and long-term projects to accommodate a range of planning horizons. All projects recommended are phased according to short, medium, or long term projects.

PROJECT CORRIDOR 1: NC 87 from City Hall to Cougar Road

Tier 1



Estimated project cost \$7,565,000

ID	DESCRIPTION
1A	High visibility crosswalk, pedestrian signal, pavement markings
1B	High visibility crosswalk, pedestrian signal, pavement markings
1C	Multiuse path on both sides from City Hall to Community Center
1D	Study turning radii and assess feasibility of roundabout

ID	DESCRIPTION
1E	Mid-block crossing at NC 87 and Fifty Lakes Drive
1F	Study pedestrian boardwalk along Mitchell Prince Bridge
1G	Engineer (see 1D) and install roundabout
1H	Signage/welcome signs at roundabout

ID	DESCRIPTION
1I	Multiuse path from Community Center to Cougar Road
1J	Lighting and wayfinding signage along NC 87
1K	Green infrastructure along NC 87 multiuse path

See the City of Boiling Spring Lakes Pedestrian Plan for detail

PROJECT CORRIDOR 2: Fifty Lakes Drive

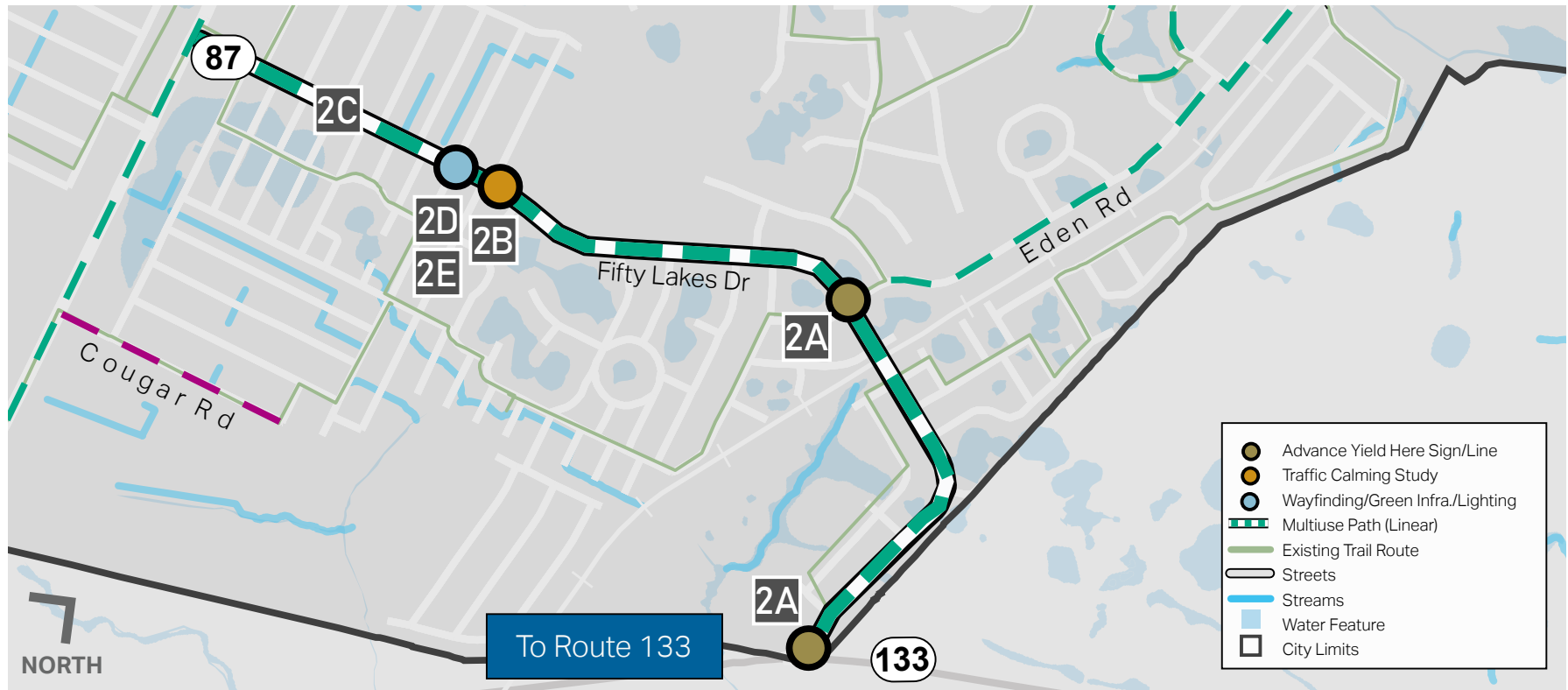
Conceptual rendering



All proposed projects on Fifty Lakes Drive aim to address residents who use the roadway for walking and other active transportation as well as for improved connectivity to regional amenities. With one of the largest rights-of-way areas at 100 feet, the roadway presents existing potential for multimodal infrastructure. There are five projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons. All projects recommended are phased according to short, medium, or long term projects.

PROJECT CORRIDOR 2: Fifty Lakes Drive

Tier 1



Estimated project cost \$6,918,000

ID	DESCRIPTION	ID	DESCRIPTION	ID	DESCRIPTION
2A	Advance yield here sign and line	2C	Multiuse path from NC 87 to Route 133	2E	Green infrastructure along Fifty Lakes Drive
2B	Traffic calming study to investigate the use of speed tables, share the road signage, stop signs, and neighborhood roundabouts	2D	Placemaking measures, including lighting and wayfinding signage		

See the [City of Boiling Spring Lakes Pedestrian Plan](#) for detail

PROJECT CORRIDOR 3: NC 87 to City Limits (South)

