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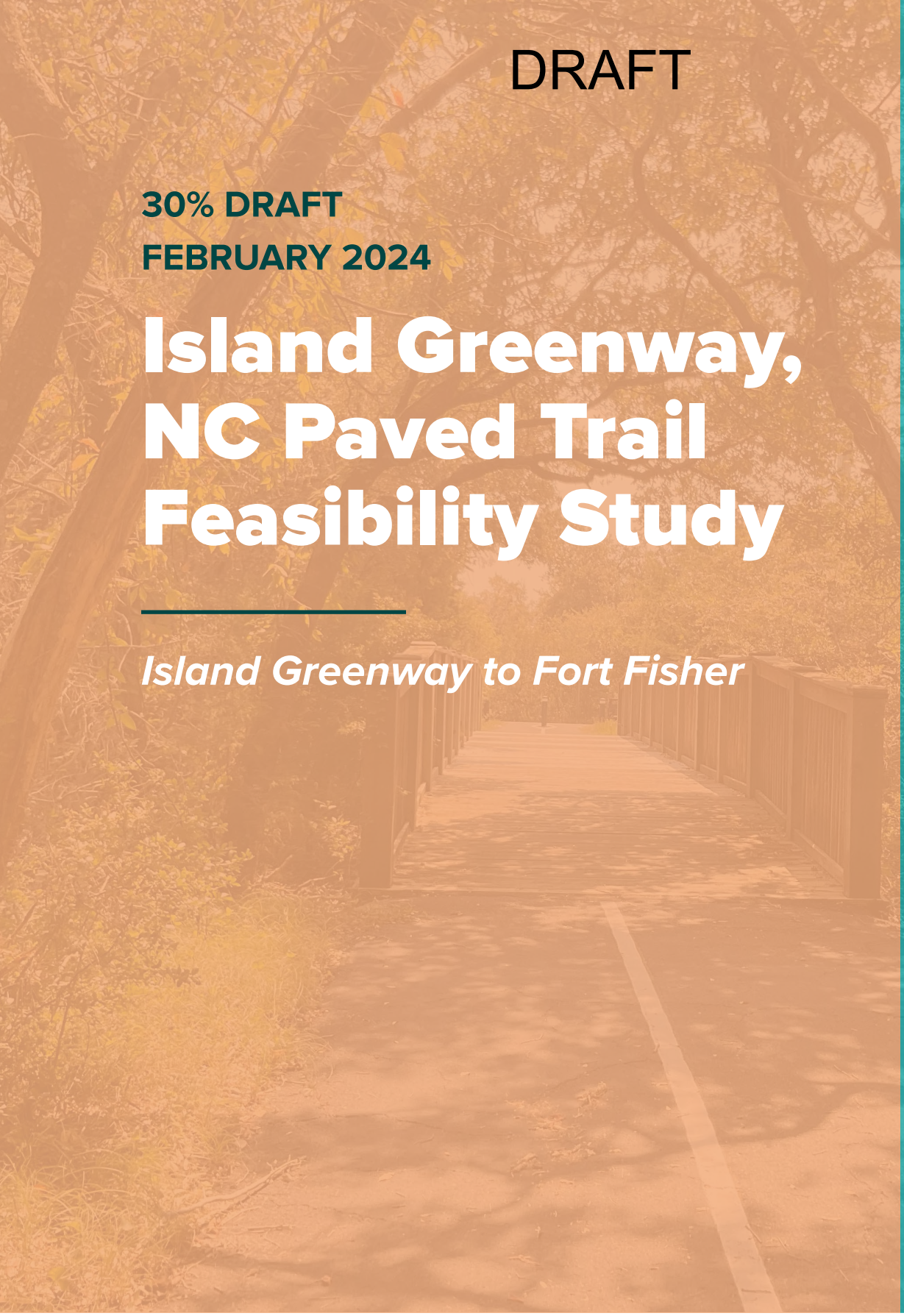
FEBRUARY 2024

Island Greenway, NC Paved Trail Feasibility Study

Island Greenway to Fort Fisher



TOWN OF KURE BEACH · NORTH CAROLINA ·

Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

East Coast Greenway ALLIANCE

alta

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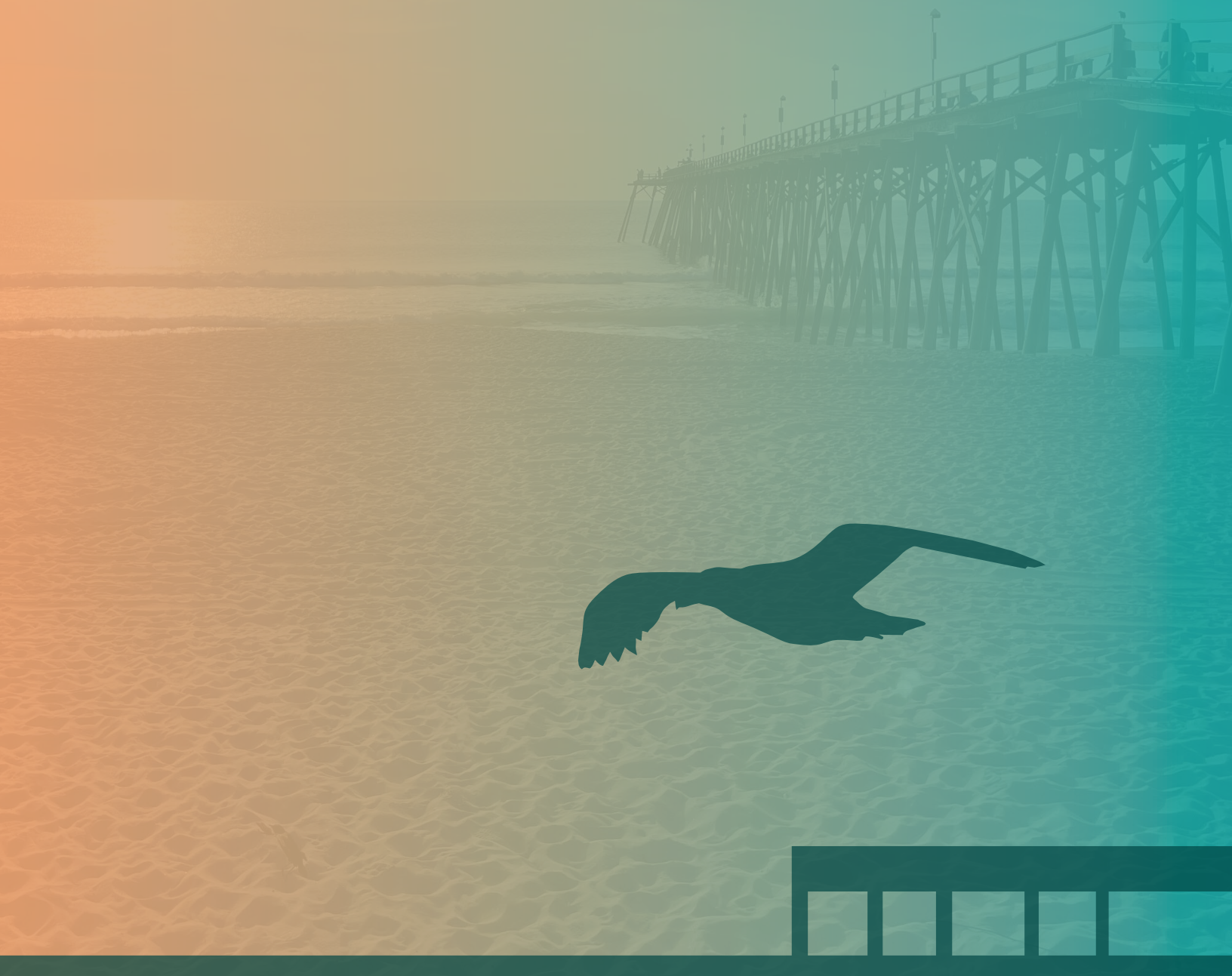
Introduction



Overview

This study was led by the North Carolina Department of Transportation Integrated Mobility Division (NCDOT IMD) to understand options for an approximately 4.8 mile greenway from the existing Island Greenway in Carolina Beach to the Fort Fisher-Southport Ferry Terminal.

In an area that currently lacks dedicated facilities for walking and biking, this greenway will improve transportation and recreation options in the area and promote sustainability. It will make critical connections to Carolina Beach, Kure Beach, local parks, and the ferry terminal. Once completed, it will provide alternative transportation options to over one million annual visitors to destinations in the area, including the Fort Fisher State Historic Site, Fort Fisher State Recreation Area, and the North Carolina Aquarium at Fort Fisher, and help complete our Statewide Trail network as part of the Great Trails State Network and East Coast Greenway State Trail route

This study explored the feasibility of several greenway alignment options through the Town of Kure Beach and the Fort Fisher Area. Alignment alternatives focused on using public right-of-way (ROW), as well as other options that were explored in partnership with land owners.

In addition to the NCDOT IMD, project partners included the Town of Kure Beach and the East Coast Greenway Alliance.

Figure 1. Island Greenway Study Area

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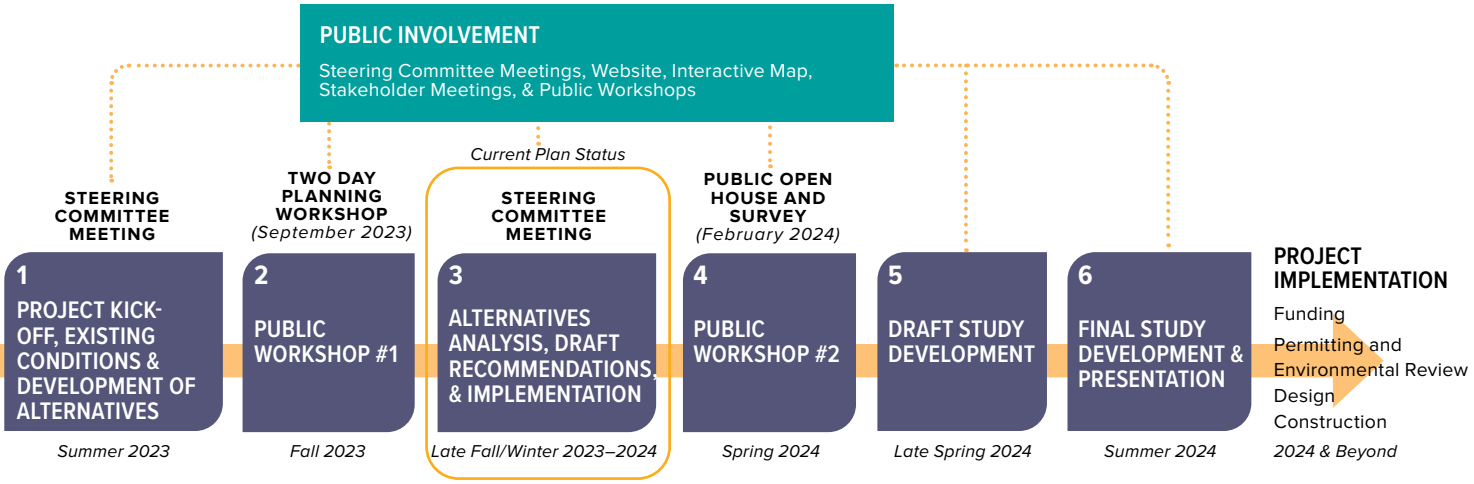
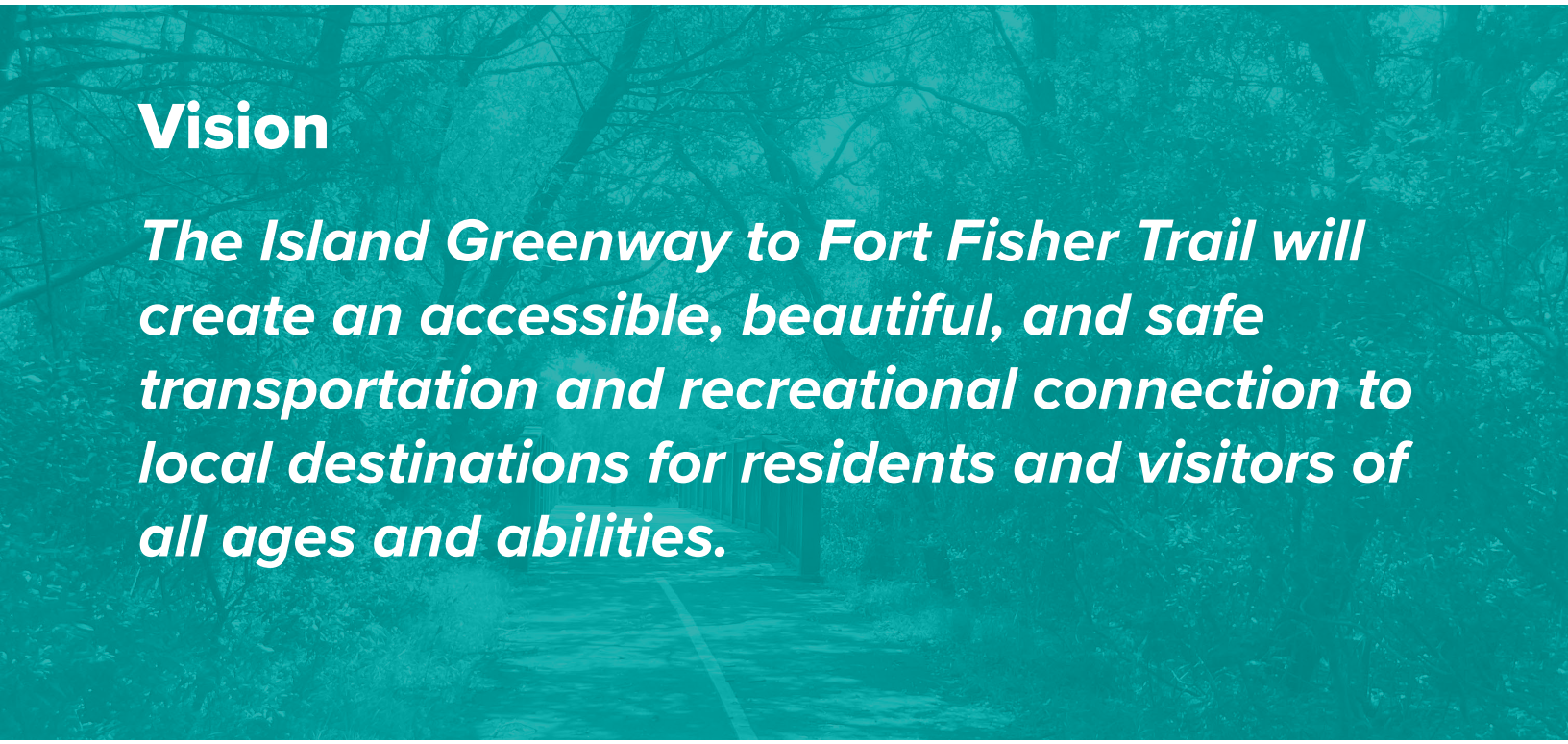
Background

Several local and state planning efforts have been conducted, which has led to the feasibility study of this greenway corridor. Major recent events leading to the development of this plan include the completion of the Town of Kure Beach's Comprehensive Bicycle and Pedestrian Plan in 2022, which prioritized the study of this greenway. In a survey for the plan, over 91% of participants responded in favor of improvements for walking and biking conditions, and the Island Greenway extension into Kure Beach was listed as the number one ranked project in the entire plan.

Around the same period, NCDOT featured this greenway corridor in the Great Trails State Plan Implementation Report as one of 11 priority projects in the statewide trails network. NCDOT IMD created a Paved Trails Feasibility and Sidewalk Program to improve the pipeline of bicycle and pedestrian projects that can be constructed. As this trail alignment is part of the East Coast Greenway, The East Coast Greenway Alliance applied for the program and received funding for the feasibility study in Spring 2023. Other findings from previous plans that informed the vision, goals and analysis in this study are summarized in Table 2.

Process and Schedule





Vision

The Island Greenway to Fort Fisher Trail will create an accessible, beautiful, and safe transportation and recreational connection to local destinations for residents and visitors of all ages and abilities.

Goals

Identify a recommended alignment for the Island Greenway/East Coast Greenway from the existing Island Greenway to the Fort Fisher Ferry.

Provide a bicycle and pedestrian facility for all ages and abilities, with an emphasis on safety and accessibility.

Fill a gap in the statewide Great Trails State Network and the East Coast Greenway, a state trail and national greenway route.

Connect residents and visitors to all recreation facilities and to the beach easily and comfortably.

Minimize environmental impact through sustainable design to reduce maintenance needs in the future.

Project Benefits

According to North Carolina's Great Trails State Coalition and local data, the benefits of greenways include:

RECREATION

- Trails make communities better places to live by **preserving and creating free and open spaces** for recreation.
- Trails provide new opportunities for **outdoor recreation and non-motorized transportation**.
- The addition of this trail to the existing trail network would create around **7.2-miles of continuous greenway**, and improve connections to three parks, and connections to beach access points.
- Trails can increase **community wellbeing** by acting as a **social gathering space** and creating opportunities for random encounters and interactions between community members

HEALTH

- Trails provide a dedicated **space for physical activities**, such as walking, hiking, and biking.
- Trails increase physical activity, **improve physical and mental health,** and improve an individual's sense of well-being.

TRANSPORTATION

- Trails are an integral part of a **multi-modal transportation system**.
- This trail will provide a **critical connection** from Kure Beach and Carolina Beach to Fort Fisher Area and local connections to neighborhoods.
- Trails improve alternative transportation access for residents and visitors. There are **over 1-1.5 million annual visits**[1] **to destinations** at the southern part of the proposed trail. Alternative transportation access will help reduce vehicle trips and the excess demand on parking.
- This trail can reduce vehicle trips to the Fort Fisher Ferry and encourage active transportation. Currently, 2.1% of the **over 3.5 million annual ferry passengers** travel there using active transportation modes to the island.[2]

1 Based on NC Aquarium and Fort Fisher State Historic Site annual visitation numbers from the last few years.
2 NCDOT Ferry Division, 2023.

ECONOMIC

- Trails **attract and retain business and residents**; this is why trails are considered a quality of life amenity.
- Trails benefit businesses located nearby as **trail users spend money** on equipment, food, lodging, and entertainment.
- Proximity to trails and greenways can **increase property values**, attract buyers, and make property easier to sell.
- Trails generate a return on investment. **For every $1.00 spent on trail construction, $1.72 is generated** annually from local businesses and tax revenue, and benefits related to health and transportation. [3]

ENVIRONMENTAL

- Trails encourage human-powered forms of transportation, **improving water and air quality, and slowing climate change**.
- Trails serve as hands-on environmental classrooms, providing a chance to **raise awareness about the important flora and fauna** of Pleasure Island.
- Trails can have stormwater features that capture surrounding stormwater to be slowly cleaned through filtration, **reducing flooding and improving water quality**.

3 ITRE, Alta and NCDOT, 2018.

Relevant Plans and Policies

This section provides a review of previous plans completed for the study area, as well as current policies that are important to this study.

Relevant Plans and Policies

The Town of Kure Beach, NCDOT, Wilmington Urban Area Metropolitan Planning Organization (MPO), and other agencies in the Cape Fear Region have prioritized bicycle and pedestrian connectivity in planning efforts over the years. Table 1 lists the plans that were reviewed during the planning process. Table 2 on the following pages provides a summary of key bicycle and pedestrian, transportation, land use, and parks and recreation recommendations from previous plans and studies that are relevant to the Island Greenway Feasibility Study. Relevant policies were also reviewed and are summarized starting on page 20.

Table 1. Plans Reviewed

PLAN NAME	AGENCY	YEAR
The Great Trails State Plan	NCDOT	2022
Kure Beach Bicycle and Pedestrian Plan	Town of Kure Beach Wilmington Urban Area MPO	2022
East Coast Greenway State Trail Plan	East Coast Greenway Alliance	2022
Cape Fear Moving Forward 2045 Metropolitan Transportation Plan	Wilmington Urban Area MPO	2020
Military Ocean Terminal Sunny Point Joint Land Use Study	Cape Fear Council of Governments	2019
Fort Fisher State Recreation Area General Management Plan	North Carolina Department of Natural and Cultural Resources Division of Parks and Recreation	2017
Cape Fear Regional Bicycle Plan	NCDOT	2017
Move. Play. Connect. Comprehensive Greenway Plan	City of Wilmington New Hanover County	2013
Corridor Study For Dow Road	Wilmington Urban Area MPO	2009

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Relevant Plans and Studies

Table 2. Plan Review Findings and Recommendations

PLAN NAME + YEAR	KEY FINDINGS + RECOMMENDATIONS
GREAT TRAILS STATE PLAN (2022) **NCDOT**	• Development, network recommendations, and implementation strategies for connecting communities and destinations with a network of greenways. • Public input collected identified parks as the top destination for walking and biking, and Fort Fisher was identified as a top connection to state parks in the coastal region. • Proposed shared-use path segments to connect existing segments through Kure Beach to Fort Fisher- Southport Ferry as part of the East Coast Greenway State Trail.

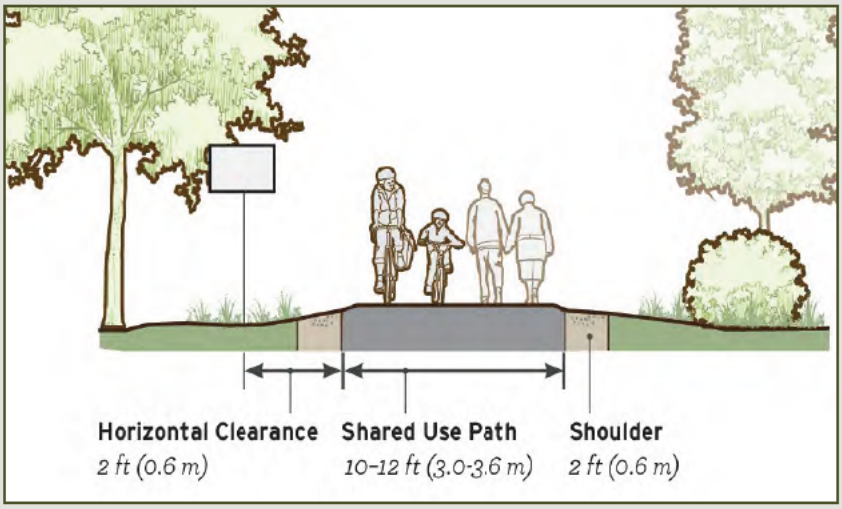
Figure 2. Great Trails State Plan Facility Vision

The Great *Trails* State

For this plan, "Trails" refer to shared-use paths, also known as greenways, multi-use trails, sidepaths (along roadways) and rail-trails (along rail corridors).

Trails can be paved or unpaved, but support both bicycling and walking (as opposed to hiking-only trails or footpaths)

Limited on-road connections may be necessary for connectivity or for interim network routing.



The Great Trails State Plan envisions a network of shared-use paths that connect major destinations throughout North Carolina and can be used for transportation and recreation.

KURE BEACH BICYCLE AND PEDESTRIAN PLAN (2022)

Town of Kure Beach and Wilmington Urban Area Metropolitan Planning Organization (See Figure 3)

- Network and program recommendations, implementation steps, design guidelines, and funding opportunities for expanding active transportation facilities.
- Recommended Short Island Greenway Connection from existing Island Greenway to proposed Island Greenway Extension (along the Military Ocean Terminal Sunny Point (MOTSU) Boundary Alternative alignment) and neighborhood connection to Settlers Lane (part of Neighborhood Bikeway Alternative alignment). Public feedback showed support for safe connections, although concerns were stated for potential conflicts with traffic on Settlers Lane.
- Recommended greenway extension and connector from Island Greenway in Carolina Beach to Town Hall/K Avenue (along MOTSU Boundary Alternative alignment). Public feedback showed this as the number one selected project in Kure Beach. Island Greenway Extension requires MOTSU approval.
- Recommended Island Greenway Extension from K Avenue to Fort Fisher. Two alignment options proposed through MOTSU property. Public feedback showed support for the project, as well as some concerns. Island Greenway Extension requires MOTSU approval.
- Feasibility study needed for Fort Fisher Boulevard sidepath. Public feedback was largely in favor of improvements along this corridor with some concerns about cost and removal of parking.
- Sidepath recommended along Fort Fisher Boulevard from Avenue E to state park. Public feedback was largely in favor of this project and improved connectivity.

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Relevant Plans and Studies (continued)

Figure 3. Kure Beach Bicycle and Pedestrian Plan Recommendations Summary Maps

EAST COAST GREENWAY STATE TRAIL PLAN: 2022-2027 (2022)

East Coast Greenway Alliance

- List of trail development projects and information, including status, land needs, and cost estimates.
- Kure Beach Island Greenway segment of East Coast Greenway connecting Carolina Beach Island Greenway to Aquarium Path and Fort Fisher-Southport Ferry.
- Alignment requires land acquisition or easement.

CAPE FEAR MOVING FORWARD 2045 METROPOLITAN TRANSPORTATION PLAN (2020)

Wilmington Urban Area MPO

- Multi-modal vision for regional and local projects that advance the MPO's goals for the transportation network.
- Public input collected shows that a majority of respondents would bike or walk more often if there were more dedicated facilities, such as multi-use paths, bicycle lanes, or sidewalks.
- Bike/ped project: K Avenue and US 421 crossing improvements (along the Fort Fisher Boulevard Alternative alignment).
- One pedestrian improvement project in Fort Fisher (along Fort Fisher Boulevard Alternative alignment).
- Public transportation project: Pleasure Island Trolley bus stop at Fort Fisher-Southport Ferry, creating an additional destination along the Fort Fisher Boulevard Alternative alignment.

MILITARY OCEAN TERMINAL SUNNY POINT JOINT LAND USE STUDY (2019)

Cape Fear Council of Governments

- Report to identify ways to protect military operational capability of MOTSU while supporting growth of neighboring communities through improved communication and policies/procedures for compatible land uses.
- Recommendation for Pleasure Island ESCZ (PIE): Local governments on Pleasure Island should work with MOTSU to identify opportunities to continue developing compatible recreational uses in the [PIE] (such as the recently constructed greenway trail in Carolina Beach).
- Compatibility analysis acknowledges the Town of Kure Beach's anticipated community needs for bike and pedestrian paths either in the fire lane or on the Dow Road ROW.

Relevant Plans and Studies (continued)

FORT FISHER STATE RECREATION AREA GENERAL MANAGEMENT PLAN (2017)

North Carolina Department of Natural and Cultural Resources Division of Parks and Recreation

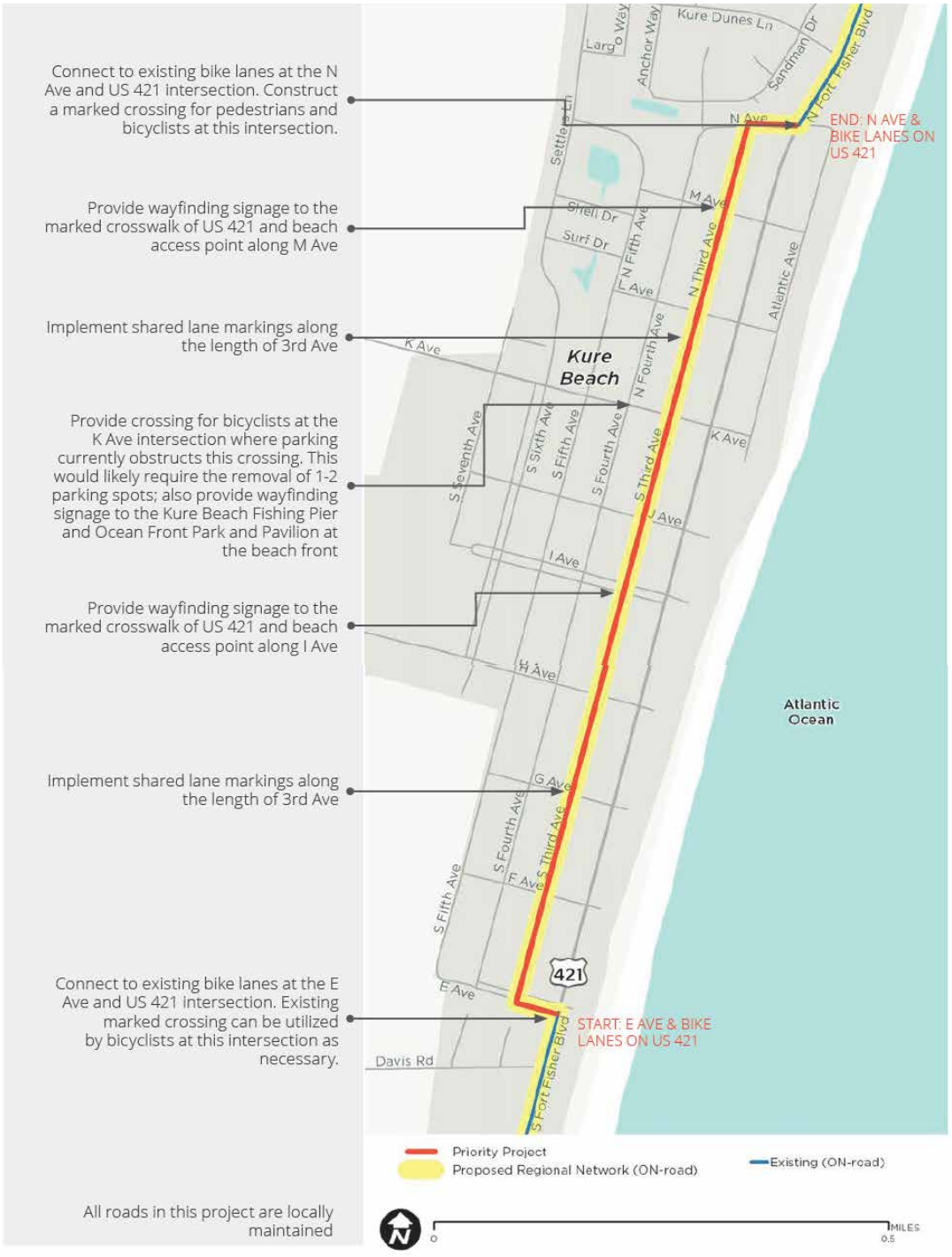
- Acts as a management plan for preserving land and promoting recreation opportunities in the state park. Existing Basin Trail from Loggerhead Road parking area to Basin Overlook.
- Projects include additional parking, building renovation, and maintenance area for vehicles.

CAPE FEAR REGIONAL BICYCLE PLAN (2017)

NCDOT
(See Figure 4)

- Network, policy, and program recommendations, implementation steps, design guidelines, and funding resources for achieving a 30-year vision for improving bicycling infrastructure.
- Public input gathered showed that improving bicycle conditions in the region is "very important" to the majority of respondents and the majority or respondents would bike more if there were more bike lanes, trails, and safe crossings.
- Short-term priority project: Kure Beach Through-Route - shared lane markings from intersection of E Avenue and US 421 to intersection of N Avenue and US 421 to avoid high traffic volumes on US 421 (connects to Fort Fisher Boulevard Alternative alignment).
- Pleasure Island opportunities and recommendations: Kure Beach to Fort Fisher Southport Ferry long term improvement should include separated bicycle facilities along US 421, as well as pedestrian facilities.

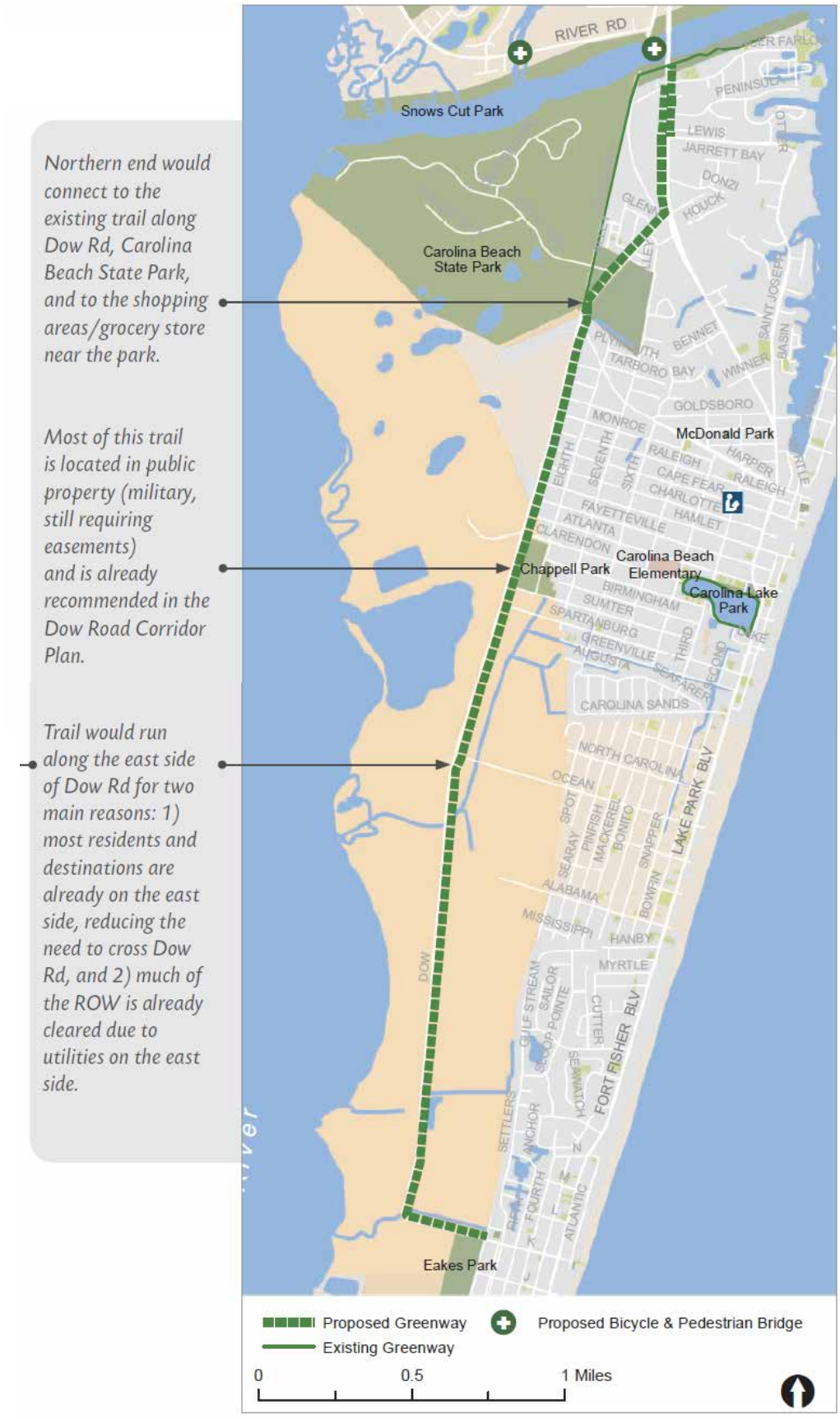
Figure 4. Cape Fear Regional Bicycle Plan Priority Project Map



Relevant Plans and Studies (continued)

MOVE. PLAY. CONNECT. COMPREHENSIVE GREENWAY PLAN (2013) City of Wilmington and New Hanover County (See Figure 5)	• Recommendations, design guidelines, and implementation steps for completing a comprehensive greenway network throughout Wilmington and New Hanover County. • Public input collected showed that the goal of creating more greenways in New Hanover County is "very important" to a majority of respondents and most respondents would use greenways more if they were closer or there were more facilities. • Dow Road identified as top corridor for new trails for improved bike/ped connectivity (along Dow Rd Alternative alignment). • Proposed network: greenway along Dow Rd Trail from Chappell park to K Avenue (along Dow Rd Alternative alignment), greenway along Lake Park E Ave from Carolina Sands to Alabama Ave (along Fort Fisher Blvd Alternative alignment), sharrows along Fort Fisher Blvd from N Ave to E Ave (along Fort Fisher Blvd Alternative alignment). • Priority projects include Dow Rd Trail from Snows Cut to Seventh Ave (along Dow Rd Alternative alignment).
CORRIDOR STUDY FOR DOW ROAD (2009) Wilmington Urban Area Metropolitan Planning Organization	• Feasibility study for Dow Road proposed extension and supporting multi-modal transportation facilities. • Public feedback received showed support for improvements along Dow Rd and K Ave. • Recommended bike lanes along Dow Road and K Avenue (along Dow Rd Alternative alignment). • Recommended multi-use path along Dow Road from state park to K Avenue, crossing from west to east side of the road one mile south of Ocean Boulevard (along Dow Rd Alternative alignment).

Figure 5. Move. Play. Connect. Dow Rd Trail Map



Relevant Policies

East Coast Greenway

The East Coast Greenway (ECG) is a continuous 3,000-mile route for biking, walking, and other active modes from Maine to Florida. Kure Beach is part of the planned ECG route through North Carolina.

The ECG is envisioned as a fun, safe, and accessible route that connects major cities, small towns, and nature on facilities that are completely separated from motor vehicle traffic. Currently, about 35% of the ECG route is protected from traffic, and the remaining sections are on-road. The completed ECG will support local commutes and long adventures alike, fostering healthy, sustainable, and prosperous communities throughout the Eastern Seaboard.

Visit www.greenway.org to learn more.

In order for a trail to be considered to be part of the East Coast Greenway, it needs to meet the following requirements:

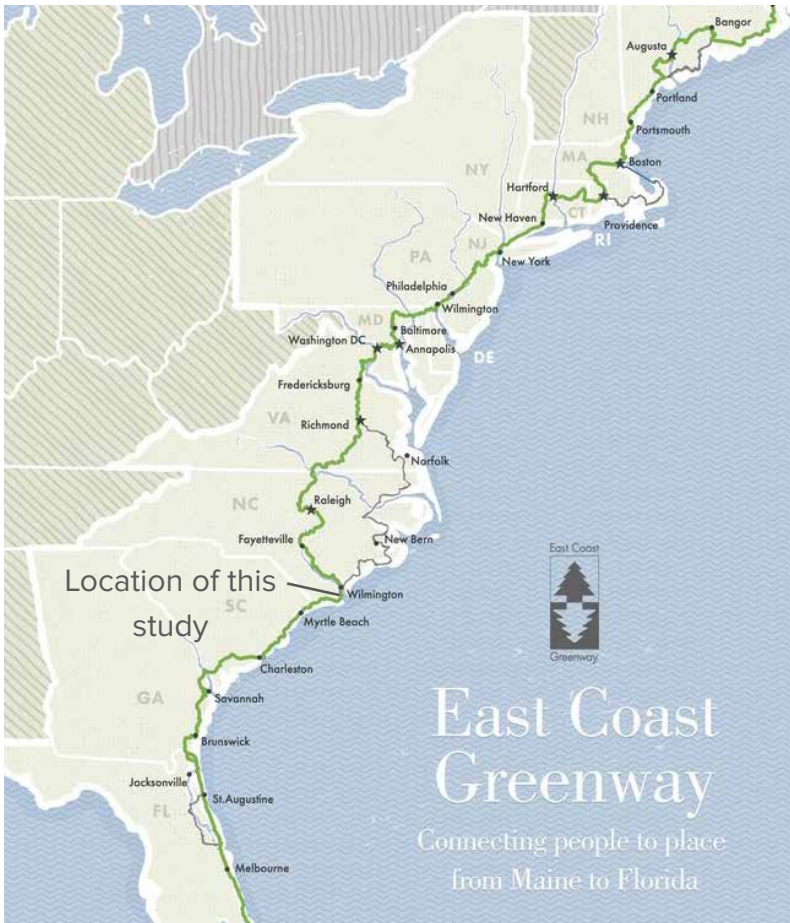
- Trails should be open and free to the public every day of the year.
- Avoid steep grades, aiming to follow American Association of State Highway and Transportation Officials (AASHTO) guidelines.
- The trail must be wide enough for shared use; all new trails are expected to be

designed and built according to AASHTO best practices.

- Trail surface must be firm and easily navigable by different user types and users of all ages and abilities.
- Trail must be separated from traffic by a combination of both horizontal spacing and vertical elements to protect trail users from motor vehicles.

Based on these guidelines, the trail facilities prioritized for this study include a shared-use path, sidepath, and separated bike lane with sidewalk.

Figure 6. East Coast Greenway Map



NCDOT Complete Streets Policy

The N.C. Department of Transportation's "Complete Streets" policy directs the department to consider and incorporate several modes of transportation when building new projects or making improvements to existing infrastructure. The benefits of this approach include[1]:

- Making it easier for travelers to get where they need to go.
- Encouraging the use of alternative forms of transportation.
- Building more sustainable communities
- Increasing connectivity between neighborhoods, street, and transit systems.
- Improving safety for pedestrians, cyclists, and motorists.

Military Ocean Terminal Sunny Point (MOTSU)

The proposed study area is unique in that the western half is within the Military Ocean Terminal Sunny Point (MOTSU) buffer zone boundary. MOTSU is a military terminal located on the opposite side of the Cape Fear River from Pleasure Island. The area within the buffer zone boundary is to remain undeveloped, preserved, and with limited access to the property. Carolina Beach worked with MOTSU to build the Island Greenway along the eastern perimeter of MOTSU property, demonstrating a willingness to work with neighboring municipalities for specific acceptable land uses. The Town of Kure Beach and the NC Department of Natural and Cultural Resources will work with MOTSU to seek their input and approval for an extension of the Island Greenway as part of the feasibility study process. If that route is determined to be the most suitable for the greenway, the Town will work with MOTSU for approval. For additional MOTSU input and policy guidance, refer to the Stakeholder Input section on page 26.

1 https://connect.ncdot.gov/projects/BikePed/Pages/Complete-Streets.aspx

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Community Involvement

OUTLINE OF ENGAGEMENT

Introduction

The community involvement process includes steering committee meetings, stakeholder meetings, community open house meetings, and an online survey. Public and stakeholder input helped to inform plan priorities and alignment preferences.

The following sections summarize the first Community Open House and Stakeholder Input. A second Community Open House and the online survey will take place in February 2024 before the Plan is finalized.

Community Open House #1

Summary

There were 240 attendees at the first public open house in September 2023. This included 221 Kure Beach Residents, 17 Pleasure Island Residents, and 2 Non-Locals.

The workshop gathered input on opportunities and challenges of greenway alignment options and which facility typology the public favors; solicited feedback on the most important criteria for route selection; and asked the public about "what the Island Greenway will be" and "who will use it."

Comments were generally positive towards the greenway, although some participants expressed concerns. When asked which type of facility they prefer for walking and biking, the overwhelming response was a shared-use path on a greenway.

Additional alignment options were included as a part of this study's consideration after initial public input and field analysis.

Desired Facility Types:

Shared-Use Path: Greenway
224 votes

Shared-Use Path: Sidepath
47 votes

Separated Bike Lane with Sidewalk
11 votes

COMMON TOPICS OF PUBLIC INPUT (FROM WORKSHOP #1)

Pedestrian/ bicycle safety

Greenway benefits

Property values

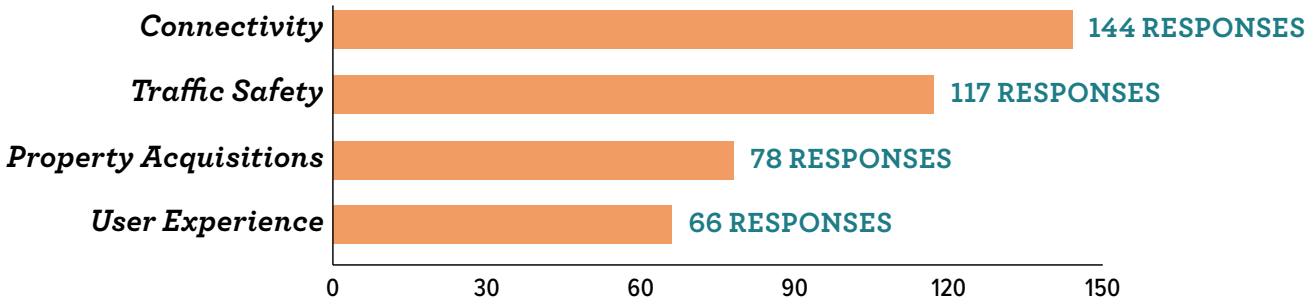
Maintenance

Safety/crime and privacy

Preservation of natural areas

Criteria for Route Selection

Participants were asked their opinion on the most important criteria for route selection. Most respondents favored connectivity, with 144 total responses and 125 responses from Kure Beach residents, and Traffic Safety, with 117 total responses and 108 responses from Kure Beach residents. Property Acquisitions and User Experience were the next most common choices.



What Will the Island Greenway Be?

"Safe place for the greater good, cars are dangerous"

"A way to bring the island together"

"Loss of privacy and property value"

"Town needs the greenway for residents and visitors!"

"Great place to bicycle off the busy streets"

"It will preserve "Forever Green" land behind Settlers"

"A path to the ferry and Southport"

"Increased property values for the 21st century community"

"The greenway will be a safe alternative to Dow or Fort Fisher for all!"

A minimal impact on the environment and privacy for residents were suggested by multiple attendees in written comments.

Who Will Use the Island Greenway?

"Residents and vacationers"

"My family, my guests, tourists"

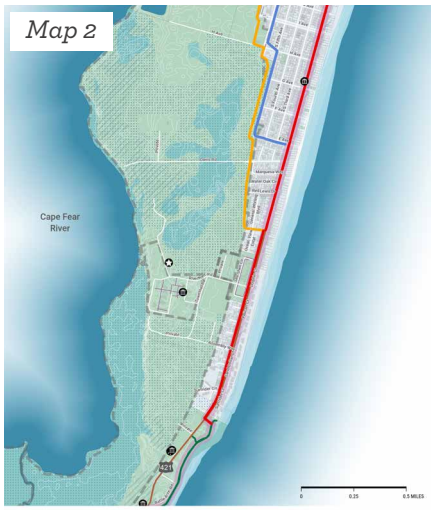
"Runners, walkers, cyclists"

"Families, friends, residents"

"My family and dog"

"My husband, me, grandkids, my walking buddies, my friends..."

Opportunities and Constraints



Map posters showed alignment options for the northern, central, and southern sections of the study area. Participants were asked to share opportunities and constraints for the study area and alignment options. Map thumbnails with alignments are shown at left. Below is a summary of comments provided for alignment options. For a full list of detailed comments, see Appendix A.

Map 1: Ocean Boulevard to H Ave.

Dow Road

» Provides a more natural setting

» High vehicle speeds

» Wetlands are prevalent

MOTSU Eastern Boundary

» Adjacent property owners are concerned with safety, crime, privacy

» Wetlands and wildlife (some of which may be threatened or endangered) are prevalent in the area

» Current drainage and stormwater issues in the area

» Received both support and opposition from residents

Settlers Lane

» Residents often backing out of driveway

» Congestion with residential traffic and active transportation users

Fort Fisher Boulevard

» Dangerous with car traffic

Map 2: H Ave. to Fort Fisher State Historic Site

Fort Fisher Boulevard

» Travels through commercial area and near beach access points

» On-street parking is heavily used

» Frequent flooding with storms

» Connects to destinations in the south

Map 3: Fort Fisher State Historic Site to Ferry

Options South of the Town of Kure Beach

» Residents feel Fort Fisher Blvd. is dangerous and would have impacts to parking along Fort Fisher Blvd, but want to ensure it is being connected to

» Preference to stay away from roads, or have a good buffer

Stakeholder Input

The study team identified public land owners, land managers, and partners in planning and implementation as stakeholders for the project. These entities provided feedback on alignment alternatives and, in some cases, stakeholders dictated whether an alignment would be allowed within their property. The following is a summary of their feedback. For a full set of meeting notes from these conversations, see Appendix B.