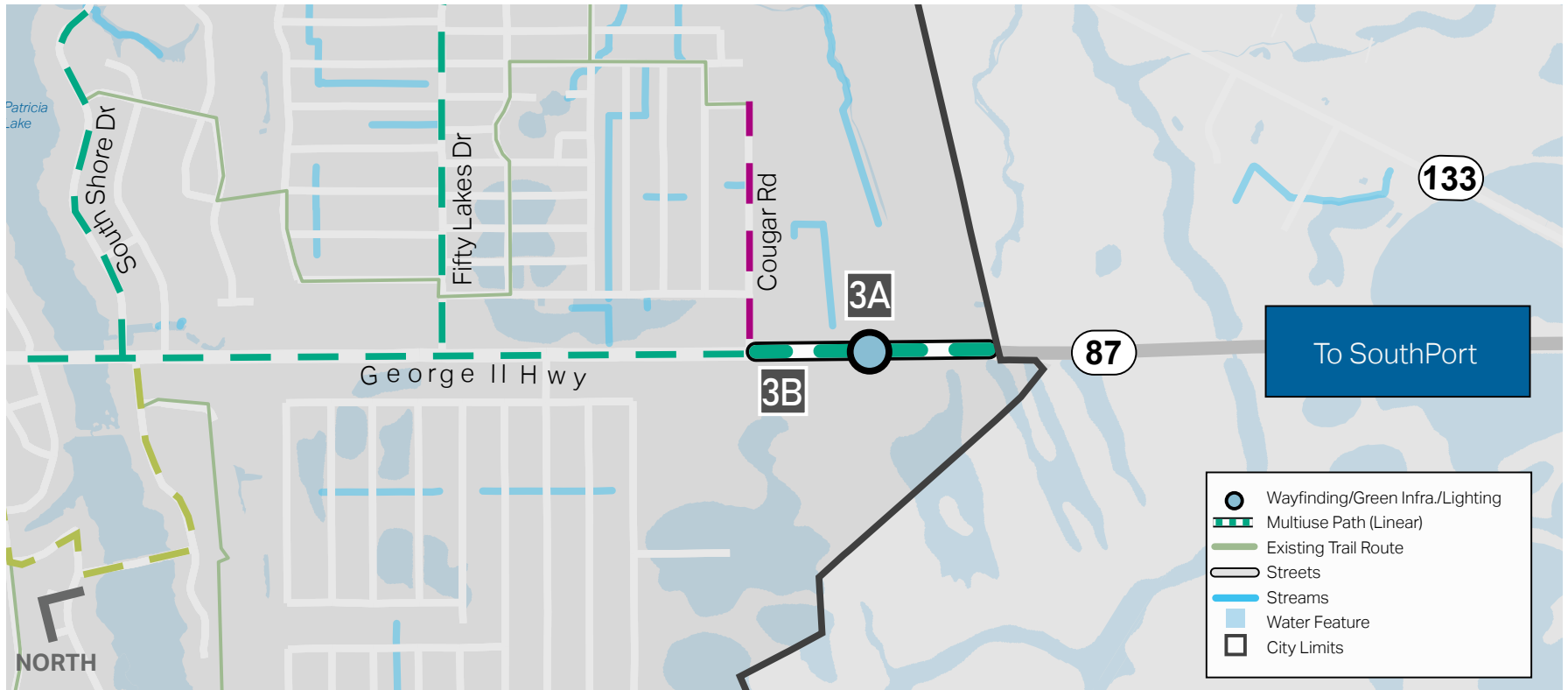
Conceptual rendering



Establishing safety measures and installing appropriate infrastructure along NC 87 to City Limits (South) will be crucial to creating a safer community for all users as well as provide better connectivity to regional attractions such as Southport and Oak Island. There are two projects proposed for this section of NC 87, organized according to short and long-term projects to accommodate a range of planning horizons. All projects recommended are phased according to short, medium, or long term projects.

PROJECT CORRIDOR 3: NC 87 to City Limits (South)

Tier 1



Estimated project cost \$1,498,000

ID	DESCRIPTION
3A	Wayfinding signage with regional direction to Southport

ID	DESCRIPTION
3B	Multiuse path along NC 87 at Cougar road to city limits (south)