NC DEPARTMENT OF TRANSPORTATION, DIVISION 3

Alta and NCDOT IMD met with staff on October 18th, 2023. Note that NCDOT manages and owns any state-maintained road, seen on the Built Environment map in this study. The following points were made:

- **Use of Dow Road for a sidepath:** While NCDOT does own the road ROW, they feel this option is less feasible due to ROW constraints. They do not prefer this option.
- **Use of Fort Fisher Boulevard ROW for a sidepath or other facility type:** ROW in the northern half above Avenue E is much more constrained and would require loss of parking which is in high demand. NCDOT feels a multi-use path is less feasible. South of Avenue E the ROW opens to 60+ feet, providing greater opportunity for a side path.
- **Preferred option for the greenway:** NCDOT prefers to keep the trail consistent with location and trail specifications of the connecting Island Greenway. That means that using the MOTSU Eastern Perimeter (Options 1-C and 2-C) are most preferred for them.

MOTSU

In the Fall of 2023, Alta and NCDOT IMD have had ongoing communications with MOTSU to keep them up-to-speed on the project and timeline. MOTSU provided feedback on the alignments shown at the public open house which are shown below:

- **Dow Road Alternative:** MOTSU does not consider Dow Road as a feasible or safe design option/location for a greenway. This is due to explosive safety requirements, security restrictions, and the speed limit on Dow Road. An at-grade crossing on Dow Road or K Avenue would be unsafe.
- **MOTSU Boundary/Eastern Perimeter Alternative:** MOTSU is open to a greenway along the property line, with fencing constructed as an in-kind contribution (like Carolina Beach's Island Greenway).
- **Settlers Lane Alternative:** No feedback was given from MOTSU.
- **Fort Fisher Boulevard Alternative:** Fort Fisher Blvd is a state-owned road located on MOTSU

property at its southern end. Coordination with NCDOT would be needed. Factors to consider include NCDOT ROW, road speed and buffer distance requirements, wetlands, vegetation constraints, etc.

- **Requirements for any MOTSU approved alternatives:**
  - MOTSU would require an environmental study for the preferred alternative on MOTSU property in order to move forward with the recommendation.
  - Any alternative on MOTSU property would require specific permitting/environmental review as required by Army regulations. MOTSU would require the completion of an Environmental Condition Report or equivalent per Table 15-2 of the AR 200-1, Environmental Protection and Enhancement. It can be costly and could take 12 months or more to complete this and all required reviews of the final report.

WILMINGTON METROPOLITAN PLANNING ORGANIZATION

Alta and NCDOT IMD met with staff on September 7th, 2023 and received input on the following:

- **Upcoming projects:** No major Statewide Transportation Improvement Plan projects other than the submission for pedestrian infrastructure to connect the ferry and parking. The MPO is currently updating its transportation plan, this greenway project could be listed as a project to consider. Several pedestrian crossing and ADA improvements were also mentioned.
- **Dow Road:** Crossing Dow Road would not be a good idea.

FORT FISHER HISTORIC SITE

Alta and NCDOT IMD met with Fort Fisher Historic Site on August 28th, 2023. Much of the southern half of the corridor travels through several land units under the jurisdiction of the NC Department of Natural and Cultural Resources. Note that in some places the State leases and is under MOTSU guidelines and review requirements. The team received input on the following:

- **Routing through Fort Fisher Historic Site/State Recreation Area:** There are many important cultural resources that cannot be impacted, including the revetment wall. Comments were provided on where the trail should go exactly.

NC AQUARIUM

Alta and NCDOT IMD met with the NC Aquarium on August 28th, 2023. Much of the southern half of the corridor travels through several land units under the jurisdiction of the NC Department of Natural and Cultural Resources. Note that in some places the State leases and

is under MOTSU guidelines and review requirements. Feedback on the potential alignments in this are shown below.

- **Aquarium access:** While the aquarium is open to their current trail connecting into proposed alignment, their section of the trail would be closed from dusk to dawn and could impede some ferry commuters (who would have to ride US 421).

FORT FISHER STATE RECREATION AREA

Alta and NCDOT IMD met with Fort Fisher State Recreation Area on August 28th, 2023. Much of the southern half of the corridor travels through several land units under the jurisdiction of the NC Department of Natural and Cultural Resources. Note that in some places the State leases and is under MOTSU guidelines and review requirements. Key points are listed below.

- **Parking is a commodity and a major challenge:** While the greenway may alleviate some of the demand for parking, others may want to use the parking lots as a trailhead, which are already full during summers. People are illegally parking along Fort Fisher Blvd and Loggerhead Rd, which may conflict with the sidepath unless certain design features, like a curb, can be implemented to help alleviate parking issues. Loss of parking to accommodate the greenway would not be supported.
- **Routine flooding:** Much of US 421 near the ferry floods during lunar tides and any greenway design would need to accommodate this.

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Study Considerations and Alternatives

Local Context and Considerations

This section describes key considerations that influence the feasibility and optimal route for a trail from the Island Greenway to the Fort Fisher-Southport Ferry, including:

- *Local Context and Land Use*
- *Human Environment*
- *Available ROW*
- *Traffic Volumes and Speeds*
- *Natural Environment*

Natural and Built Environmental Conditions Overview

There are a number of factors that will influence the feasibility of proposed alignments which are summarized here.

Natural Environment

WETLANDS

There are substantial number of wetlands bordering or potentially intersecting with alignments. Wetlands require US Army Corp of Engineer regulation. If above a tenth of an acre is impacted, mitigation and permitting is required and can be costly. The trail alignments shown have been developed to avoid wetlands as much as possible. Two wetland data layers shown on the maps are the National Wetlands Inventory (NWI) data and the NC Coastal Wetlands layer, which is a predictive model of where wetlands may be. This data is not always accurate and should not be considered ground truthed. A wetland and hydrology delineation would typically occur at a later phase of the project.

Example of wetland on the eastern edge of Fort Fisher Blvd south of the NC Aquarium.

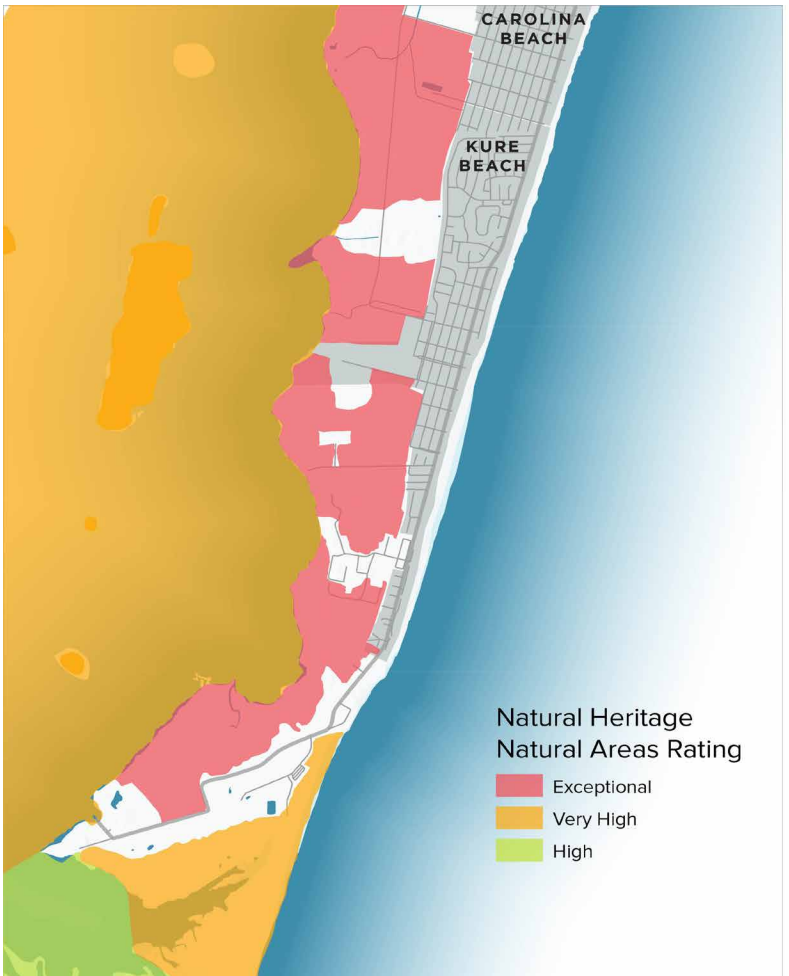
FLOODPLAIN

The southern area of the study area along Fort Fisher Blvd. is within the coastal floodplain, meaning it can more regularly flood, especially with sea level rise.

THREATENED AND ENDANGERED SPECIES

Pleasure Island has many areas that fall within Critical Habitat designed by the US Fish and Wildlife Service and NC's designated State Natural Areas. These designations both represent species that are listed Federally or of State importance. Most of the areas

Figure 7. Natural Areas Map



outside of the Town of Kure Beach are within the State Natural Areas, and the MOTSU area is listed as exceptional, meaning it has very high occurrence of state or federal species. The designated Natural Areas within the study area are shown in Figure 8.

Built Environment

MOTSU PROPERTY

The MOTSU property is land owned and managed by the US Army that surrounds the Sunny Point military terminal across the Cape Fear River. Sunny Point serves as a transfer point between rail, trucks, and ships for the import and export of weapons, ammunition, explosives, and military equipment for United States Army. Considering the nature of its operations, a buffer zone around the terminal has been secured, and that property is owned by the US Army. The buffer zone protects civilians from a potential explosive path.

All of this property is restricted, with the exception of areas already leased to the towns. MOTSU staff have rights to restrict any use and would require an environmental study to be done if any trail is proposed on the property. MOTSU staff is required to review any externally requested use of its property and determine if the use granted must be of direct benefit to the US, promote the national defense or an Army mission, or be in the public interest. The use must also be compatible with the installation/ project mission (Army Regulation 405-80). MOTSU would require specific permitting/ environmental review as required by Army regulations. Specifically, MOTSU would require an Environmental Condition Report or equivalent per Table 15-2 found in the AR 200-1, Environmental Protection and Enhancement. It can take up to 12 months to complete the report and all required reviews of the final report.

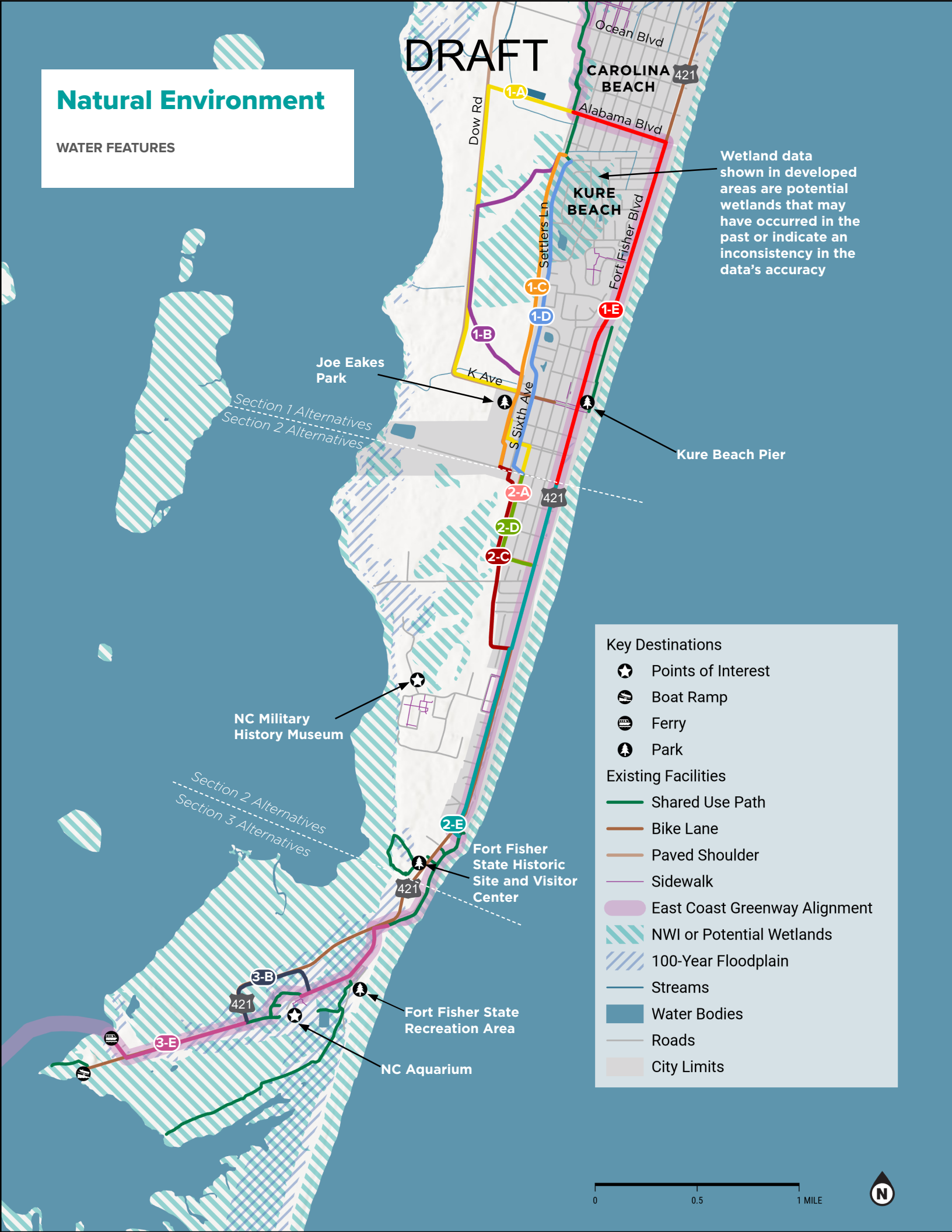
HAZARDOUS SITES

Any hazardous site on the map could require remediation if an alignment were to uncover contaminants. These are listed on the map and may or may not indicate the need for remediation. These sites are monitored and regulated by the NC Department of Environmental Quality.

NATIONAL REGISTER OF HISTORIC PLACES (NRHP)

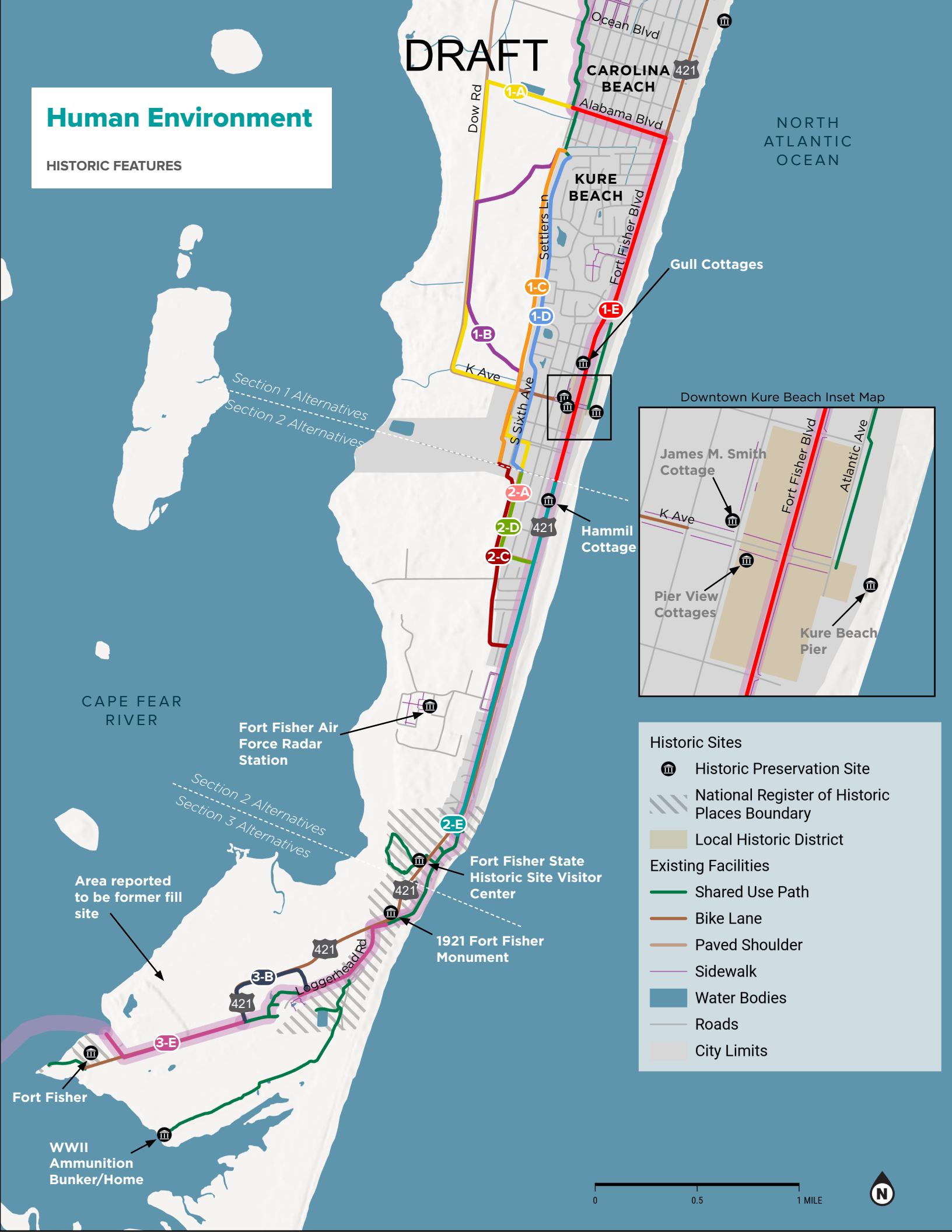
The Fort Fisher State Historic and Recreation Site is within the NRHP which is in place to ensure an intact cultural landscape and cultural resources are protected. NRHP designation requires a deeper level of review in future phases of trail design. Additional archaeological resources may be present and could be a roadblock to greenway development, but have not been assessed in this study.

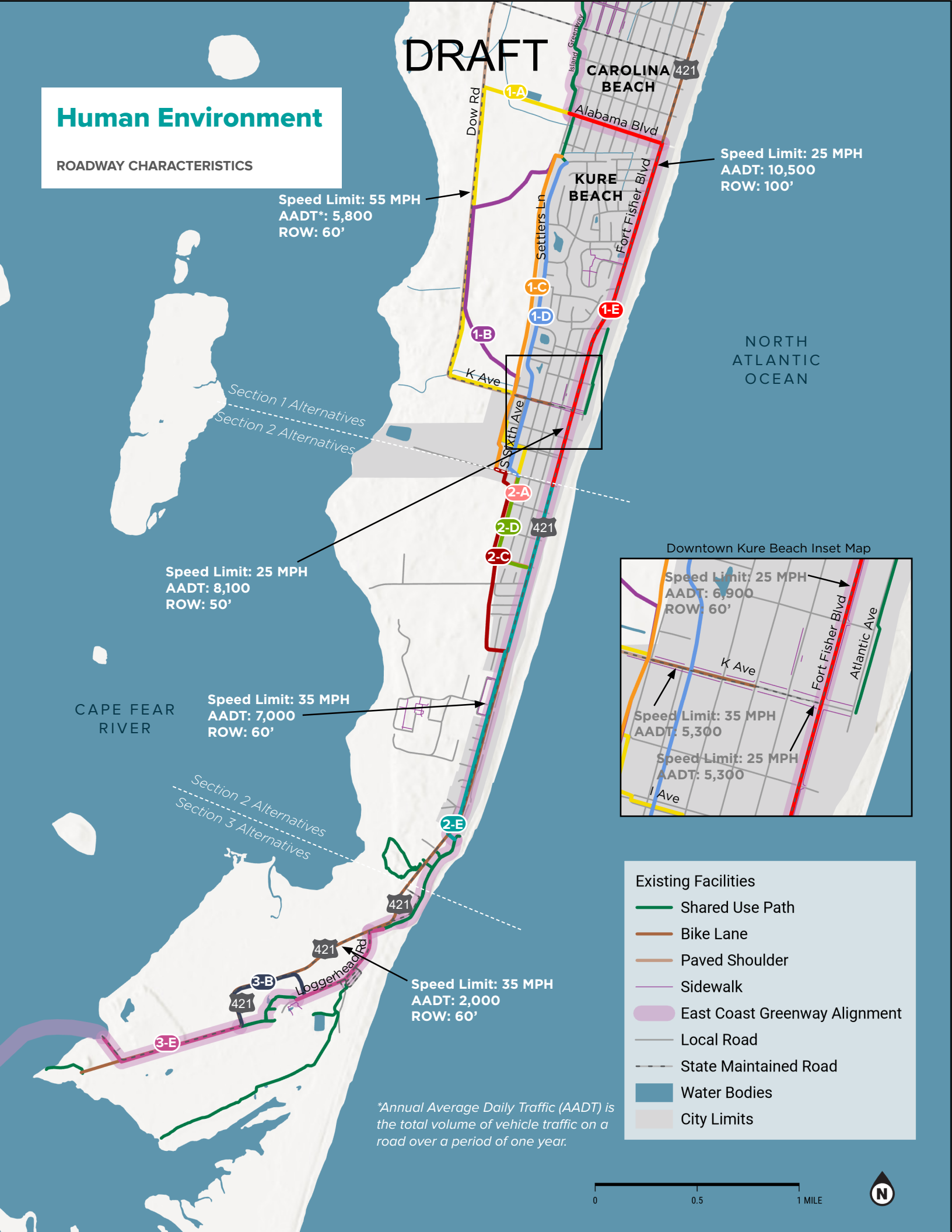
1921 Fort Fisher Monument is a designated historic site.

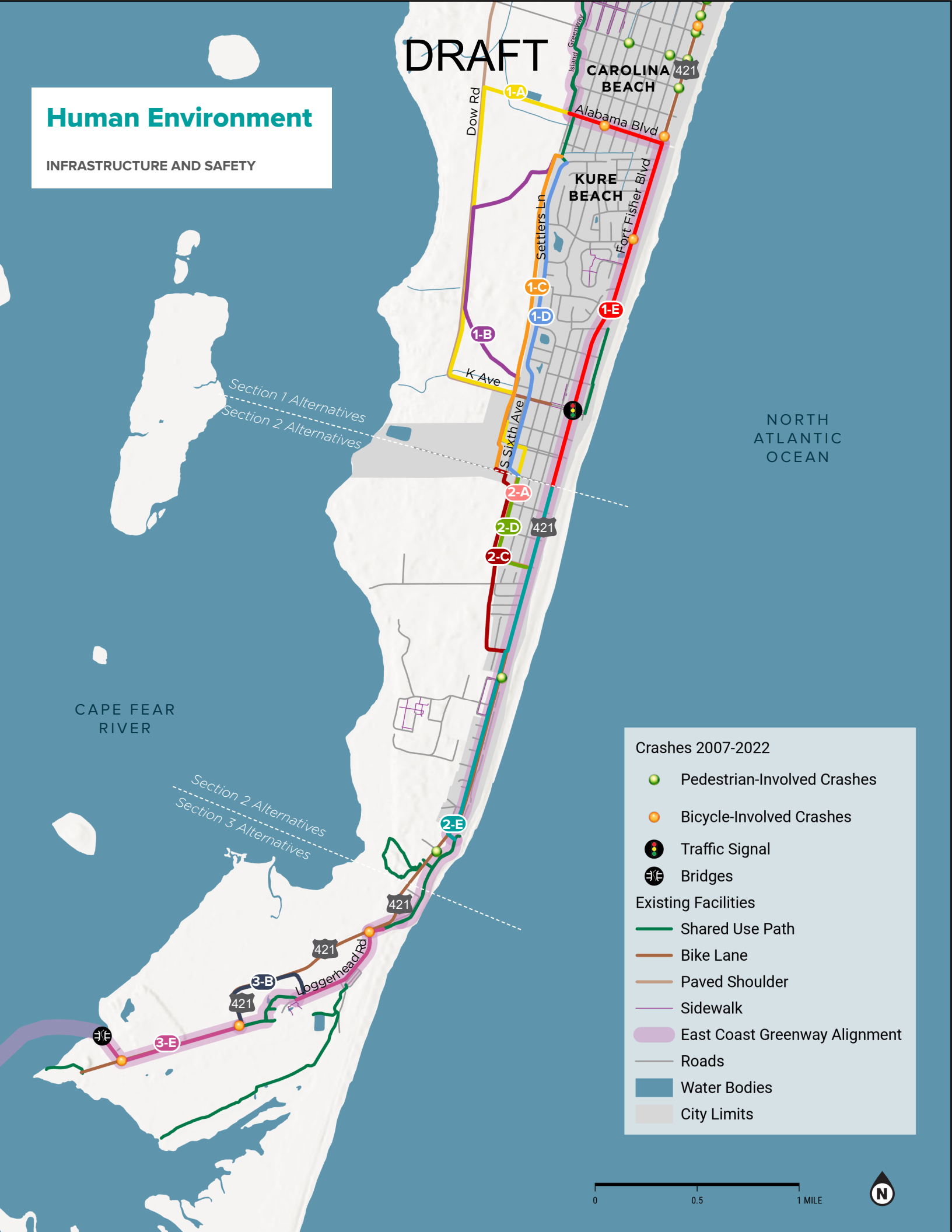

DRAFT
Natural Environment
WATER FEATURES
Ocean Blvd
CAROLINA BEACH
421
Alabama Blvd
Dow Rd
1-A
KURE BEACH
Settlers Ln
Fort Fisher Blvd
Wetland data shown in developed areas are potential wetlands that may have occurred in the past or indicate an inconsistency in the data's accuracy
1-C
1-D
1-E
1-B
Joe Eakes Park
K Ave
S Sixth Ave
Section 1 Alternatives
Section 2 Alternatives
Kure Beach Pier
2-A
421
2-D
2-C
NC Military History Museum
Section 2 Alternatives
Section 3 Alternatives
2-E
Fort Fisher State Historic Site and Visitor Center
421
3-B
421
Fort Fisher State Recreation Area
3-E
NC Aquarium
Key Destinations
Points of Interest
Boat Ramp
Ferry
Park
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
East Coast Greenway Alignment
NWI or Potential Wetlands
100-Year Floodplain
Streams
Water Bodies
Roads
City Limits
0
0.5
1 MILE
N

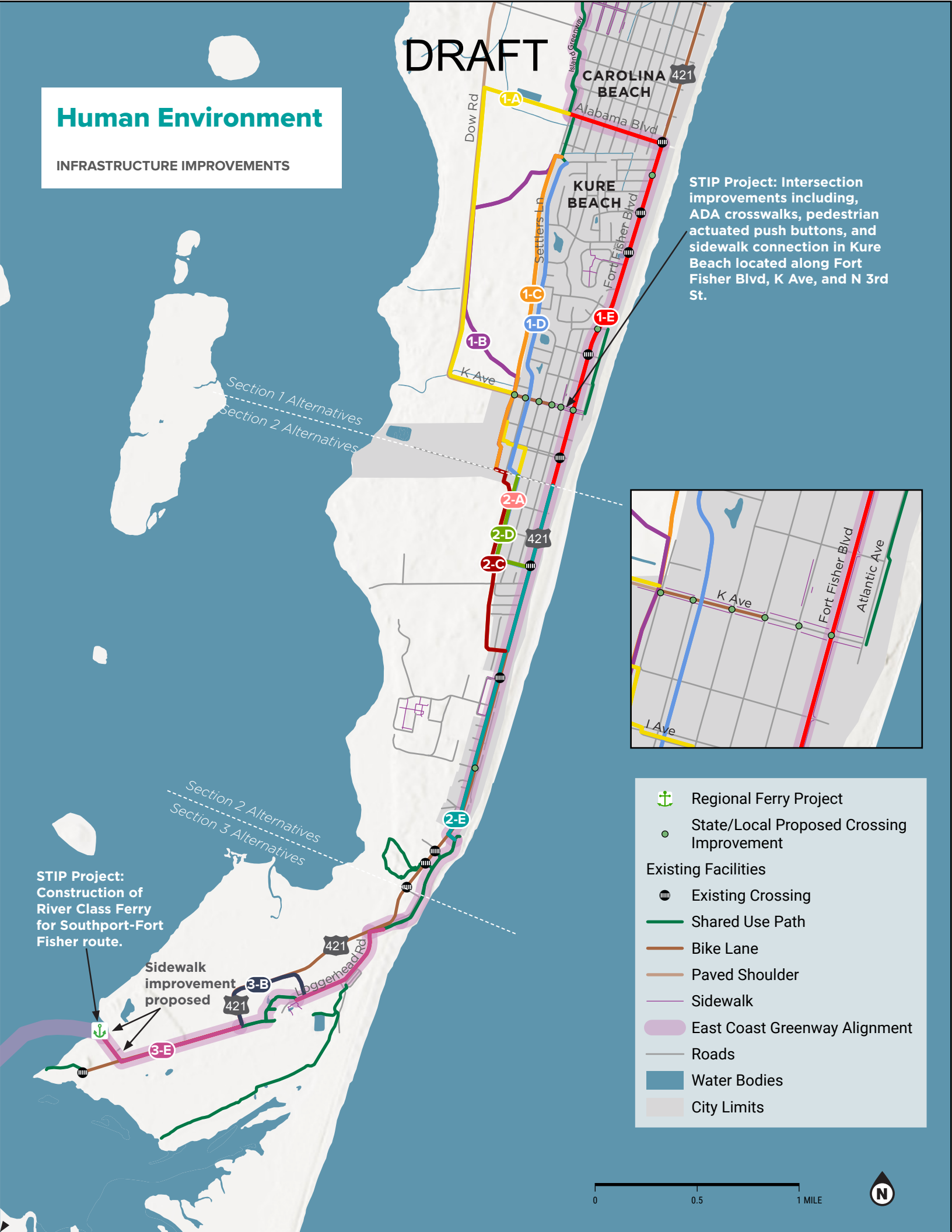

DRAFT
Natural Environment
LAND FEATURES
Ocean Blvd
CAROLINA BEACH
421
Alabama Blvd
Dow Rd
1-A
KURE BEACH
Settlers Ln
Fort Fisher Blvd
1-C
1-D
1-E
1-B
Joe Eakes Park
K Ave
S Sixth Ave
Section 1 Alternatives
Section 2 Alternatives
Kure Beach Pier
2-A
421
2-D
2-C
NC Military History Museum
Section 2 Alternatives
Section 3 Alternatives
2-E
Fort Fisher State Historic Site and Visitor Center
421
3-B
421
Fort Fisher State Recreation Area
3-E
NC Aquarium
Key Destinations
Points of Interest
Boat Ramp
Ferry
Park
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
East Coast Greenway Alignment
Critical Habitat
Managed Areas
Water Bodies
4' Contours
Roads
City Limits
0
0.5
1 MILE
N


DRAFT
Human Environment
LAND USE FEATURES
Kure Beach Water Tower
Plan review revealed this as the Dow Chemical Plant Hazardous Substance Disposal Site
Kure Beach Sewage Lagoon
Kure Beach Refuse Disposal
Area reported to be former fill site
Section 1 Alternatives
Section 2 Alternatives
Section 2 Alternatives
Section 3 Alternatives
CAROLINA BEACH
KURE BEACH
NORTH ATLANTIC OCEAN
CAPE FEAR RIVER
Ocean Blvd
Alabama Blvd
Dow Rd
Settlers Ln
Fort Fisher Blvd
K Ave
S Sixth Ave
Loggerhead Rd
421
1-A
1-B
1-C
1-D
1-E
2-A
2-C
2-D
2-E
3-B
3-E
Hazardous Waste Sites
Water Tower
MOTSU Installation Boundary
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
State, Local, or Federal Government Lands
Privately Owned Public/Managed Lands
Water Bodies
Roads
Parcels
City Limits
0
0.5
1 MILE
N


DRAFT
Human Environment
HISTORIC FEATURES
CAROLINA BEACH
KURE BEACH
NORTH ATLANTIC OCEAN
CAPE FEAR RIVER
Ocean Blvd
Alabama Blvd
Dow Rd
Settlers Ln
Fort Fisher Blvd
S Sixth Ave
K Ave
Loggerhead Rd
421
1-A
1-B
1-C
1-D
1-E
2-A
2-C
2-D
2-E
3-B
3-E
Gull Cottages
Hammil Cottage
Fort Fisher Air Force Radar Station
Fort Fisher State Historic Site Visitor Center
1921 Fort Fisher Monument
Area reported to be former fill site
Fort Fisher
WWII Ammunition Bunker/Home
Section 1 Alternatives
Section 2 Alternatives
Section 2 Alternatives
Section 3 Alternatives
Downtown Kure Beach Inset Map
James M. Smith Cottage
Atlantic Ave
Pier View Cottages
Kure Beach Pier
Historic Sites
Historic Preservation Site
National Register of Historic Places Boundary
Local Historic District
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
Water Bodies
Roads
City Limits
0
0.5
1 MILE
N


DRAFT
Human Environment
ROADWAY CHARACTERISTICS
CAROLINA BEACH
KURE BEACH
421
Dow Rd
Island Greenway
Alabama Blvd
Fort Fisher Blvd
Settlers Ln
Sixth Ave
K Ave
1-A
1-B
1-C
1-D
1-E
2-A
2-C
2-D
2-E
3-B
3-E
Loggerhead Rd
Speed Limit: 55 MPH
AADT*: 5,800
ROW: 60'
Speed Limit: 25 MPH
AADT: 10,500
ROW: 100'
Speed Limit: 25 MPH
AADT: 8,100
ROW: 50'
Speed Limit: 35 MPH
AADT: 7,000
ROW: 60'
Speed Limit: 35 MPH
AADT: 2,000
ROW: 60'
Section 1 Alternatives
Section 2 Alternatives
Section 2 Alternatives
Section 3 Alternatives
NORTH ATLANTIC OCEAN
CAPE FEAR RIVER
Downtown Kure Beach Inset Map
Speed Limit: 25 MPH
AADT: 6,900
ROW: 60'
K Ave
Fort Fisher Blvd
Atlantic Ave
Speed Limit: 35 MPH
AADT: 5,300
Speed Limit: 25 MPH
AADT: 5,300
I Ave
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
East Coast Greenway Alignment
Local Road
State Maintained Road
Water Bodies
City Limits
*Annual Average Daily Traffic (AADT) is the total volume of vehicle traffic on a road over a period of one year.
0
0.5
1 MILE
N


DRAFT
Human Environment
INFRASTRUCTURE AND SAFETY
CAROLINA BEACH
KURE BEACH
421
Dow Rd
Island Greenway
Alabama Blvd
Fort Fisher Blvd
Settlers Ln
S Sixth Ave
K Ave
1-A
1-B
1-C
1-D
1-E
2-A
2-C
2-D
2-E
3-B
3-E
Loggerhead Rd
Section 1 Alternatives
Section 2 Alternatives
Section 2 Alternatives
Section 3 Alternatives
NORTH ATLANTIC OCEAN
CAPE FEAR RIVER
Crashes 2007-2022
Pedestrian-Involved Crashes
Bicycle-Involved Crashes
Traffic Signal
Bridges
Existing Facilities
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
East Coast Greenway Alignment
Roads
Water Bodies
City Limits
0
0.5
1 MILE
N

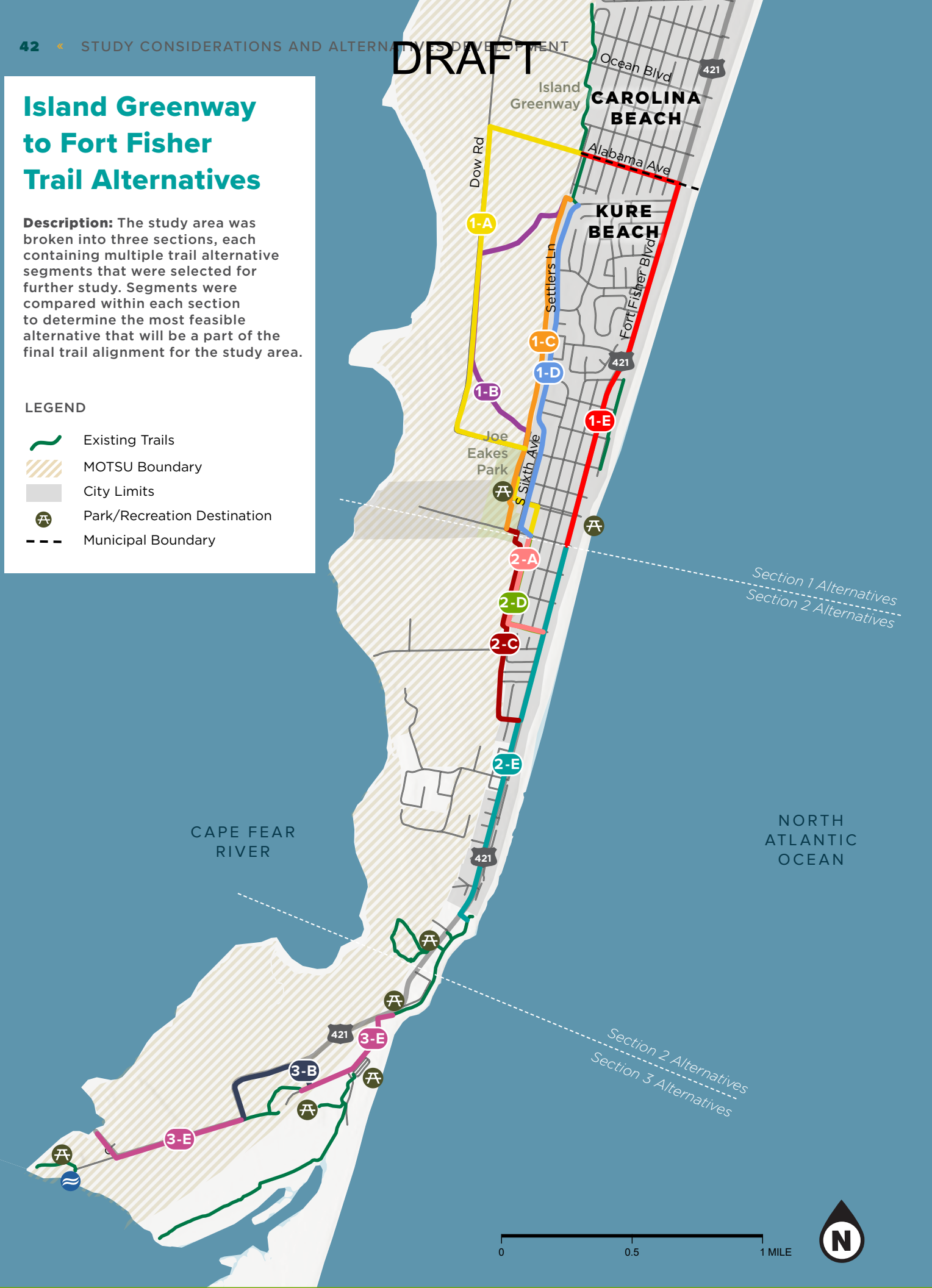

DRAFT
Human Environment
INFRASTRUCTURE IMPROVEMENTS
CAROLINA BEACH
421
Alabama Blvd
Dow Rd
Island Greenway
KURE BEACH
Settlers Ln
Fort Fisher Blvd
1-A
1-B
1-C
1-D
1-E
K Ave
STIP Project: Intersection improvements including, ADA crosswalks, pedestrian actuated push buttons, and sidewalk connection in Kure Beach located along Fort Fisher Blvd, K Ave, and N 3rd St.
Section 1 Alternatives
Section 2 Alternatives
2-A
2-D
2-C
2-E
Section 2 Alternatives
Section 3 Alternatives
K Ave
Fort Fisher Blvd
Atlantic Ave
I Ave
STIP Project: Construction of River Class Ferry for Southport-Fort Fisher route.
Sidewalk improvement proposed
3-B
3-E
Loggerhead Rd
Regional Ferry Project
State/Local Proposed Crossing Improvement
Existing Facilities
Existing Crossing
Shared Use Path
Bike Lane
Paved Shoulder
Sidewalk
East Coast Greenway Alignment
Roads
Water Bodies
City Limits
0
0.5
1 MILE
N

Alternatives

Multiple alternatives within each section of the study area were selected for further study. This section describes opportunities and constraints along each alternative and provides examples of the recommended facility types for each alternative.

Island Greenway to Fort Fisher Trail Alternatives

Description: The study area was broken into three sections, each containing multiple trail alternative segments that were selected for further study. Segments were compared within each section to determine the most feasible alternative that will be a part of the final trail alignment for the study area.



Summary of Alternatives

Table 3. Summary of Alternatives (Note alternatives within sections 1-3 are compared against each other)

ID	DESCRIPTION	FACILITY TYPE; LENGTH (MILES); COST*	OPPORTUNITIES AND CHALLENGES
1A	**Dow Road** Begins at Alabama Ave, ending at K Ave and S 7th Ave	**Sidepath** **1.8 mi.** **$6.1 M**	**Opportunities:** Continuation from Alabama Ave, away from residential backyards **Challenges:** Low lying wetland area, utilities, option lacks support from MOTSU and NCDOT Division 3
1B	**MOTSU Boundary Interior** Begins at Alabama Ave to Dow Rd through the dirt service access	**Shared-use path** **1.6 mi.** **$5.5 M**	**Opportunities:** Uses existing road, less wetland disturbance **Challenge:** Lacks support from MOTSU
1C	**MOTSU Eastern Perimeter** Begins at Alabama Ave, ends at H Ave	**Shared-use path** **1.32 mi.** **$4.5 M**	**Opportunities:** Continuous with existing Island Greenway, MOTSU open to option **Challenges:** Some wetland indicators, resident concerns about impacts to neighboring properties
1D	**Settlers Lane** Begins at Alabama Ave and Spot Ln, ends at H Ave	**Bicycle Boulevard** **1.33 mi.** **$700,000**	**Opportunities:** Less expensive option and least impacts **Challenge:** Could not be a separated trail facility so would not be an off-road East Coast Greenway designated route
1E	**Fort Fisher Boulevard** Begins at Alabama Ave, ends at H Ave	**Bike Lane** **1.85 mi.** **$7.2 M**	**Opportunity:** Utilization of NCDOT ROW **Challenges:** Constant driveway access points interrupting facility, utilities, limited ROW width and total loss of parking may be needed
2A	**Joe Eakes Park Connection** Begins at J Ave, ends at E Ave and Fort Fisher Blvd	**Side Path** **0.79 mi.** **$2.4 M**	**Opportunities:** Utilize parking on Ave I, connect to Joe Eakes Park **Challenges:** Needs connection to Kure Beach's commercial core
2C	**MOTSU Eastern Perimeter S** Begins at H Ave, ends at President Davis Ave and Fort Fisher Blvd	**Shared-use path** **0.86 mi.** **$3.1 M**	**Opportunities:** MOTSU open to option of using land behind residential area **Challenges:** Ditches and stormwater drainage will need to be designed around
2D	**Fifth Ave S (Use of parking)** Begins at H Ave, ends at E Ave and Fort Fisher Blvd	**Sidepath** **0.47 mi.** **$1.8 M**	**Opportunities:** Use of parking median and Town ROW to accommodate trail, option to make Fifth Ave S one way **Challenges:** Removes parking
2E	**Fort Fisher Boulevard** Begins at H Ave, ends at Fort Fisher Boundary	**Sidepath** **1.51 mi.** **$6.3 M**	**Opportunities:** On-street parking ends; ROW opens up south of Red Lewis Dr **Challenges:** Utilities, still has occasional driveway access points
3B	**Aquarium Bypass** Begins at Loggerhead Rd, ends at Fort Fisher Blvd, avoiding the NC Aquarium's nightly closures	**Shared-use path** **0.5 mi.** **$1.4 M**	**Opportunities:** Avoids aquarium campus nightly closures **Challenges:** May impact wetlands and require boardwalks, additional permitting
3E	**Fort Fisher Boulevard** Begins at Loggerhead Rd, ends at the Fort Fisher Ferry	**Sidepath** **1.12 mi.** **$3.1 M**	**Opportunities:** Potential trailhead at Ferry **Challenges:** Sand dunes; impacts to ditches and wetland species parallel to road, may require significant permitting and require boardwalks, impacts to utilities

**See an explanation of how costs were generated on page 102*

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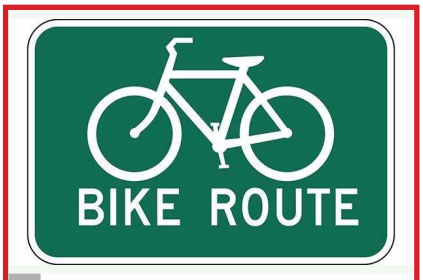
Opportunities and Constraints