PROJECT CORRIDOR 4: Alton Lennon Drive/Eden Drive

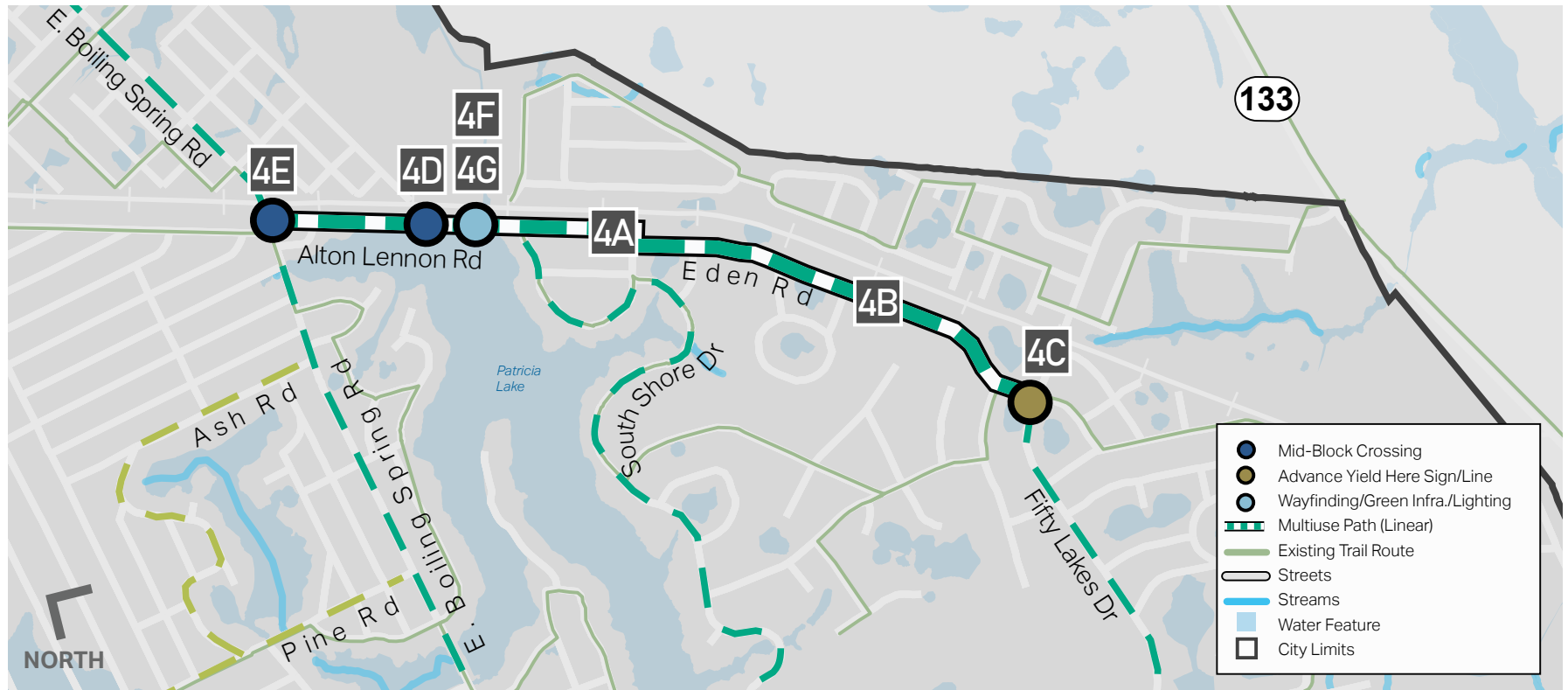
Conceptual rendering



Alton Lennon Drive provides critical connections in the City of Boiling Spring Lakes. The strong motivation by the community and City to plan for medium and long-term opportunities for both dam-specific upgrades as well as improved active transportation amenities along the entirety of the roadway will help encourage medium- and long-term improvements. Zoning updates could mandate the inclusion of active transportation infrastructure as part of mitigation efforts to prevent potential, future dam breach. A multiuse path may be accommodated on the downstream face of the existing berm, which would require widening. There are seven projects proposed, organized according to short, medium, and long-term projects to accommodate a range of planning horizons. All projects recommended are phased according to short, medium, or long term projects.

PROJECT CORRIDOR 4: Alton Lennon Drive/Eden Drive

Tier 1



Estimated project cost \$7,565,000

ID	DESCRIPTION
4A	Multiuse path on east side of Alton Lennon Drive from Eden Drive to E. Boiling Spring Rd, coordinate with FEMA rebuilding, (see 6C)
4B	Multiuse path on east side of Eden Drive from Alton Lennon Drive to Fifty Lakes Drive to extend the multiuse path along Alton Lennon Drive as part of the Sanford Dam reconstruction project (see 4A)

ID	DESCRIPTION
4C	Advance yield here sign and line at Eden Drive (see project 2C)
4D	Mid-block crossing at Alton Lennon Park
4E	Mid-block crossing on east side of Alton Lennon Drive at East Boiling Spring Road

ID	DESCRIPTION
4F	Install lighting and wayfinding signage along Eden Drive and Alton Lennon Drive
4G	Green infrastructure along Eden Drive and Alton Lennon Drive multiuse path

PROJECT CORRIDOR 5: Cougar Road

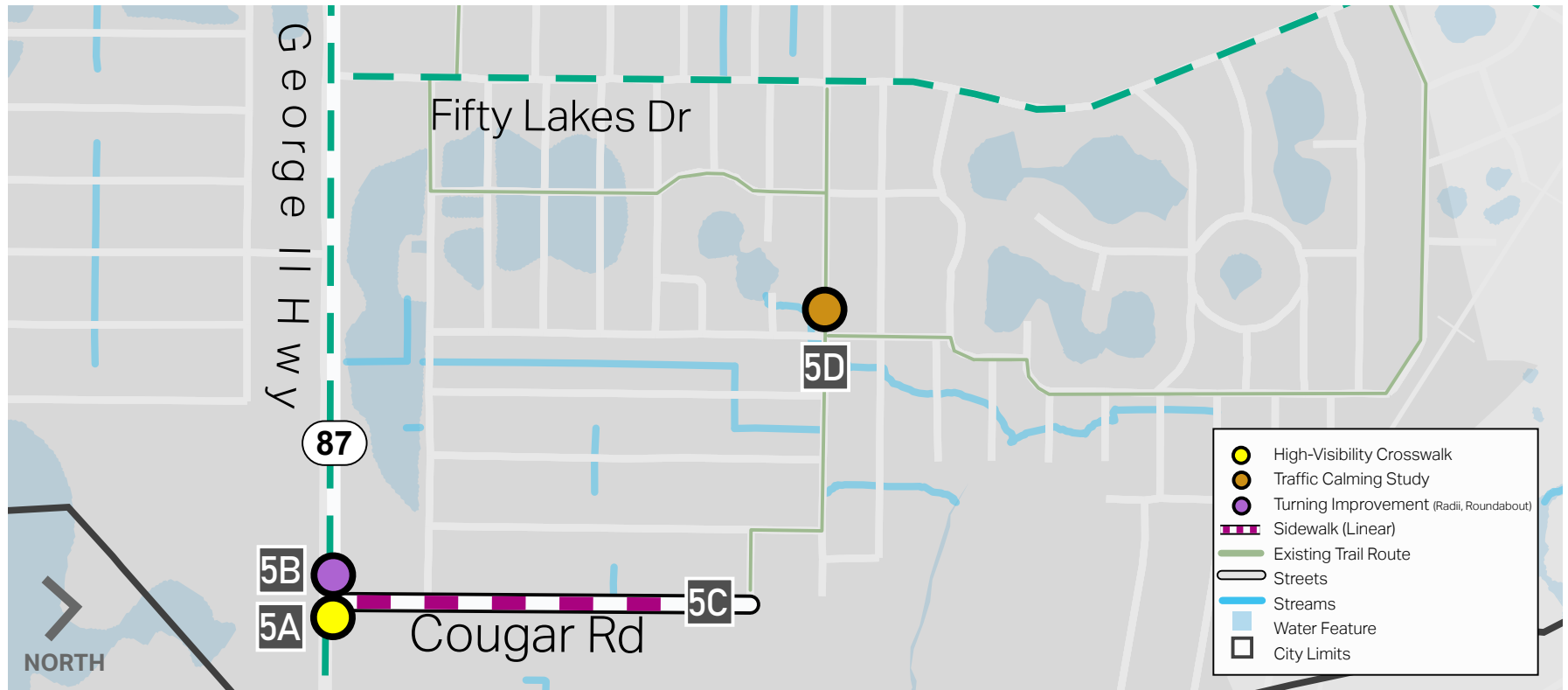
Conceptual rendering



Recommended projects for the Cougar Road corridor include several linear and spot pedestrian projects to improve walkability around the schools and surrounding residential areas. Pedestrian improvements are likely to help reduce automobile dependence in this area, thereby reducing traffic. There are four projects proposed, categorized as short-term projects based on the high-level of need for the corridor. See the City of Boiling Spring Lakes Pedestrian Plan document for more project detail.

PROJECT CORRIDOR 5: Cougar Road

Tier 1



Estimated project cost \$978,000

ID	DESCRIPTION
5A	High visibility crosswalk with pavement markings, right-turn-on-red, pedestrian signal, and a leading pedestrian interval
5B	Reduce turning radii of the right turn lane from Cougar Road onto NC 87. To be coordinated with NC 87 turning radii project

ID	DESCRIPTION
5C	Install sidewalk on south side of Cougar Road from NC 87 to Dix Road
5D	Traffic calming study that investigates the use of speed tables and neighborhood roundabouts to control vehicular traffic

Tier 2 Infrastructure Projects

Project	Map ID	DESCRIPTION
East Boiling Spring Road	6A	Traffic calming study to investigate use of speed tables and neighborhood roundabouts
	6B	Advance yield here sign and line based on 6A
	6C	Multiuse path on the north side of East Boiling Spring Road from NC 87 to Alton Lennon Drive (see projects 4B and 4E)
	6D	Lighting and wayfinding signage along East Boiling Spring Road
	6E	Green infrastructure along East Boiling Spring Road multiuse path
NC 87 (North)	7A	Extend multiuse path from City Hall to city limits (north)
Spring Lake Loop	8A	Wayfinding signage around Spring Lake from Pine Road, Grace Road, Ash Road, to East Boiling Spring Road
	8B	Multiuse path from Pine Road, Grace Road, Ash Road, to East Boiling Spring Road