Section 1

Existing Site Conditions

1 Alabama Ave at the Water Tower

6 MOTSU Forest



11 Westside Signed Bike Route

2 Structures Over Wetlands

7 Joe Eakes Park

12 Existing Boardwalk

3 Unpaved Road Off Dow Rd

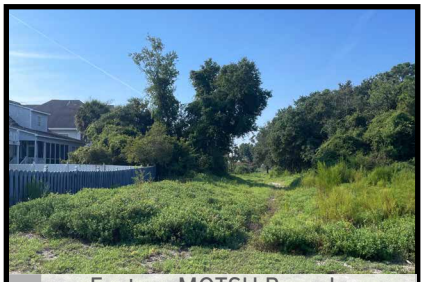
8 Grass Median Parking

13 Power Lines on Fort Fisher Blvd

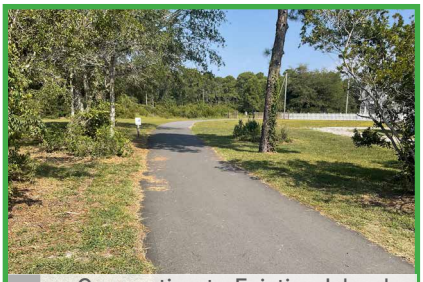
4 Power Lines on Dow Rd

9 Driveways on Fort Fisher Blvd

14 Proposed K Ave and Fort Fisher Blvd Crossing Improvements



5 Eastern MOTSU Boundary



10 Connection to Existing Island Greenway

15 Proposed K Ave and Settlers Ln Crossing Improvements

Note: Numbering corresponds with map on the facing page

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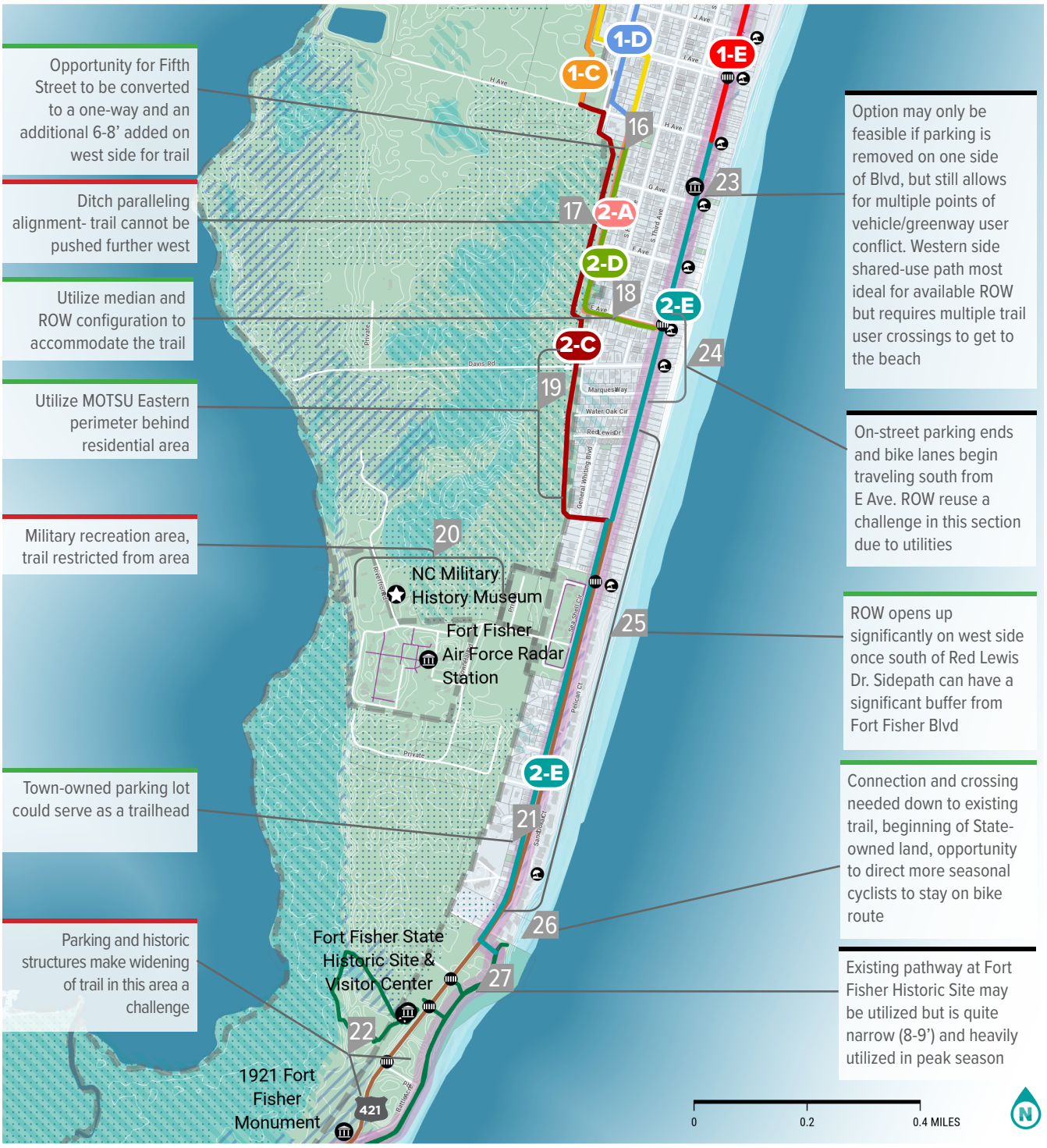
Opportunities and Constraints

Section 2



Existing Site Conditions

16 Fifth St to Turn into One-Way

20 Military Area Restriction Sign on MOTSU Property

24 Utilities on Fort Fisher Blvd

17 Ditch on West Side of Dow Rd

21 Town Owned Parking Lot

25 Potential Space for Sidepath with Buffer South of Davis Rd.

18 E Avenue Median and ROW

22 Fort Fisher Historic Structure

26 Street Crossing Connection to Fort Fisher Historic Site

19 MOTSU Eastern Perimeter/Firebreak

23 Removal of Parking Needed for Any Facility Within ROW

27 Fort Fisher State Recreation Area Trail

Note: Numbering corresponds with map on the facing page

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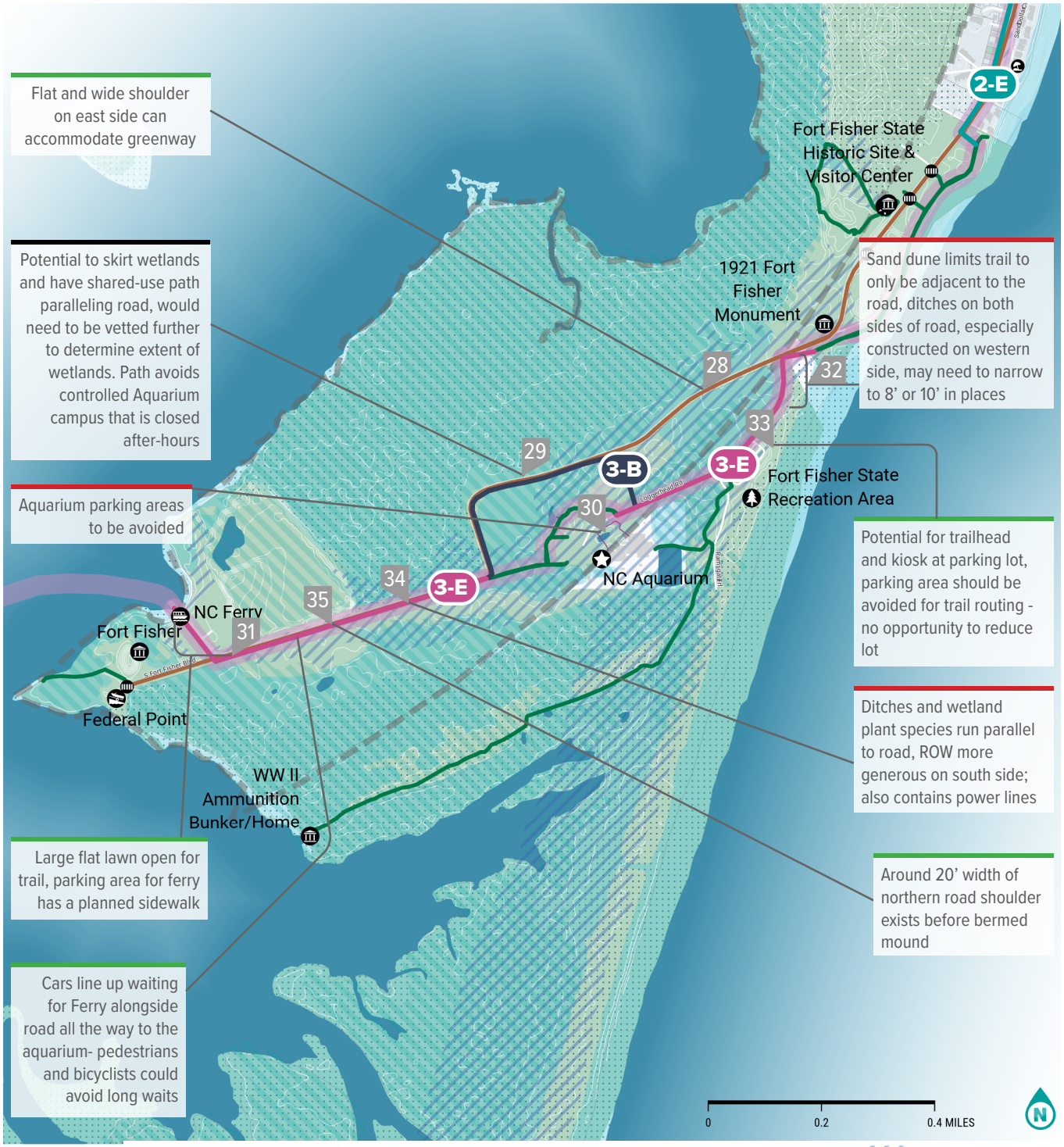
Opportunities and Constraints

Section 3



Existing Site Conditions

28 Existing Bike Lane on Fort Fisher Blvd

32 Sand Dune and Wetland Constraints of Loggerhead Rd

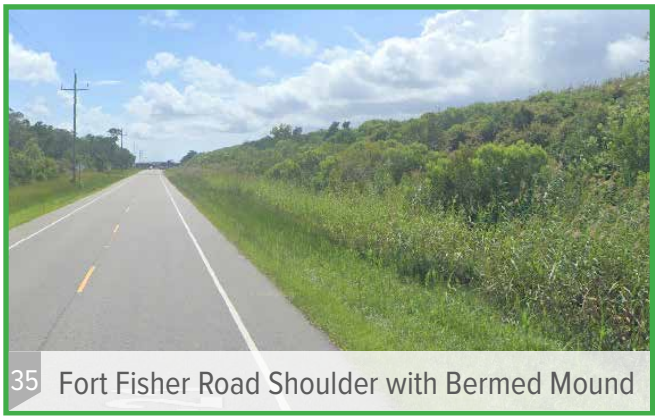
29 Existing Road Next to Wetlands

33 Parking Area at Fort Fisher Recreation Area

30 Fort Fisher Aquarium Parking Area to be Avoided Due to Heavy Traffic

34 Ditches and Wetlands Along Fort Fisher Blvd

31 Fort Fisher Ferry Area Connects to Proposed Sidewalk at Parking Lot



35 Fort Fisher Road Shoulder with Bermed Mound

Note: Numbering corresponds with map on the facing page

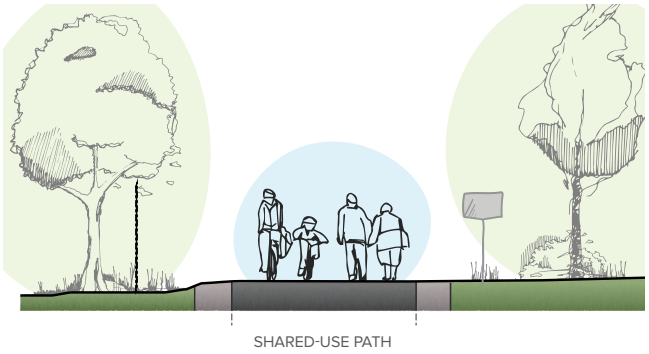
Facility Types and Typical Cross Sections

This section describes the trail cross sections that could be used to complete each alignment, depending on its context. Most cross sections include a shared-use path or a sidepath with roadway context to illustrate traffic volumes and speeds that necessitate different levels of separation.

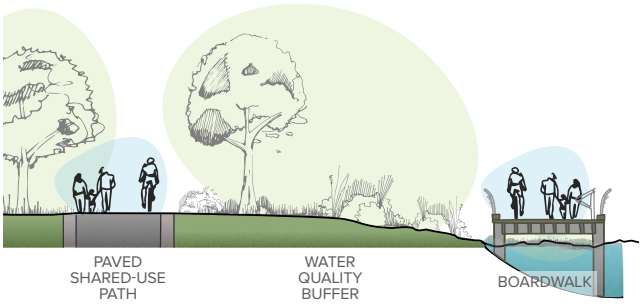
Facility Types

The following five facility types show the range of cross sections that could be used throughout the study area. Options for each alternative are also described.

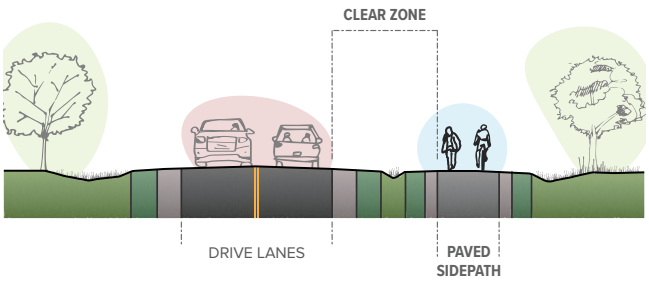
SHARED-USE PATH: GREENWAY



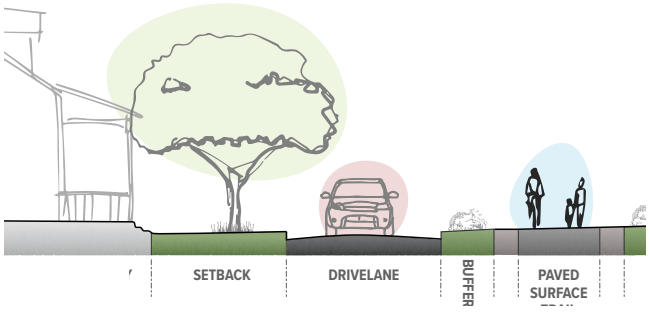
SHARED-USE PATH: BOARDWALK, WETLANDS, OR WETLAND ADJACENT



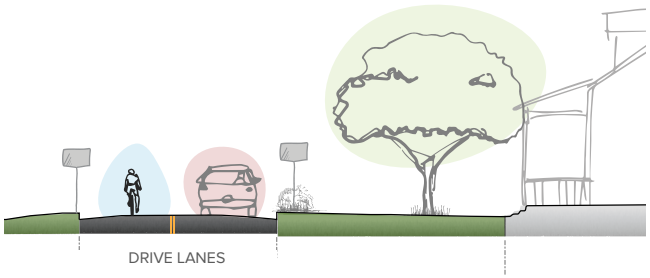
SIDEPATH: MINOR HIGHWAY



SIDEPATH: RESIDENTIAL



BICYCLE BOULEVARD



Facility Types of Each Alternative

Table 4. Alternative Facility Types

ID	NAME	FACILITY TYPE(S)
Section 1 Alternatives		
1A	Dow Road	Minor Highway Sidepath
1B	MOTSU Boundary Interior	Shared-Use Path/ Boardwalk
1C	MOTSU Eastern Perimeter	Shared-Use Path/ Boardwalk
1D	Settlers Lane	*Bicycle Boulevard*
1E	Fort Fisher Boulevard*	*Bike Lanes*
Section 2 Alternatives		
2A	Joe Eakes Park Connection	Residential Sidepath/ Shared-Use Path
2C	MOTSU Eastern Perimeter S	Shared-Use Path Boardwalk
2D	Fifth Ave S	Residential Sidepath
2E	Fort Fisher Boulevard	Minor Highway Sidepath
Section 3 Alternatives		
3B	Loggerhead Rd	Shared-Use Path
3E	Fort Fisher Boulevard	Minor Highway Sidepath

** Alternative 1E is not represented as a cross section, as it is not a greenway typology.*

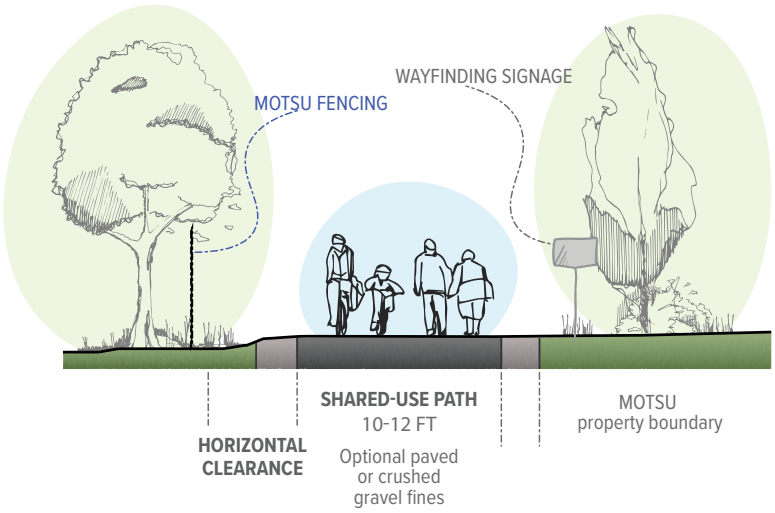
Note: Italicized facilities cannot be designated officially as East Coast Greenway off-road routes.

Facility Types and Associated Alignment Alternatives

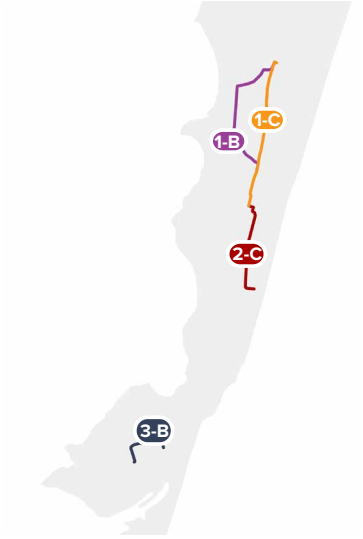
SHARED-USE PATH: GREENWAY

Alignment Alternatives: 1-B 1-C 2-C 3-B

Items in blue required on MOTSU property

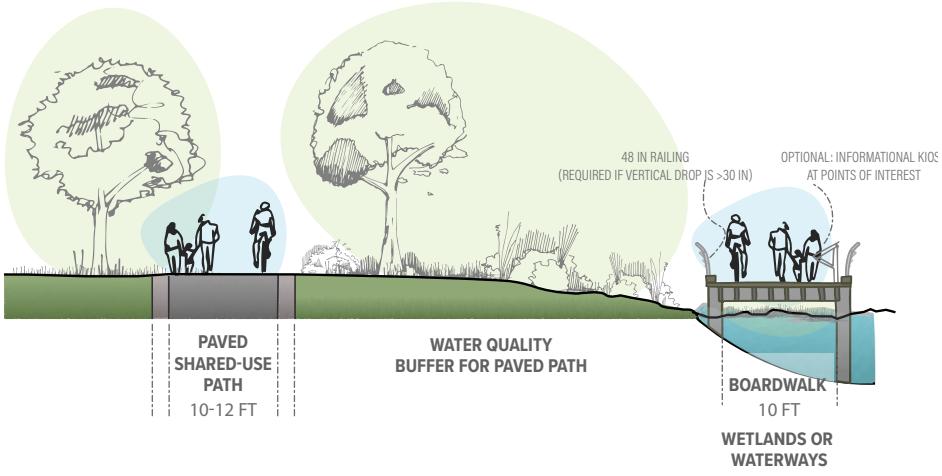


MAP OF ALTERNATIVES



SHARED-USE PATH: BOARDWALK, WETLANDS, OR WETLAND ADJACENT

Alignment Alternatives: 1-B 1-C 2-C 3-E



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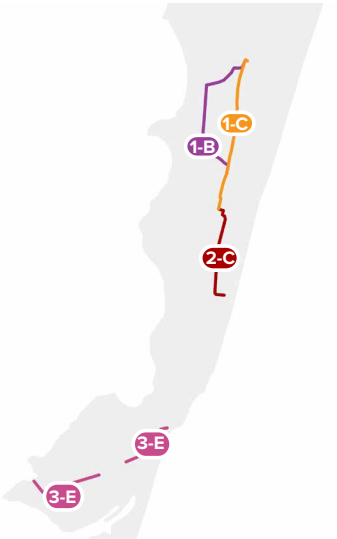
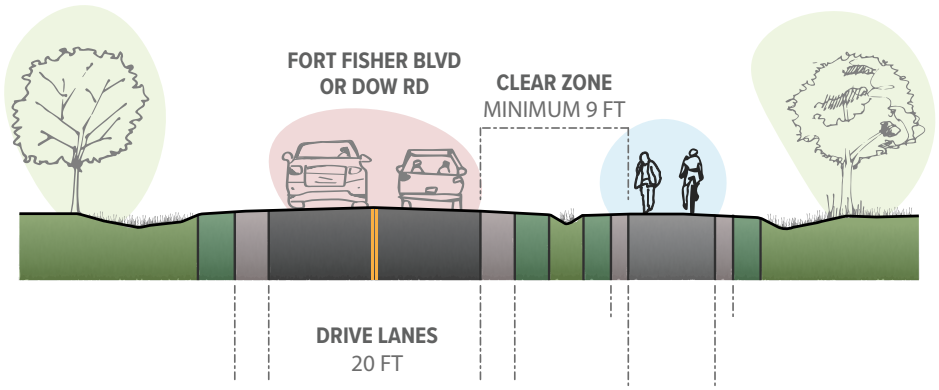


Facility Types and Associated Alignment Alternatives

SIDEPATH: MINOR ROADWAY

Alignment Alternatives: 1-A 2-E 3-E



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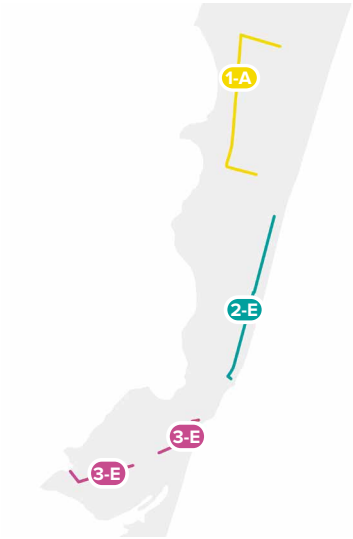
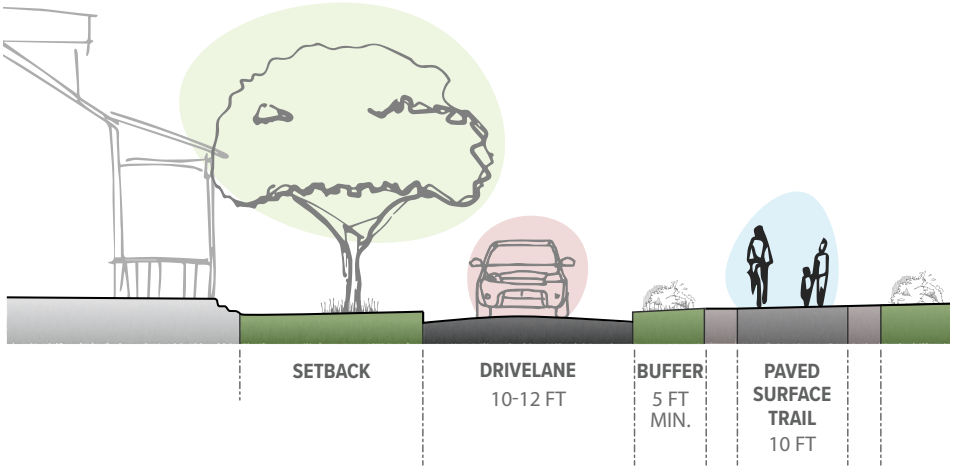


SIDEPATH: RESIDENTIAL

Alignment Alternatives: 2-A 2-D



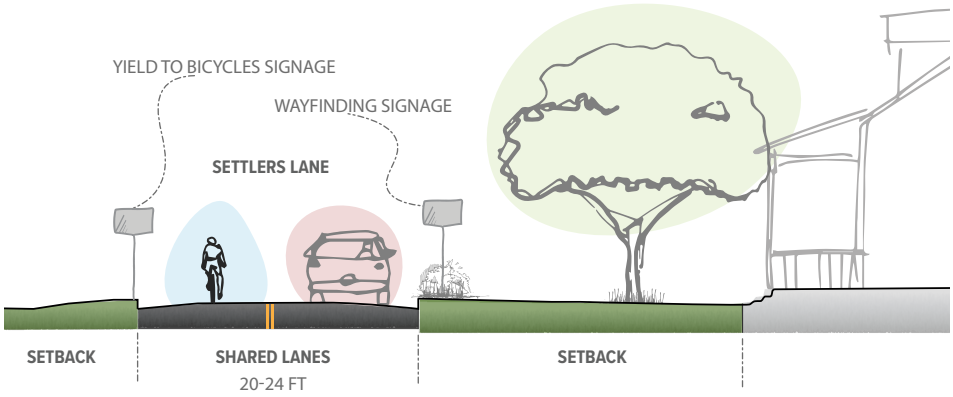
MAP OF ALTERNATIVES

Facility Types and Associated Alignment Alternatives

Note: The below facility types do not meet the East Coast Greenway separated facility requirements

BICYCLE BOULEVARD

Alignment Alternatives: 1-D



MAP OF ALTERNATIVES

BICYCLE LANES

Alignment Alternatives: 1-E

Alternative 1E is not represented as a cross section, as it is not a greenway typology. Bike lanes would require significant loss of parking along Forth Fisher Boulevard.