Tier 3 Infrastructure Projects

Project	Map ID	DESCRIPTION
City Connector	9A	Designate a City Connector with distinctive wayfinding signage from the Community Center to City Hall
	9B	Multiuse path along the City Connector from the Community Center to City Hall
South Shore Drive	10A	Advance yield here sign and line to alert drivers of pedestrian activity at intersections
	10B	Traffic calming study to investigate the use of speed tables
	10C	Traffic calming measures (see 10B) from NC 87 to Alton Lennon Drive
Tate Loop Park	11A	Wayfinding signage on South Shore Drive at Tate Lake Drive
W. Boiling Spring Rd	12A	Wayfinding signage with regional direction to the East Coast Greenway and Oak Island
	12B	Extend multiuse path along West Boiling Spring Road/Antenna Farm Road SE at NC 87 to City limits
Rail to Trails	13A	Convert the Wilmington, Brunswick and Southern Railroad west of the City from an unused rail line to a multiuse trail
	13B	Wayfinding signage (or similar) along NC 87 (and other key corridors, as needed) to direct active transportation users to the Rail to Trails
E. Boiling Spring Rd to Brunswick Nature Park	14A	Wayfinding signage with regional direction to Brunswick Nature Park
	14B	Pedestrian crossing and safety study with the existing and active railroad line between Alton Lennon Drive and Durham Road
	14C	Extend multiuse path along East Boiling Spring road at Alton Lennon Drive to City limits

Policies

A comprehensive set of recommended code and ordinance updates focuses on embedding active transportation in the design and development of infrastructure in the City. Broadly, these includes amendments to Article 5.4 Overlay Districts; Article 5.7 Table of Area, Setback, Living Area, and Height Requirements; Article 7.9.2 (c) Cross Access; Article 7.16 Pedestrian Facilities; Article 7.16 Pedestrian Facilities; Article 11.4.2 Flood Damage Prevention Ordinance; New Section – Dedication of Open Space; New Section – Signage Policy; New Section – Lighting Policy.

CODE, ORDINANCE, EXISTING CONDITION	CURRENT POLICY OR CONDITION	RECOMMENDED CHANGES AND COMMENTS
Code, Ordinance, Existing Condition Article 5.4 Overlay Districts (UDO)	Currently states that it is “reserved for future use.”	<p>Create an Active Transportation Overlay Zoning District along all linear corridors defined and mapped in the City of Boiling Spring Lakes Pedestrian Plan (2020). See “proposed projects” 1-14.</p> <p>This regulation is intended to require sidewalk/multiuse infrastructure requirements for any new or proposed construction or reconstruction projects throughout the city.</p>
Article 5.7 Table of Area, Setback, Living Area, and Height Requirements (UDO)	<p>Zoning districts (including PRD, C-1, and C-1A) have minimum front setbacks of n/a and 50-feet, respectively. City-Center (C-C) has a minimum front setback of 15 feet. Side and rear setbacks are 50 feet (PRD has a n/a setback).</p>	<p>Amend zoning to require minimum front setbacks in commercial and planned residential districts (PRD) to align with city-center (C-C) setback of 15 feet. Require new commercial buildings to be placed close to the sidewalk and require either rear or side parking.</p> <p>The standard setback of 50 feet for commercial buildings does not create a pedestrian-friendly environment. In walkable urban environments, buildings placed at the edges of sidewalks and public spaces, rather than being set back, can greatly enhance the character of the pedestrian environment. To promote design that fosters a safe and inviting pedestrian environment, the adoption of a smart growth, performance-based, or other types of code, including form-based codes are recommended. These types of zoning codes can regulate the size, height, and proximity to the street and can help create vibrant walkable communities.</p>
	New Section	Parking lots should be located behind future developments to provide a safer entrance for pedestrians accessing the business.
Article 7.9.2 (c) Cross Access (UDO)	Where new development, except individual one-and two-family residences, is adjacent to vacant land or developed land with poor adjacent connections, all streets, driveways, sidewalks, paths, and other access ways shall be designed to allow future connections at property boundaries unless the UDO Administrator determines that topography, the presence of natural features, and/or vehicular safety factors make connection impractical	Amend this section to require sidewalks and sidewalk and roadway connections between developments (stub outs) to allow greater connectivity and traffic flow between developments.