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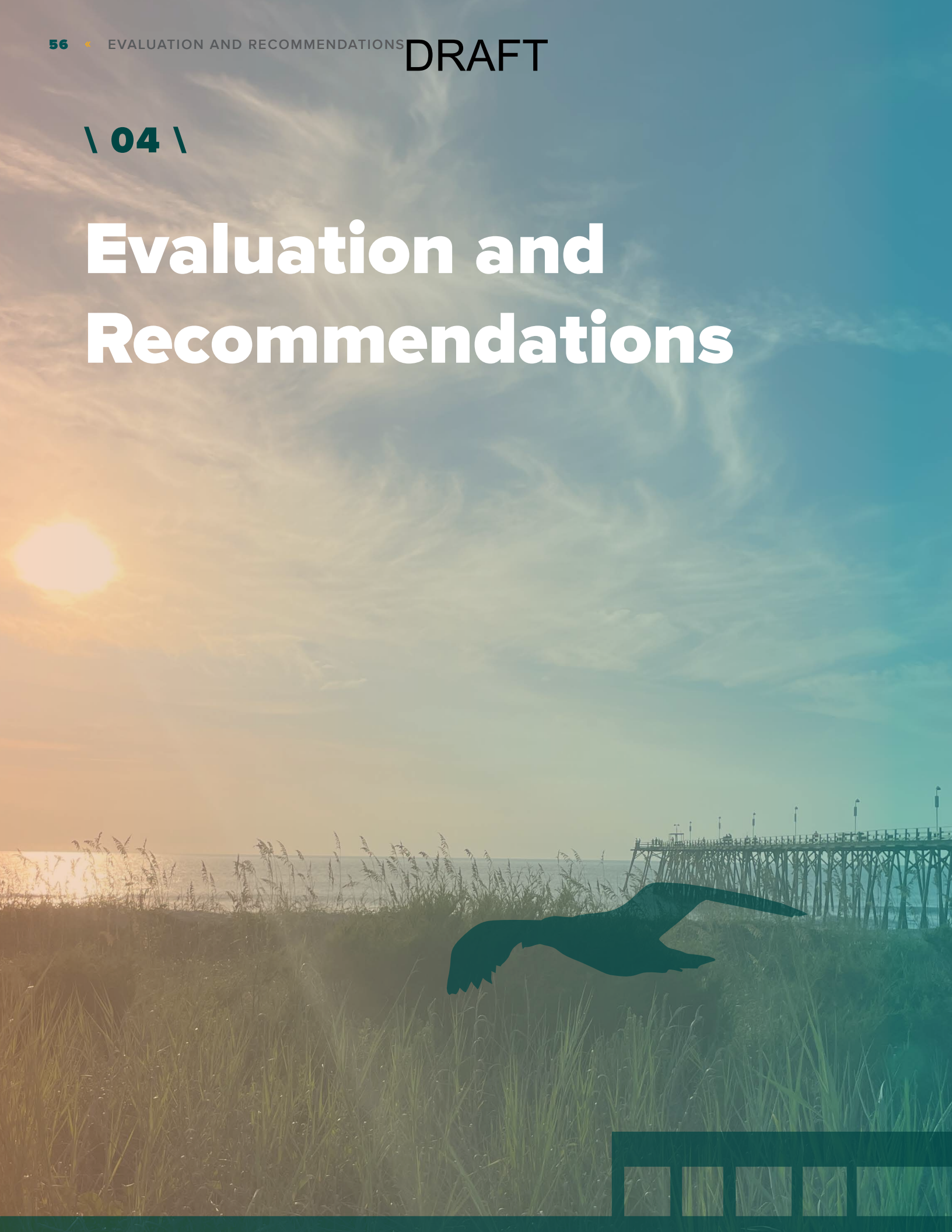
Evaluation and Recommendations



Criteria Scoring and The Most Feasible Route

Alternatives within each section of the study area were compared across all criteria and given a score of high, medium, or low based on performance. Performance from each criteria were combined to create an overall performance for each section alternative. **Trail alignments with higher scores for overall performance present the most feasible routes.**

This information is used to inform the final selection of the preferred route. Final selection of a preferred route is ultimately chosen by the Steering Committee with input from stakeholders and the public.

The most feasible/highest performing route is shown highlighted in white.

Criteria for Evaluating Alternatives

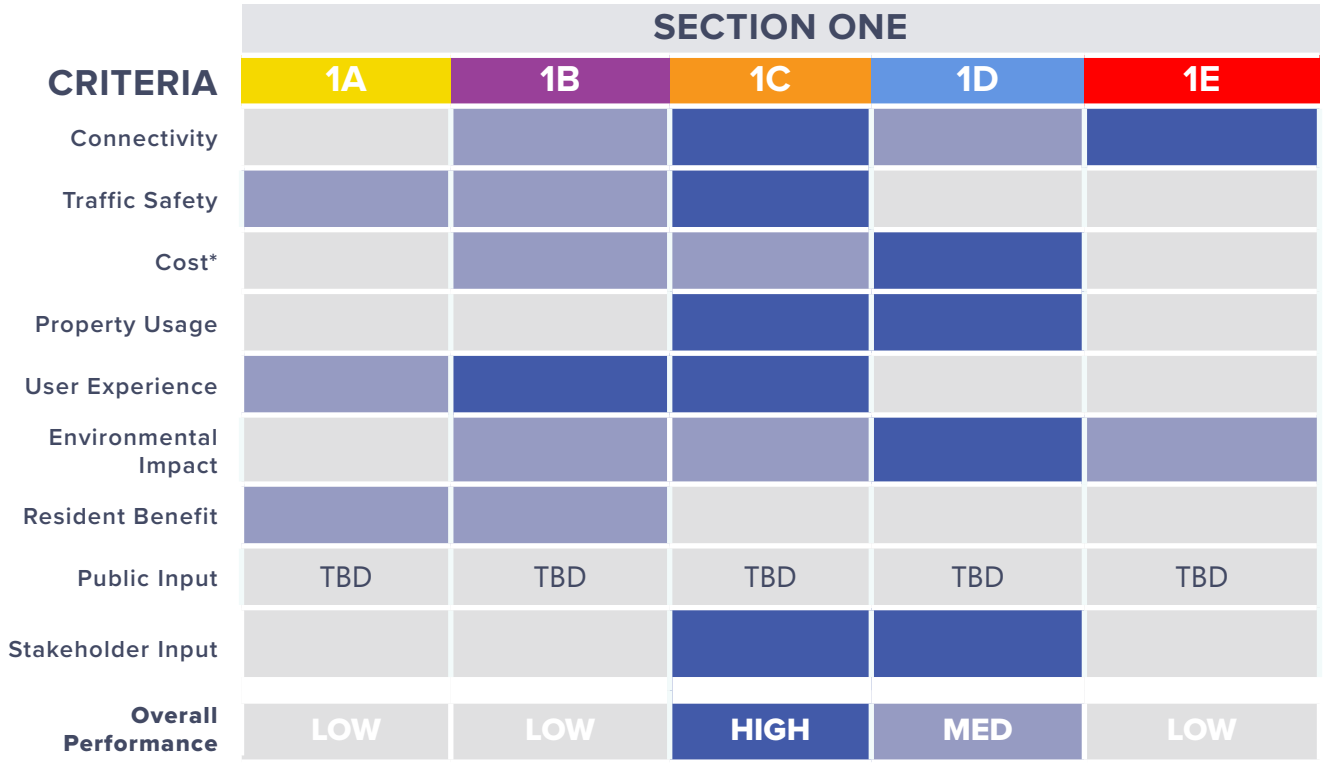
Alternatives within each section of the study area were compared and given a score of high, medium, or low based on the following criteria:

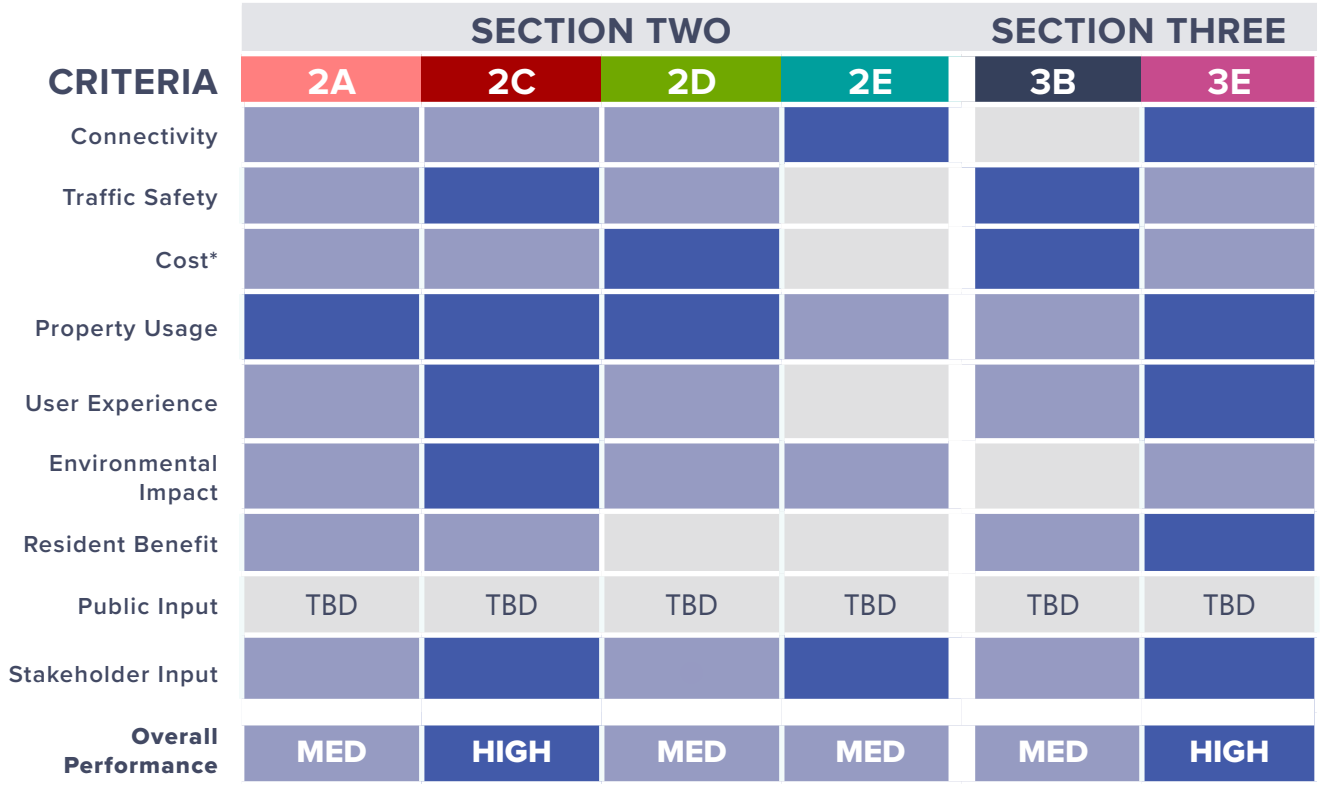
GOAL	EVALUATION MEASURES	DETAILS ON PERFORMANCE		
		Low	Medium	High
Connectivity	▸ Connects to existing and future destinations, such as such as other trails, parks, historic sites, schools, and neighborhoods ▸ Expands the area's overall walking and biking transportation network ▸ Enhances the trail's transportation function	Lower or little connection to destinations Expands network where there is low demand and few facilities	Connects mostly neighborhoods and parks Expands network where there is more demand and some walking and biking facilities	Connects to the greatest amount of destinations Expands network where there is the most demand a need for walking and biking facilities
Traffic Safety	▸ Minimizes crossings with roadways and driveways ▸ Has sufficient ROW for a trail to be appropriately separated from traffic	Along higher speed roads (50 mph+) and/or traffic Has minimal or no separation Has more than 20 driveway cuts and road crossings ROW is limited	Along roads with 35-50 mph speeds and/or some traffic Has some separation Has less than 20 driveway cuts and road crossings ROW is somewhat limited	Along or crosses lower traffic roads (35 mph or below) Has largest separation from roads Has few driveway cuts and/or road crossings
Cost	▸ Minimizes cost compared to other alternatives (based on planning level cost estimates)	Most expensive due to length, needed structures, environmental impacts, utilities (powerlines and stormwater infrastructure), and ROW acquisition Alternative cost is more than $6 million	Some expenses due to length, needed structures, environmental impacts, and utilities Alternative cost is between $2-6 million	Few expenses due to length, needed structures, environmental impacts, and utilities Alternative cost is below $2 million
Property Usage	▸ Minimizes property impacts by using public right-of-way (ROW) or private property where landowners have allowed for use of land	Landowners do not support this option and/or limited public ROW exists	Some very limited ROW acquisition may be needed upon further study of DOT ROW limits, and some coordination and approvals with NCDOT and MOTSU is needed to implement	Options most supported by landowners that would need to grant approval for ROW, and/or is Town and NCDOT owned, no private property ROW needed

Criteria for Evaluating Alternatives (Cont.)

GOAL	EVALUATION MEASURES	DETAILS ON PERFORMANCE		
		Low	Medium	High
User Experience	▸ Opportunities for shade/tree cover, attractive scenery, desired destinations, separation from traffic, gentle grade, and trail amenities ▸ Meets criteria for East Coast Greenway off-road facility	Adjacent to the road with little separation and higher speed traffic Cannot be adequately separated (Alternatives 1D and 1E)	Adjacent to the road with some separation and higher speed traffic Some connection to natural areas and/or amenities	Complete separation from the road and higher speed traffic Connection to amenities, natural areas, and scenic views
Environmental Impact	▸ Provides conservation benefits ▸ Minimizes impacts to wetlands, habitat of threatened and endangered species, and trees ▸ Minimizes tree removal, grading, and addition of impervious surfaces	Has indication of potential impacts to habitat of threatened and endangered species, up to 5+ stream crossings, greater impact to wetlands, potential stormwater impacts, and tree impacts	Has few indications of impact to threatened and endangered habitat, some potential impacts to wetlands, less than 5 stream crossings, some tree removal	Has no indications of impact to threatened and endangered habitat, minor or no impacts to wetlands, less than 5 stream crossings, limited tree removal
Resident Benefit	▸ Provides benefits to residents within the study area while minimizing potential negative impacts	Concerns from residents about privacy or neighborhood impact (Alternatives 1C and 1D) or potential loss of parking (1E, 2D, and 2E)	Fewer expressed concerns from residents or perceived impacts	Benefits residents with no expressed reasons for concern about privacy, or reduction in parking
Public Input	▸ Accounts for preferences of the public based on input received during this and other planning efforts	To be determined (TBD)	To be determined (TBD)	To be determined (TBD)
Stakeholder Input	▸ Accounts for feedback and preferences from key stakeholders based on communication and other planning efforts	Not supported by stakeholders (NCDOT and MOTSU do not support Alternative 1A, and MOTSU does not support 1B)	Supported by stakeholders MOTSU will have final approval on any alignment within their jurisdiction	Most supported by stakeholders MOTSU will have final approval on any alignment within their jurisdiction

Trail Alternatives Decision Matrix





PERFORMANCE:

Low	Medium	High
Received majority low scores and/or determined infeasible due to lack of support by landowner	*Received majority medium scores or majority low/medium scores and 2-4 high scores*	*Received 5 or more high scores*

**Based on planning-level cost estimates; see Table 3 for cost estimates for each alternative.*

Decision Matrix Performance Details

CRITERIA	SECTION ONE 1A	1B	1C	1D	1E
Connectivity	Furthest from destinations	Further from destinations	Direct connection to destinations		Direct connection to destinations
Traffic Safety	Partially along high speed roadway	Partially along high speed roadway	Most removed from roadways	Within roadway	Along highly trafficked roadway
Cost*	$6.1M	$5.5M	$5M	$700,000	$7.2M
Property Usage	Infeasible, ROW will not be granted		MOTSU supported**	Within road ROW	Needs ROW beyond NCDOT's ROW
User Experience	Adjacent to a high speed road	Partially adjacent to a high speed roadway	Removed from roadways	Within roadway	Along highly trafficked roadway
Environmental Impact	Many env. sensitive areas per MOTSU	Some wetland impacts may occur, further study is needed, some stormwater issues		No impacts	Has some stormwater issues
Resident Benefit	Furthest from residences	Furthest from residences	Resident concern about privacy	Resident concern users on road	Significant loss of parking
Public Input	TBD	TBD	TBD	TBD	TBD
Stakeholder Input	MOTSU and NCDOT don't support	MOTSU doesn't support	MOTSU and NCDOT support**	No vocalized concern	NCDOT less supportive inadequate ROW

CRITERIA	SECTION TWO 2A	2C	2D	2E	SECTION THREE 3B	3E
Connectivity	Residences and park connection	Residences and park connection	Residences and park connection	Ties commerce and beaches	Farther from aquarium	Closest to aquarium
Traffic Safety	Crosses low traffic roads	Most separated from roads	Crosses low traffic roads	Less separated, many driveways	Minimal road crossings	Two road crossings
Cost*	$2.4 M	$3.1 M	$1.8 M	$6.3 M	$1.4 M	$2.4 M
Property Usage	Town-owned/ MOTSU ROW**	MOTSU supported**	Town-owned/ MOTSU ROW**	Mostly within NCDOT ROW**	MOTSU ROW/ State Use**	MOTSU ROW/ State Use**
User Experience	Separated facility but along roads	Separated facility, in woods	Separated facility but along roads	Sidepath with driveway cuts	Separated facility but along road	Separated facility partially along road
Environmental Impact	Minimal impact, along road	Minor stream and wetland impacts	Separated facility but along roads	Potential some stormwater issues	Potential wetland impacts	Potential stormwater and wetland impact
Resident Benefit	Minimal impact, along road	Travels behind residences	One-way road conversion on Fifth Ave S	Potential loss of some parking	Indirect connection	Direct aquarium connection
Public Input	TBD	TBD	TBD	TBD	TBD	TBD
Stakeholder Input	No preference given	MOTSU supported**	No preference given	NCDOT supported if w/ in ROW	No preference given	Closest to existing facilities, preferred

***MOTSU support does not infer support of the selected facility type or final approval of alignment. MOTSU will grant official permissions in the next phase when environmental study and more detailed design has been done.*

Phasing

The following phasing is proposed for the most feasible trail alignments.

The total of all phases is 5.12 miles.

PHASE 2

Existing Island Greenway to K Avenue (1.01 miles)

This phase would occur only if an initial and more detailed design was developed so that an environmental study could be performed to ensure that the greenway meets MOTSU's requirements and to ensure that any environmental impacts can be avoided or minor impacts can be mitigated.

PHASE 1

K Avenue/Joe Eakes Park to Fort Fisher Ferry (3.11 miles)

This first phase would connect Joe Eakes Park and Town Hall all the way to the Fort Fisher Ferry. Crossing improvements of K Avenue (connecting the park and Town Hall) are slated to happen likely before this phase, allowing users to safely cross to Settlers Lane. Settlers Lane would be used as an interim measure until the Alternative 1-C has an environmental study completed.

PHASE 1/ INTERIM MEASURE

Settlers Lane Bike Boulevard (1.0 miles)

This interim measure can be instituted while Alternative 1-C is being studied for environmental impacts. This interim measure could include traffic calming, sharrow markings painted on the road, and route wayfinding signs. Trail users would use this low-speed street as an interim connection of the two greenways.

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Appendices

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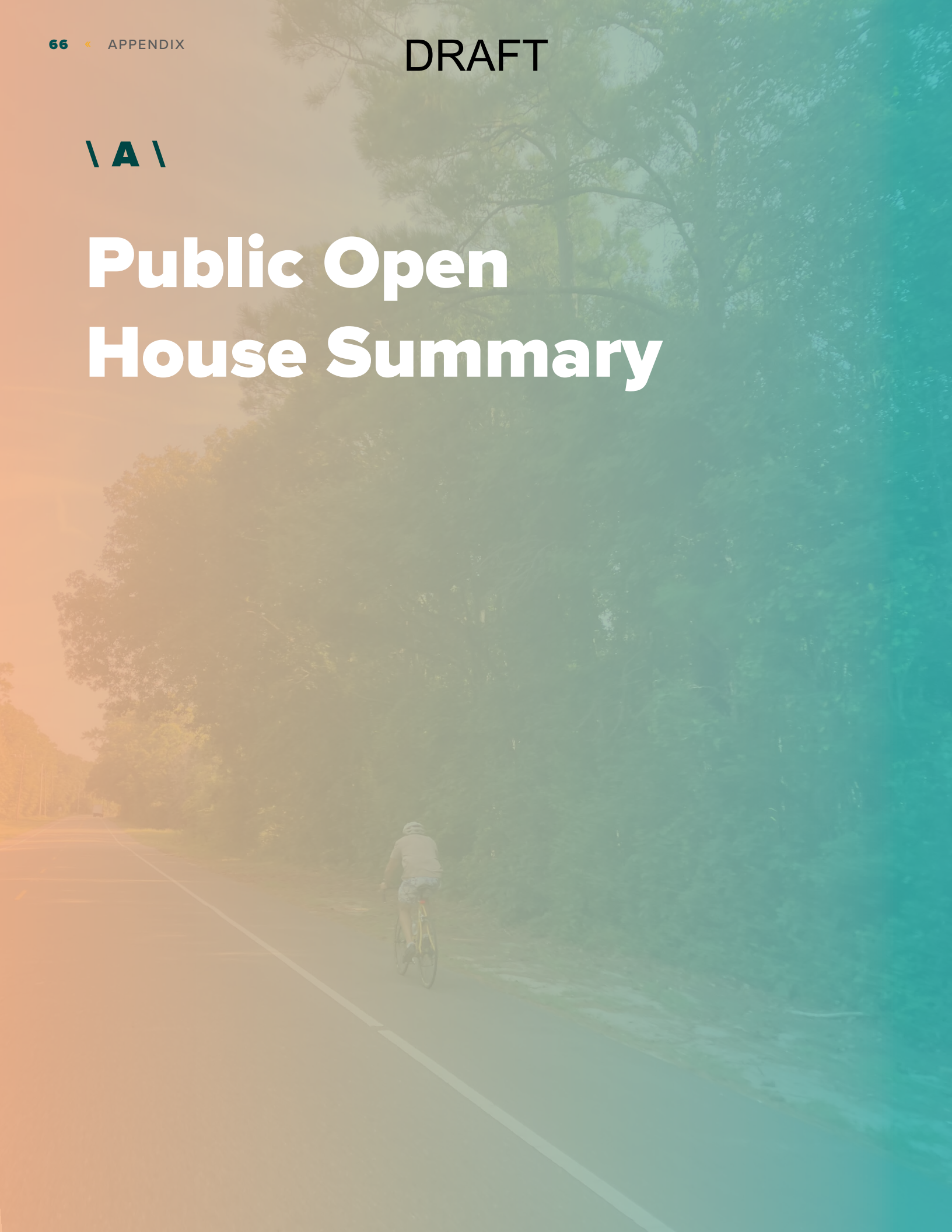
Public Open House Summary



Island Greenway Feasibility Study Open House

Wednesday, September 6, 2023; 5:30-7:30pm

Location: Kure Beach Fire Department and Ocean Rescue, 608 K Avenue, Kure Beach, NC 28449

Prepared by: Alta Planning + Design

Summary of Public Feedback

Introduction

The proposed "Island Greenway to Fort Fisher Feasibility Study" will establish an approximate 4.8-mile greenway route and implementation plan for the corridor connecting the southern terminus of the Carolina Beach Island Greenway to the Fort Fisher – Southport Ferry Terminal. Once completed, this Island Greenway to Fort Fisher multi-use path will result in an effectively-continuous greenway that will connect Carolina Beach State Park, Carolina Beach, Kure Beach, Fort Fisher State Recreation Area, Fort Fisher State Historic Site, the North Carolina Aquarium at Fort Fisher, and the Fort Fisher Ferry. This segment will be a part of both the East Coast Greenway State Trail route and the North Carolina Great Trails State Network.