CODE, ORDINANCE, EXISTING CONDITION	CURRENT POLICY OR CONDITION	RECOMMENDED CHANGES AND COMMENTS
Article 7.16 Pedestrian Facilities (UDO)	(A) Sidewalks shall be at least five (5) feet wide and constructed of concrete at least five (5) inches thick, or such other material as may be approved by the City of Boiling Spring Lakes City Engineer.	<p>Amend to include "active transportation including sidewalks and multiuse facilities."</p> <p>Amend to include that all facilities require compliance with ADA. This should include curb ramps on sidewalks at all crossings and a restriction of cross slopes of more than two (2) percent. National and statewide plans are used by NCDOT to guide the planning, design, and construction of bicycle and pedestrian infrastructure.</p> <p>Amend to include wider sidewalks, between 10'-15', in the C-C zoning district to allow for outdoor dining.</p>
	(B) Sidewalks should be installed along the frontage of all new development or redevelopment within the C-1, and C-C zoning districts. Sidewalks shall be installed within the right-of-way and connect to adjacent facilities in all zoning districts.	Amend to include active transportation (e.g., sidewalks or multiuse paths) shall be located on at least one side of each street or roadway of a new development, subdivision, redevelopment, or newly paved street within C-1, C1A, and C-C zoning districts.
	New Subsection	Amend to include new sub section that vegetative buffering should be provided along newly constructed, developed, or re-developed sidewalks or multiuse paths to provide increased drainage during storm or flood events, shade, and natural resource protection. Permeable pavement should also be used, where feasible, to increase drainage.
	New Subsection	Amend to include new sub section that when an existing sidewalk or multiuse path is closed for construction or maintenance reasons – on the walkway itself or on adjacent property – an adequate detour route should be established and signed, if feasible.
Article 11.4.2 Flood Damage Prevention Ordinance (UDO)	Section 11.4.2 (I) includes specifications for "other development" including fences, retaining walls, roads/watercourse crossings.	Add sub article that requires hybrid green/nature-based infrastructure and stormwater infiltration, conveyance, and storage improvements be included on all roadway upgrades, new construction, or reconstruction to help mitigate impacts from stormwater and nuisance flooding. This may include larger-diameter grey infrastructure and combinations of green and gray infrastructure such as vegetative buffers, storm sewers, and culverts. This should follow FHWA's Nature-based Resilience for Coastal Highways guidance.
New Section – Dedication of Open Space	New Section	Align with Section 8.11 in UDO requiring open space for subdivisions of 50 acres or more to include open space defined as any portion of any lot proposed for open space, common open space, or recreation area means any space or area characterized by great natural scenic beauty or whose openness, natural condition, or present state of use, if retained, would enhance the present or potential value of abutting or surrounding development, or would maintain or enhance the conservation of natural or scenic resources; or any undeveloped or predominately undeveloped land that has value for one or more of the following purposes: (1) Park and recreational uses; (2) Conservation of land and other natural resources; or (3) Recreational or scenic purposes. Chapter 4 of NCDOT's Complete Streets Planning and Design Guidelines provides specific design guidance and recommendations for greenways, shared use paths, bicycle facilities, and sidewalks.
New Section – Signage Policy	New Section	Signage that provide wayfinding for active transportation users should be required on construction of all active transportation facilities including greenways, shared use paths, bicycle facilities, and sidewalks.
New Section – Lighting Policy	New Section	Provision of lighting along active transportation routes, designed by the City, should be required for new construction.