The purpose of the engagement was to…

1. Garner input on opportunities and challenges of different alignment options that are being considered.
2. Understand which facility typology the public most supports.
3. Get feedback on what criteria is most important during route selection.
4. Hear from the public about “what the Island Greenway” will be and “who will use it.”

Public Meeting

At the public open house, there were a total of 240 attendees. This consisted of 221 Kure Beach Residents, 17 Local Residents to other areas of Pleasure Island, and 2 Non-Locals. Attendee sign In sheets, with names redacted for privacy, are attached in Appendix A.

Key Takeaways

Many written comments collected at the open house were generally positive towards the greenway, although there were concerns with certain alignment options presented on the meeting materials.

Major themes included concerns about property value, maintenance, safety/privacy, and preservation of natural areas, specifically wetlands. Key points related to these themes are outlined below, and all individual comments from the meeting are included in Appendix A.

- Pedestrian/bicycle safety
    - Many residents want safer places to ride bicycles and walk that are away from roads, especially Fort Fisher Blvd. which many feel is not safe for families.
- Greenway benefits

    - The greenway will be used by and benefit families. Many felt that families will greatly benefit from the trail as there is no good place for inter-generational groups of family members to be together on bikes or walking.
- Property values
    - Property owners along the Settlers Lane expressed concern about the alignment along the eastern MOTSU boundary and said it would have negative impacts to property value due to proximity to a public greenway facility. Other citizens stated they think it will raise their property values or have personal experience with property values increasing with the Island Greenway.
- Maintenance
    - Residents were concerned about who will maintain the greenway.
- Safety/crime and privacy
    - The majority of concerns were along the MOSTU Eastern Boundary/Firebreak alignment: increased crime, such as theft and child abduction, were mentioned as concerns by a number of residents. Many were concerned about privacy and want to see a significant buffer from their homes.
- Preservation of natural areas.
    - Many want to see preservation of natural areas within the MOTSU boundary, including concerns about flooding and protection of wetlands, wildlife, and tree canopy.

Map posters for three segments of the study area asked participants to share opportunities and constraints for any of the alignment options. The pictures of the maps are attached in the appendix. Below is a summary of comments provided for each alignment option:

- Dow Road
    - Provides a more natural setting
    - High vehicle speeds
    - Wetlands are prevalent
- MOTSU Eastern Boundary
    - Property owners concerned with safety, crime, privacy
    - Wetlands and wildlife are prevalent in the area
    - Current drainage and stormwater issues in the area
    - Concerned about impact to property values
- Neighborhood Bikeway
    - Residents often backing out of driveway
    - Congestion with residential traffic and active transportation users
- Fort Fisher Boulevard
    - Routes along commercial area and beach access
    - Dangerous with car traffic
    - On-street parking is heavily used
    - Frequent flooding with storms
    - Connects to destinations in the south
- Options South of the Town of Kure Beach
    - Residents feel Fort Fisher Blvd. is dangerous and would have impacts to parking, but want to ensure it is being connected to
    - Preference to stay away from roads, or have a good buffer

Preferred Facility Type

When asked about preferred facility types for walking and biking, the majority of responses showed a preference for a Greenway. With the ability to place two dots, 224 total responses were placed on this option, including 204 responses from Kure Beach Residents. A secondary preference for Sidepath facility type was shown with 47 total responses, including 43 from Kure Beach Residents. The Separated Bike Lane with Sidewalk facility type option received 11 total responses.

Facility Types:

Separated Bike Lane with Sidewalk

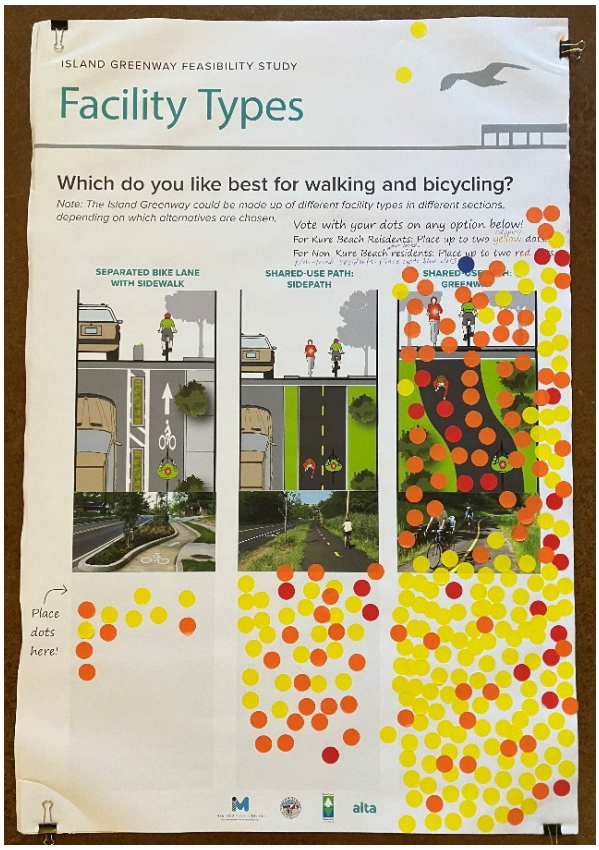
- Kure Beach Residents (yellow/orange): 11
- Local Residents (red) : 0
- Non-Local Residents (blue) : 0

Shared-Use Path: Sidepath

- Kure Beach Residents (yellow/orange): 43
- Local Residents (red) : 4
- Non-Local Residents (blue) : 0

Shared-Use Path: Greenway

- Kure Beach Residents (yellow/orange): 204
- Local Residents (red) : 18
- Non-Local Residents (blue) :1



Criteria for Route Selection

Participants were asked their opinion on the most important criteria for route selection and given the ability to place three dots on any criteria. Most respondents favored Connectivity, with 144 total responses and 125 responses from Kure Beach Residents, and Traffic safety, with 117 total responses and 108 responses from Kure Beach Residents. Property acquisitions and user experience were the next most common choices, with 78 and 66 total responses, respectively. Cost was chosen as an important criterion with 23 total responses. Other criteria were written in and are listed below:

Route Selection (Which criteria are the most important):

Connectivity

- Kure Beach Residents (yellow/orange): 125
- Local Residents (red) : 17
- Non-Local Residents (blue) : 2

Traffic Safety

- Kure Beach Residents (yellow/orange): 108
- Local Residents (red) : 9
- Non-Local Residents (blue) : 0

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MEMORANDUM

Cost

- Kure Beach Residents (yellow/orange): 23
- Local Residents (red) : 0
- Non-Local Residents (blue) : 0

Property Acquisitions

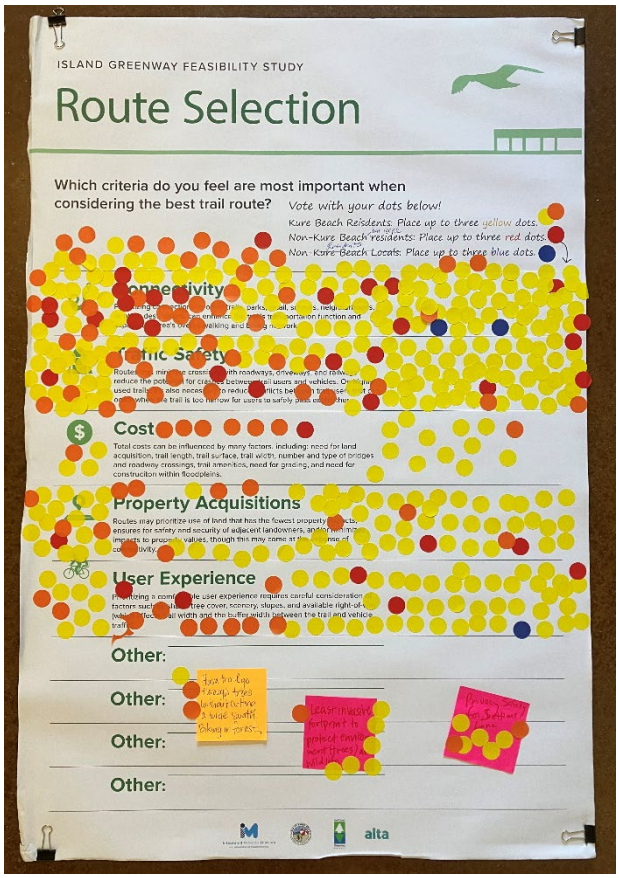
- Kure Beach Residents (yellow/orange): 75
- Local Residents (red) : 3
- Non-Local Residents (blue) : 0

User Experience

- Kure Beach Residents (yellow/orange): 60
- Local Residents (red) : 5
- Non-Local Residents (blue) : 1

Other

- Have trail go through trees without cutting a wide swath. Biking in forest: 3
- Least invasive footprint to protect environment (trees) and wildlife: 7
- Privacy safety for Settlers Lane: 7



Next Steps

The planning process is currently within the Draft Study Development Phase. The second public open house and public survey will be in February 2024.

Appendix A: Individual Reponses

The Island Greenway Will be…

- It will preserve "Forever Green" land behind Settlers
- A safe place for me to bike
- Safe place for the greater good, cars are dangerous
- Help keep people and children safe off roads with a safe place to walk, jog and bike
- Great and safe addition for exercise, walkers, bikers
- The Greenway would be – safe, family/children friendly
- Wonderful for everyone! Great for the environment and health.
- A path to the ferry and Southport
- Added safety, added fun, added value, less pedestrian and bike traffic on roads
- Great place for the family to ride safely
- I look forward to everyone being able to ride safely and be able to see the undeveloped areas
- Good for my family, biking, walking safely- instead of on main street
- Increased safety for pedestrians and bicyclists
- Protect children from criminals/unknown strangers
- Fantastic and a great way to get all over the island!
- Great for community
- A safe place to run and ride bikes
- A way to bring the island together
- Increased property values for the 21st century community
- Make it safe for walkers and bikers
- A safe place
- A safe place to bike and walk
- A safe place to walk, run, bike in the community. Great way to stay active and fit.
- Keep bikes and people off roads traveled by cars
- Great place to walk and ride bike safe from cars
- A great place to walk or bike safely

- Safety
- A great place for the future of KB
- A great addition to KB, a safe way to traverse the island from the ferry to CB
- Great for community. Long overdue.
- No privacy
- I will use it for bike riding, walking, walking my dog, enjoying nature
- Allow me to safely ride my bike to friend's house in Southport.
- Great 4 the Politicians, disaster for residents who eventually pay for it
- A great place to exercise.
- An easy way for anyone to come into my backyard and break into my house. No!
- Protect trees and wildlife, maritime forest. Less pavement and fences.
- Safe for walkers and bikers.
- Safe place to walk and ride without traffic.
- Pros: Increased land value, safer for cyclists, beautiful for community
- A safe place to ride or walk
- Awesome for being able to safely go around all areas of the island
- The greenway will be a safe alternative to Dow or Ft Fisher for all!
- A safe place for me and my family to bike and walk
- I love how the animals enjoy (deer, fox, etc) the CB Greenway too!
- Connectivity with CB and Path that minimizes using public roads.
- Disaster
- Safety and recreation
- Safe bike path for grandkids would be great
- To connect state parks- Use state road
- Safe place to ride
- Crime on houses that back on fire ln
- A easy way for someone to come in my backyard and break into my house
- The birds will love the open space!
- We need a safe place to ride. Make it happen
- The greenway would be: safe, family/children friendly
- Safe place to walk and ride without traffic
- A great addition not only for Kure residents but for all
- Enjoyment for the whole family
- Encourage outdoor lifestyle

- Extended greenway will encourage more exercise and community
- Biking and walking
- A lovely way for citizens to enjoy nature and get healthy exercise. East Coast connectivity
- Great place to bicycle off the busy streets
- A safe place to ride or walk
- Love the safety of the path especially during peak season
- A trail like CB
- Must get bikes and pedestrians off the roads too dangerous on bike lanes
- Loss of privacy and property value
- A bad idea

Who Will Use the Island Greenway?

- Residents and vacationers
- Dog walking, exercise, walk, run, bike
- Residents, families
- My family, my guests, tourists
- My family, friends, renters
- My family
- My family and with my dog
- My family
- Families, friends, residents
- My family
- Family and us
- Myself, family, friends, neighbors
- My family and dog
- Family
- Now everyone will be able to enjoy this undeveloped area
- Friends and family
- My family will use it as we do now
- We use the CB greenway several times a week: bike riding, walking
- Runners, walkers, cyclists
- Keep bikes and people off roads traveled by cars
- Town needs the greenway for residents and visitors!
- My husband, me, grandkids, my walking buddies, my friends, and neighbors. Love the IG!

- I ride my bike and walk the IG with family and friends. Want a safe place to ride and walk.

General Comments:

- Extending the bike and walking trail in our beach community is a fantastic idea with numerous benefits. Beyond the obvious allure of picturesque view this expansion promises to significantly enhance the health and well being of our community members. Access to trails encourage physical activity making it easier for residents to engage in regular exercise and enjoy the great outdoors. Where it's a brisk morning walk, leisurely bike ride, these activities promote cardiovascular health, reduce stress and foster a sense of unity among neighbor by extending a safe trail away from roads and cars
- Keep in mind the cost of continual upkeep.
- If you can put it anywhere- put it where people will be okay with it- why antagonize 80+ homes?
- Yes please- we want it.
- I know that fences may be unpopular along the greenway, but dog and cat owners may view them as a positive thing.
- This open house idea was poorly executed- it was impossible to have a meaningful conversation! There should have been a presentation to bring attendees up to speed!!
- I paid a premium to be on Settlers Lane. This will would create noise and privacy issues.
- Concerns about the trail prox. Against the 4th Ext S homes on buffer.
- Yes greenway! Too dangerous for pedestrians on the road- even on quiet res. Streets!
- Really need to define exactly where the greenway is proposed along Eastern MOTSU boundary- homeowners think it is against their fence line.
- Resident- Do NOT want it behind my house on Settlers- takes away privacy.
- Yellow- wide enough for bikes and people.
- I use CB Greenway several days a week to go to gym, library, etc. It absolutely is a benefit to all on the Island. This would make KB an even better community!
- Please make this happen! Great idea!
- A bike/pedestrian path separated from Dow Road is the best option. It is good for environment and children.
- Even Google has a bicycle overlay. It's going to happen!
- I don't want people looking in my backyard.
- Do not put a greenway behind Settlers.
- The draw to our Island Paradise for residents and tourists is being outdoors. The greenway is one of those draws. We need the Greenway!
- Firebreak: flooding, residential.
- I love and fully support this project however it can be accomplished! Will add another level of wonderful to town and make walkers/bikers safer.
- A greenway behind Settlers is UNSAFE for my baby and toddler. Child abduction is too important.
- Best decision Carolina Beach Council ever made!!!
- Bicycling on Ft Fisher, using a walker or stroller, is dangerous. Kids and seniors need the greenway!

- One life saved is worth the effort.
- Don’t bulldoze and pave maritime forest. Save the wetlands.
- Please take into consideration human life and safety.
- Run it along Dow Rd from CB Park to KB Park, would not affect anyone’s property.
- Dow Rd more applicable thruway, privacy for Settlers Lane residents.
- I am a resident of house on Settlers. I do not want this behind my home. It already floods there. Dow Rd is the best option.
- Dow Rd is the only option. Protect wetlands!
- Flooding or proposed trail behind General Whiting.
- Road safety for walkers, cyclists and scooters is a concern. This would be great for so many reasons. This is an active community.
- Our children, pets and grandchildren need a safe place to bike and walk. The streets in Kure Beach are too narrow to ride.
- Wild life behind firelane.
- Homeowner safety that backs up to firelane.

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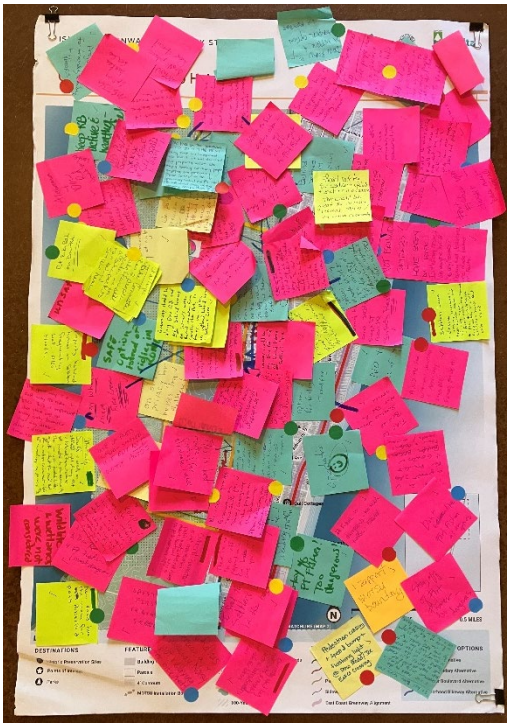
MAP 1 – Island Greenway to H Avenue



- Behind Settlers is not an option for us
- Settlers is becoming congested with walker/bikers. Need alternative to walking and riding in street.
- All the people that live on Settlers Ln will have no access to the bike path. And if you do put gates in then we have to worry about people coming thru the gates to vandalize.
- Propose place behind
- Dow Rd is a better and cheaper option- KB Resident
- Stay off 421 as much as possible
- Great plan- please extend greenway along back of Settlers. Make is safe for everyone.
- Lake Park Blvd is a part of all the routes eventually and would make sense to make that the whole routes, and make the whole town more navigable for bikes and pedestrians.
- Off main road behind Settlers
- Fort Fisher option doesn't have great appeal
- Stay off Dow Rd
- Safer proposed than Dow Rd
- Off main road behind Settlers
- Not behind Settlers- home safety at risk!
- Is this an issue? Has anyone in CB had any issues? Hoping that decisions are based on facts.
- Unsafe
- Many driveways that people back out of onto road
- Beachwalk mailboxes and pool and clubhouse frequently visited. Vehicles back out onto road.
- Avoid the fear. Win-win solution is absolutely possible! Fences, shrubs, etc.
- No to all of it!
- A greenway behind Settlers puts my 4 month old girl and 2.5 yr old boy at risk for child abduction- unacceptable risk – don't marginalize my kinds- use Dow Rd
- Behind houses and Settlers safest route. Safety first.
- Don't like Fort Fisher as an option
- Stay off Settlers. Too dangerous. Road behind home on Settlers.
- Great plan to utilize off road path behind Settlers and Dow would work is off main road only.
- Greenway should continue the spot by the water station? Go behind the houses on Settlers. Safest way

- Greenway should be along Dow Rd and NOT behind homes on Settlers Lane.
- Opportunities
- Ft Fisher is dangerous. Too much traffic already.
- Save the wetlands. Put the greenway along Dow Road where hundreds of people already bike, run, and walk.
- Safe option for riding and walking.
- Stay off Ft Fisher! Too dangerous!
- I support MOTSU Boundary.
- "It has been very fun." I live next to the Greenway in CB and think it has been an easy and fun way to travel. Also keeps people off of the streets so you won't get run over. I would love for it to go into Kure Beach. I use it to go from my house to the park and use it to go to friends' houses.
- Stay off of Fort Fisher- too dangerous.
- Pedestrian crossing and speed bump and flashing light at Dow Road/Joe Eakes crossing.
- Too many cars parking out (2 per household equals danger) NOT recommended for Settlers
- Unsafe (Dow Rd)
- Put bike path on Dow Rd.
- Safety concerns, especially at night.
- Greenway should be along Dow Rd and NOT behind home on Settlers Lane. Easiest connection from Carolina Sate Park to ferry. Don't place on wetlands behind homes on Settlers Lane.
- Greenways should run along major roads, not on wetlands behind homes.
- Safety and privacy not considered for Settlers owners. Not in my back yard.
- Opportunities: Settlers Ln is an existing right of way with adequate lighting for traffic in a residential setting. The street is lightly traveled and could easily be converted to a one-way to make space for a dedicated bike/multiuse lane. Residents already experience bike and pedestrian traffic on this road. This road has established slow speeds for current traffic. This road meets up with CB Greenway and it is how we currently travel to the Greenway.
- There seems to be a misconception where the greenway would be located along Settlers Lane- residents believe it would be located right next to their fences.
- We paid a premium price for our property on Settlers Lane because of the privacy of the backyard.
- No behind Settlers Ln. Down Road OFF-ROAD PATH!
- Alabama and Dow Rd should be route.
- I would like it to go behind the houses on Settlers so I won't have to ride with traffic.
- MOTSU option makes sense
- Keep KB active and healthy- walk and ride!
- Anywhere except Fire Lane.
- Safe option instead of riding in road.
- Use Mots land- Shared use but not with autos

- No Access on and off Greenway on Fire Lane for Police/Emergency or the people on the Greenway. *Don't destroy our wetlands and wildlife. DO NOT ON Fire Lane.
- There is no on or off proposed route on the fire break near Settlers once you are on it.
- This is a safe proposal for bike and walking traffic.
- I feel that Settlers Ln is the best
- Behind Settlers is not private and would be safest. It would allow great connectivity.
- Floods on fire lane behind Settlers Lane. Best route is Dow Rd. I am not for route behind houses on Settlers. Privacy, security, and property value concerns.
- MOTSU is best place for trail
- A safe option. That's important.
- Increase noise level since there is not natural buffer- people, dogs
- Property behind homes on Settlers frequently wet. Also floods.
- Great community project, for friends, family, and visitors.
- I would love there to be a connecting greenway from Alabama to Fort Fisher not on or near roads as I don't feel that is safe. I would like it to be similar to CB.
- The greenway is a safe way to ride bikes. This is important when there are so many baby boomers that day drink and drink and drive all day long… not just at night.
- Opportunity: Dow Rd is already on established right of way that is distanced from residences yet connected to the communities. There are wide forested buffers on both sides of the road that offer a natural environment while not encroaching on privacy. Electricity also already runs along this road and additional lighting could easily be added while the forest would provide light pollution buffer to residences.
- Wildlife and wetlands were not considered
- Dow Road has the room for Bike/Ped path.
- My choices: 1. MOTSU boundary 2. Neighborhood bikeway 3. Dow Rd 4. Ft Fisher (most dangerous)
- Current "connector" is not maintained. Public works does not have enough headcount- who is going to maintain???
- Opportunity: Dow Road causes the least issues for residents and is a nice, green area. It would be useful for getting to shops and attractions on the island. Other options are disruptive.
- This (orange route) is best route. Control for drainage issues.
- This same type route worked in CB.
- Wetlands
- Challenges: The firebreak behind Settlers Ln has many challenges:
- Swampy terrain
- Currently an appreciated Dark space allowing stargazing from residences
- Currently offers privacy and a view of nature to residences as well as quiet
- Limited entrances and exits

- The “Settlers Lane” alternative should consider including buffer/vegetation between houses and greenway as appropriate
- Challenges: Bike committee has 2 people who their sole agenda is for a bike path to run behind Settlers Lane homes. One comment from Head of Bike/Ped Committee- I don’t care about the residents on Settlers. I only care about the children. We would have no privacy- more chances of theft. This is on wetlands.
- Connect behind Beach Walk! Property value have not gone down on the CB greenway!