Programs

Programmatic recommendations look to improve safety, encourage physical activity, and enhance the local aesthetics of Boiling Spring Lakes. These can be administered to socialize the public to multimodal activities and/or facilities. The focus is to educate both active transportation users and vehicular users while bringing awareness to proposed recommendations. The City should consider expanding upon the work of the existing Boiling Spring Lakes Bicycle & Pedestrian Task Force to lead these efforts and formalize into the Boiling Spring Lakes Active Transportation Advisory Committee (ATAC). [See the City of Boiling Spring Lakes Pedestrian Plan for detail.](#)

Formalize Active
Transportation
Advisory Committee

Safety Campaigns to
Educate Pedestrians,
Active Transportation
Users, and Drivers

Enhance Safe Access
to Schools through
Safe Routes to School

Support Open Street
and Walking Events
such as Outdoor
Festivals

Encourage Public Art
and Environmental
Education Events

Educate Citizens on
Existing Driving Laws
& Speed Limits

Action Steps

ACTION	DESCRIPTION	STAKEHOLDER	TIMELINE
Adopt the Boiling Spring Lakes Comprehensive Pedestrian Plan	Present the Plan to the Boiling Spring Lakes Board of Commissioners for adoption.	Board of Commissioners and city staff	Fall 2020
Adopt a active transportation overlay district	Adopt a sidewalk overlay district that to require sidewalk infrastructure be built throughout the City.	Board of Commissioners and city staff	Fall 2020
Amend Brunswick County CTP	Amend Brunswick County Comprehensive Transportation Plan (CTP) to incorporate recommended projects from this plan into the CTP.	Board of Commissioners, City Staff, Brunswick County	Fall 2020
Convert the Task Force to an Active Transportation Advisory Committee (ATAC)	Transition the Boiling Spring Lakes Bicycle & Pedestrian Task Force into a formal advisory committee that will be responsible for overseeing the implementation of the Plan.	Board of Commissioners and city staff	Winter 2020
Strengthen partnerships with Cape Fear RPO and NCDOT Division 3	Hold an initial meeting with the stakeholders to provide an overview of the Plan's recommendations and identify opportunities for collaboration.	Cape Fear RPO, NCDOT Division 3, and city staff	Winter 2020/ ongoing
Apply for Watch for Me NC	Apply to participate in NCDOT's Watch for Me NC campaign to raise awareness and provide educational resources to promote bicycle and pedestrian safety to residents, drivers, and law enforcement.	Task Force/ATAC and city staff	Winter/Spring 2021/ Ongoing
Identify potential funding sources during city budget planning	Identify potential funding sources for pedestrian programs, projects, and maintenance in the city's budget such as Powell Bill funds. Begin to accumulate funds that can be used for the local match required for most projects.	Task Force/ATAC, Board of Commissioners, and city staff	Winter/Spring 2021
Apply for alternative funding sources for the Plan's projects and programs	Refer to the funding sources identified in this Plan in Appendix D; apply for funds in addition to the STIP process to implement programs and projects. Establish a fund to use for local match requirements.	Task Force/ATAC and city staff	Ongoing
Include requirements for pedestrian facilities in city ordinances and policies	Draft amendments to city ordinances and policies following the recommendations of this Plan and NCDOT's Complete Street Policy for pedestrian infrastructure in existing and new development.	Board of Commissioners, and city staff	Spring/ Summer/ Fall 2021
Coordinate with Active Routes to School Coordinator	Begin meeting with the Active Routes to School Coordinator to establish and develop policy for implementation and/or training or programs for South Brunswick Middle and High Schools.	Task Force/ATAC, city staff, NCDOT, NC Division of Public Health	Summer/ Fall 2021
Partner with local artists, businesses, and the parks department	Partner with local artists, businesses, and the parks department to work on placemaking projects.	Local artists, art organizations, and city staff	Winter 2022
Prepare the Boiling Spring Lakes Pedestrian Plan Annual Report/Memo	Prepare the first Boiling Spring Lakes Pedestrian Plan Annual Report or memo assessing progress made over the past year using the performance and evaluation measures included in this Plan.	Task Force/ATAC and city staff	Spring 2022

CITY OF BOILING SPRING LAKES PEDESTRIAN PLAN

2020