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MEMORANDUM

MAP 2 – H Avenue to Fort Fisher State Historic Site

- Only trail that makes sense her is MOTSU – in forest
- Need a safer route. Need a greenway
- Widen Dow Rd bike path for biking and walking west side
- Fisher Blvd is absolutely dangerous people walk in bike path making bikers go out in front of traffic- need another solution to get to south end of island
- A greenway needs to be green – NOT ON THE ROAD
- FF is unsafe – pedestrians were hit last year IN A crosswalk. More development means even more traffic
- Fort Fisher now has parking spots where does this fit??
- Keep off Fort Fisher Blvd. It's already very busy with people, cars, flooding with storms. Thanks.
- Can we stay on the MOTSU prop the whole way down?
- FF Blvd route would cost a ton if widened. Every individual property would have to be appraised and owners would be paid for their losses.
- Orange route!
- MOTSU Boundary Alternative around 6th and I
- Flooding
- Whichever route is chosen, the greenway should have connections to the town "grid" so as to assure it serves a transportation purpose and not recreation alone.
- Great idea and freq. biker and greenway walkers with family- expanding thru FF would be great to bike with family to ferry and Southport!! Great civic effort!
- Opportunities: Fort Fisher Blvd offers several opportunities:
    - Beach access
    - Existing right of way and lighting
    - Access to Recreational Areas such as KB Pavilion, Blakeslee AF Rec Area, Fort Fisher Rec Area, Aquarium, & Ferry terminal
- Safety first, relaxation second
- Dow Rd has become a highway. Noisy, not relaxing for bike/peds
- Currently used by golf carts and mostly electric bikes/scooters not safe for bikes and kids (orange)
- I think behind Settler is the best option.
- We live on the greenway in CB. Is it THE BEST thing that has happened. We love it. It has doubled our property value. We enjoy seeing to many people enjoying the greenway. Please connect to the CB Greenway. Contact me for real life info about living on the greenway.

- I am for it but want it to be safe from traffic and lit.
- Putting a fence on MOTSU disrupts the natural flow of the wildlife! Not wanted behind houses for obvious reasons.
- Inhinges on our privacy for houses on Settlers Lane.
- Fire Lane behind Settlers should not be an option
- This is a great idea for residents and creates a buffer between Town and Federal lands. Win/win!
- Owner privacy on Settlers Ln that backs to firelane
- Want to see extension- go off road, get to Fort Fisher
- Road safety for walkers, cyclists and skaters is a concern. This would be great for so many reasons. This is an active community.

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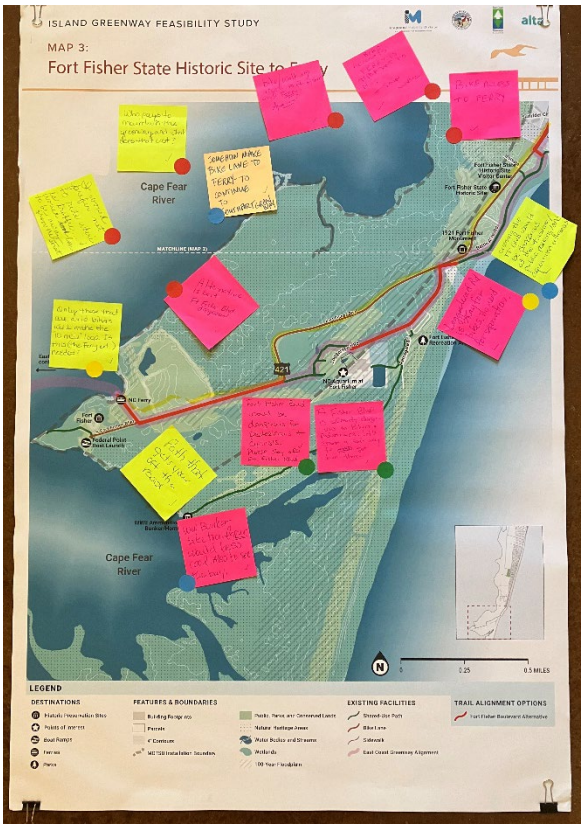
MEMORANDUM

MAP 3 – Fort Fisher State Historic Site to Ferry

- Who pays to maintain the greenway and what does that cost?
- Bike/walking access to Ft Fisher and ferry! Aquarium!
- Bike access to ferry is important to me
- Bike access to ferry
- Crossing the FF Blvd would be dangerous at the museum/public parking/and aquarium entrances
- Loggerhead Rd is okay for bikes, no need for separation
- Ft Fisher Blvd is already dangerous to bikers and pedestrians. Let's create a safe way to get down there
- Ft Fisher Blvd would be dangerous for pedestrians and cyclists. Please stay off Ft Fisher Blvd.
- WW Bunker bike trail spur would be so cool. Also to see the bay.
- Path that gets you off the road
- Only those that are avid bikers will make the 10 mile loop. Is this (the Ferry ext) needed?
- I would prefer not to ride where is traffic… would love to be away from the street
- Somehow make bike lane to ferry – to continue to Southport Greenway
- Alternative is best. Ft Fisher Blvd dangerous



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Stakeholder Meeting Minutes

Island Greenway Feasibility, Southern Corridor Meeting

Island Greenway Trail Feasibility Study

Monday, August 28, 2023 11:00-12:00 EST

Attendees:

Allen Oliver (Mayor Pro-Tem)

Hap Fatzinger (NC Aquarium at Fort Fisher)

Andrew Meeker (ECG)

Jim Steele (Fort Fisher Historic Site)

Jeff Owen (NC Parks)

Hart Evans (NCDOT)

Kim Williams (Alta)

Elizabeth Burke (Alta)

Meeting Minutes

- General Opportunities and Constraints
  - Refer to previous meeting notes with Jason Reyes of Alta for Great Trail State Plan Implementation.
    - Notes about local species and maritime forest next to the recreation area and existing trails. There are alligators and snakes on property, and mosquitos. (Jeff Owen)
  - The Aquarium would like to see increased bike access and is fine with travel through our site, although the gates close from 5pm-8am which will restrict access to pathway through the gate. (Hap Fatzinger)
    - There is the potential to re-route part of the trail to go around the gate, although parking in the State Park might be affected.
  - Another way into the State Park could be at the edge of the historic site and crossing US-421.
    - Aquarium gate may not impact the feasibility study.
    - Getting by the state park parking lot and into the aquarium's existing trail would probably be the best option as a sidepath down US-421.
  - The roadway gets filled up with illegal car parking down Loggerhead Road. The current alignment shown as a red line goes through this area.
    - The trail would need to be separated from roadway so that people aren't blocked by parked cars.
  - US-421 is supposed to be a DOT maintained road, but the existing facility is not very good and needs maintenance.
    - Because of the road conditions we wouldn't want to use the existing four-foot bike lane.
  - There is the possibility to extend the existing bike path along right hand side of the road going south.
    - There is less illegal parking than on Loggerhead Road, although there is a large drainage ditch on that side as well.

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- The existing four-foot bike lane on Loggerhead Road is narrow and not really used because of sand and other maintenance issues.
- Would a curb along bike path help the facility to manage parking?
    - Left hand side has parallel parked cars but has gotten wetter, but a curb could help mitigate the flooding.
    - There are parking signs along the right-hand side going south, but people parallel park along the other side.
    - Sea level rise has increased wetness along the left side of the road.
- US-421 is historically a dangerous roadway.
    - There are sharp turns and fast traffic racing toward the ferry.
- The speed limit was 55 mph but has since turned to 45 mph.
- Sometimes the entire road gets under water.
    - Lunar tides reach the road.
    - A possible solution could be ditches on both sides of the road for drainage.
- Where do jurisdictions meet?
    - The project site is on State land with different jurisdictions.
    - Jurisdictions easily work together, so there are no expected constraints while collaborating.
    - State Park area starts south of the rock wall near historic site and ends at the aquarium gate.
        - There is some overlap of aquarium property.
    - Includes Basin Trail.
- Further south is Federal property and the ferry.
- The trail along the rocks is State Historic Site jurisdiction, ending where the rocks end and the sand gets soft (cars often get stuck here.)
    - There might be potential to tie into a future trail depending on width, although there are concerns, like the difficulty of crossing from one side of US-421 to the other and picking up at the historic site.
    - Coordination with Army Corps of Engineers will be needed to expand the trail along the wall for bike/pedestrian access.
        - 100ft within the wall centerline is Army Corps jurisdiction.
        - Requirements had to be met for past work on the existing trail.
    - Widening the pathway and connection is possible, but it's unclear how it would connect to Loggerhead Road.
    - Losing dedicated parking spaces will lead people to parking anywhere and everywhere, as there are currently parking issues from Battle Acre Road all the way south.
    - Potential to keep people from parking on the facility, although there is a lot of visitor traffic.
- Parking in the area has gotten very busy in recent years.
    - State statute prevents charging for parking in the area.
    - Many use these parking areas to go to the beach.
- Is there any potential for new trailheads?
    - There is no parking near the ferry, only at the boat ramp in the south end.
        - Spots get filled and visitors end up parking on the roadside.
    - Ferry traffic can get backed up to the curve of US-421 waiting to get on.

- The trail could give people an opportunity to walk or bike to the beach.
  - There is potential to park at Kure Beach or Carolina Beach and travel to zbeach.
  - Visitors could use proposed trails and make a day of visiting State area rather than driving.
- There is strong opposition to adding more parking anywhere in the area.
  - This is the only free beach parking in the county, leading to lots of visitors.
  - A parking deck has been proposed in the past, although increased capacity would just increase the number of users.
  - The aquarium is looking to adjust existing parking instead of adding parking with the expansion of their facilities.
  - Historic site visitation has risen, but no additional parking will be added with the expansion of the visitor center.
  - Emergency vehicle access is a problem.

- Public Meeting
  - We will have a simplified map showing alignment options.
    - We will show the red line alignment to public.
    - The feedback received may be mostly in town area, not in the south section.
  - Improvements are needed along aquarium trails.
    - They only have a bike path that goes around the parking lot.
      - Width doesn't meet requirements for ECG.
      - It is within a maritime forest causing issues with roots, etc. growing through the pavement.
    - The trail slows people down, it is great for families, it gives a change from being out in the road.
    - One section contains a bridge and a dock overlooking the pond and alligators.
      - Improvements need to be made to the decking.
- We are possibly talking to MOTSU during the fieldwork visit.
  - A lot of property in the south is leased from MOTSU.
    - Every 5 years the lease is renewed for 300+ acres.
    - MOTSU is not currently pushing to fence in areas.
- Aquarium accreditation requires barriers around the facility to secure the site.
  - The pond/marsh is considered impenetrable, but there is a fence along another pond near the aquarium and around a lot of the perimeter.
    - There are alligators in both ponds, in ditches along road, and in the parking lot sometimes.
  - Could a path circumvent the fencing or is it too wet?
    - A path could be routed around the current bike path, but it can't connect to the existing path because that has access to the parking lot.
- Anything west of the buffer zone line will have to involve MOTSU.

Note: The following page is a markup of stakeholder comments of the southern corridor during the meeting.

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ISLAND GREENWAY SOUTHERN CORRIDOR

NCDOT TRAIL FEASIBILITY STUDY

alta

Trail Alignment Options
- Fort Fisher Blvd Alternative

Existing Facilities
- Shared Use Path
- Bike Lane
- Sidewalk
- East Coast Greenway Alignment

- Points of Interest
- Boat Ramp
- Ferry
- Park
- Historic Preservation Sites
- Natural Heritage Area
- MOTSU Installation Boundary

- 100-Year Floodplain
- Water Bodies
- Wetlands
- 4' Contours
- Stream
- Parcels
- Kure Beach City Limit

Island Greenway Feasibility Study

Wilmington Metropolitan Planning Organization Meeting

September 7th, 2023

- Kim Williams, Elizabeth Burke, Erika Herbel, Alta
- Abby Lorenzo, MPO
- Vanessa, MPO
- Hart, NCDOT
- Allen Oliver, Town of Kure Beach

What's being prioritized?

- STIP (Statewide Transportation Improvement Plan) Prioritization
  - no major projects
  - Submittal for replacement of Snows Cut Bridge to island
  - Submittal for on site pedestrian improvements for Ferry Terminal to connect to future greenway
    - Community wants bike ped connectivity from Southport to Pleasure Island
    - Sidewalk connecting future trial on 421 sidepath to ferry terminal
  - Submittal ferry project for additional ramp system
    - Delivery in current STIP is 3rd vessel
    - Additional service to increase use of ferry
  - Peak summer, have to wait 2-3 ferries to use it
- Sept 15 close of call for project for annual direct allocation of funds
  - Kure Beach K Ave ped improvements has money
- Updates to MTP
  - Currently in public engagement
  - Project list can compete for state funds
    - Including bike ped
  - WMPO will sit with Kure Beach to find priorities
- Other transportation projects in Kure?
  - Intersection K Ave
  - 7 midblock crossings from bike ped plan
    - More demand from the public for next round
    - Slowing traffic, improving safety
    - Map sent from Adrienne for top 7
      - Target is installation May 1 (3)
      - More study needed outside Town Hall (4)
  - Greenway and crosswalk improvements
  - Connectivity to community center and hotel with federal grant
  - ADA issues and maybe another crossing on 3rd Ave
  - N Ave sidewalk section to beach access- 2040 WMPO plan
  - Boardwalk issues along Atlantic Ave
- Dow Rd
  - Need to understand ROW and ownership/easement
  - MOTSU will likely have issue

        - Issues during bike ped plan
        - Fences required
    - No crossing from MOTSU
        - Maybe no Ocean or Alabama to Down Rd
    - Dow Rd and greenway plan show greenway on Dow Rd
    - Blast zone restrictions are becoming more stringent
    - Commander makes a difference on options, some more interested in community development
        - Changes every 2 years
        - Working with MOTSU planner will be helpful
            - Back and forth planner before showing an alignment
    - Land Use plans shows interest in accommodating needs
    - Other Kure facilities on MOTSU property
        - Sewage lagoon, water tower, maintenance building
    - Fencing will be tied to every lease agreement
    - What can we do to make Settlers happy?
- MOTSU
    - Any benefit from having an easement and trail
        - Clearing/maintenance help?
        - Helping with fire control?
    - Stormwater pipe being added on firebreak
- Environmental analysis won't be extremely accurate without MOTSU data
    - Long eared bat, tri colored bat, endangered woodpecker
- Disallow lighting on MOTSU
    - Lighting may be a detriment to certain species and may not be allowed.
- Important that every comment from public is typed and shared with public
    - Key themes, etc
    - Scan sign in sheets
    - Important to hear tax payers and users

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Island Greenway Feasibility Study
Meeting with NCDOT Division 3

Wednesday, October 18th, 2024 from 3-4 PM
Virtual Meeting Via Microsoft Teams

AGENDA

Project overview: The trail Feasibility Study is looking at providing a paved multiuse path/trail from Fort Fisher Ferry Terminal north to Alabama Ave in Kure Beach, which will connect to the Island Greenway in Carolina Beach. The attached map shows the alternatives we are studying and what we are trying to connect to. The feasibility study will determine the preferred alternative based on costs, public input, environmental constraints, user safety, and anything else that comes up from coordination with MOTSU, NCDOT, and other local stakeholders.

10 minutes / **Overview of the Project and Where We are in the Scope of the Project**

50 minutes **/ Trail Alternatives of the Corridor**

Note we will be asking thoughts on different scenarios shown on this map that are NCDOT State maintained roads. We would want to know your thoughts on opportunities, constraints, any future projects or plans in the area, and overall if you feel like certain options will or won't work.

Multiuse Path Alternatives Options Being Considered on State Maintained Roads:

Dow Road (*likely non-viable option per MOTSU military, but still worth getting local division input*), proposed side path along east side of the road.

- Does DOT own Dow Road or does DOT have a permanent easement with MOTSU?
- What are the ROW widths along this corridor?
- Do you see any issues with a side path on the east side of Dow Road from DOT's perspective?

Fort Fisher Boulevard, potential facility types based on where you are, Alta will discuss options.

- Do you have any thoughts about readapting the roadway and loosing parking to accommodate any kind of facility, especially as you travel from K Avenue to E Avenue?

- Do you have any thoughts about a side path being incorporated within the road ROW, especially from E Avenue south to Fort Fisher State Historic Park? Is there ROW that can be utilized?

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- Do you have any thoughts about a side path along Fort Fisher Park from near the State Aquarium to the Fort Fisher Ferry?
- Can you share what the ROW widths are along Fort Fisher? Does it vary, seems to based on the parcel data.

Loggerhead Road, potential side path facility

- Do you have any thoughts about a sidepath on Loggerhead Road as it serves as the main point of access to the North Carolina Aquarium?
- Is there ROW here? Who owns it?

Preference on Options

- Of the options shown, do you have any strong opinions that certain options should not be considered a preferred option?

Island Greenway to Fort Fisher Feasibility Study Context Map

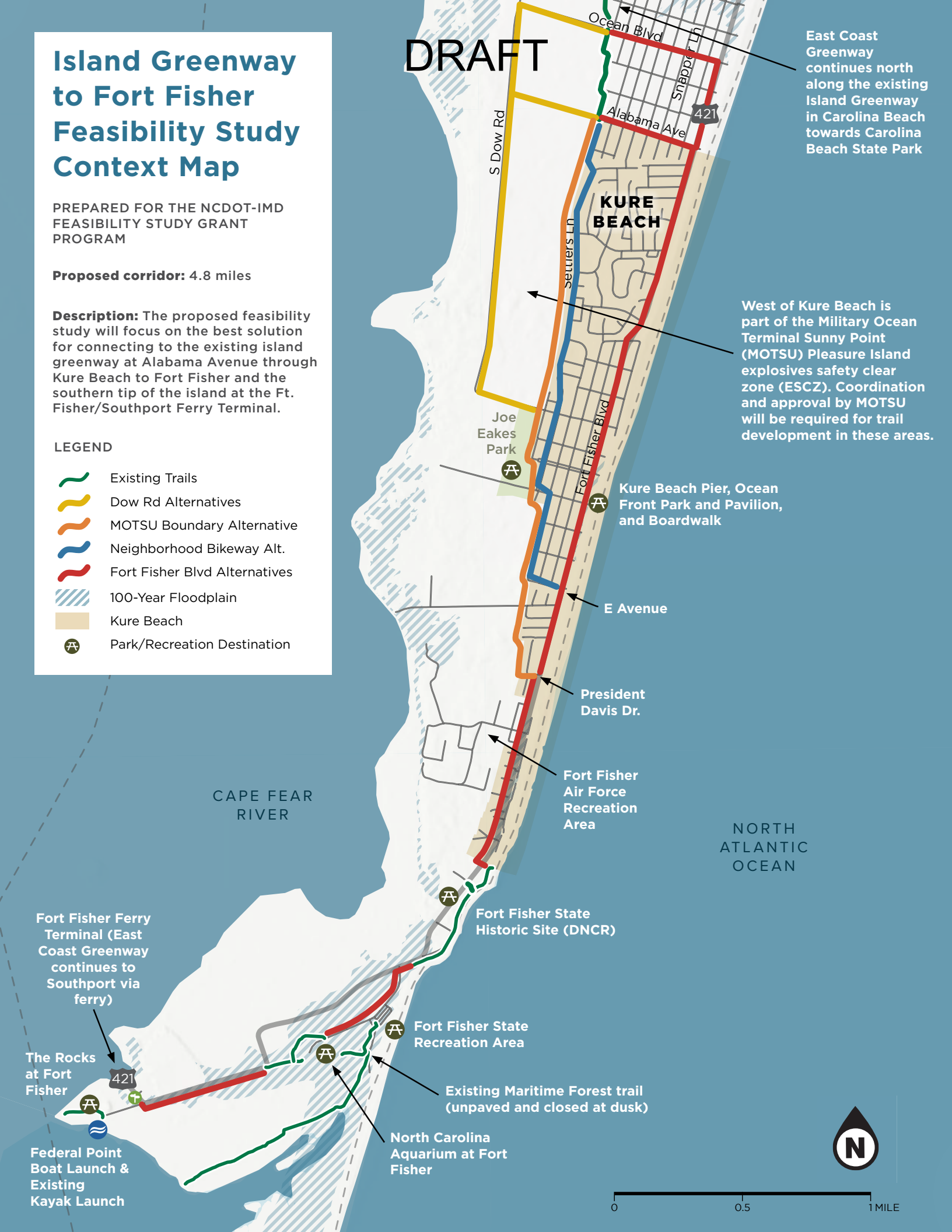
PREPARED FOR THE NCDOT-IMD FEASIBILITY STUDY GRANT PROGRAM

Proposed corridor: 4.8 miles

Description: The proposed feasibility study will focus on the best solution for connecting to the existing island greenway at Alabama Avenue through Kure Beach to Fort Fisher and the southern tip of the island at the Ft. Fisher/Southport Ferry Terminal.

LEGEND

- Existing Trails
- Dow Rd Alternatives
- MOTSU Boundary Alternative
- Neighborhood Bikeway Alt.
- Fort Fisher Blvd Alternatives
- 100-Year Floodplain
- Kure Beach
- Park/Recreation Destination



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Steering Committee Meeting Minutes

Meeting Minutes

Island Greenway Trail Feasibility Study Kick-off

Tuesday, July 18, 2023 1:00-2:30 ET

Steering Committee Kick-off

Attendees/Project Management Team:

- Kim Williams (Alta)
- Erika Herbel (Alta)
- Adrienne Harrington (SmartMoves Consulting)
- Allen Oliver (Town of Kure Beach Mayor Pro-Tem)
- Sean Geer (Town of Kure Beach Parks and Recreation)
- Hart Evans (NCDOT)
- Edward Wilkinson (Resident)
- Yvonne Bailey (Carolina Beach Bike/Ped Committee)
- Mike Smith (Kure Beach Village HOA)
- Kat Deutsch (NC State Parks)
- Andrew Meeker (East Coast Greenway)
- Hap Fatzinger (NC Aquarium at Fort Fisher)
- Mo Linquist (Bike/Ped Committee)
- Ed Strauss (Beachwalk HOA)
- Emma Stogner (WMPO)
- Vanessa Lacer (WMPO)
- Meghan Finnigan (MOTSU)

Develop Vision and Goals, and Identify Critical Issues

Vision

What should be the impact, scope, and big inspirational idea of this project?

Major themes:

- A safe walkable and bikeable corridor that is accessible to all ages and abilities.
- Connection to various state and local resources such as recreation areas which will serve as a destination for not only community members, but also for visitors.
- Connecting residences to recreation and other destinations.
- Create a linear park that provides a beautiful and enjoyable experience for recreation, gathering, exercise, and improving mental health.
- A transformative community amenity that will be used and cherished by both locals and visitors.
- Connecting the island to the greater trail system of the East Coast Greenway.

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MEMORANDUM

Goals

What are some goals for the project? What does it need to achieve when finished?

Major themes:

- Maximize use of NCDOT rights-of-way or public easements.
- Identify stakeholders.
- Identify cost.
- Gather diverse input, but especially year-round residents.
- Sustainable trail design.
- Ensure that environmental impact is minimal.
- Connect to destinations across the island.
- Allow for multimodal forms of transportation.
- Coordinate effectively with state and federal partners.
- Create comfortable and immediate access.

Critical Issues

What are some critical issues associated with creating a paved trail in the study area of interest and ways we want to address those issues in the planning process?

- One alignment is within the MOTSU Boundary, so would need coordination and approval from them.
- Maintenance costs ex. trash pickup and policing.
- Need to consider environmental impacts and permitting.
- Stormwater management.
- Dow Road is very busy and uncovered, and out of the way from destinations as well as residential areas.
- There is higher traffic near the beach especially during tourist season.

Meeting Minutes

Island Greenway Trail Steering Committee Meeting #2

Thursday, September 7th, 2023

Attendees:

- Kim Williams (Alta)
- Elizabeth Burke (Alta)
- Erika Herbel (Alta),
- Craig Wyzinski (Mayor)
- Abby Lorenzo (Wilmington MPO)
- Vanessa Lacer (Wilmington MPO)
- Hart Evans (NCDOT)
- Allen Oliver (Mayor Pro-Tem)
- Adrienne Harrington (Smart Moves Consulting)
- Andrew Meeker (ECG)
- Jim Steele (Fort Fisher Historic Site)
- Mo Linquist (Bike Ped Committee)
- Eileen Clute (Bike Ped Committee)
- Ed Wilkinson (Citizen Rep)
- BJ Tipton (ECG)
- Roy Irwin (Resident)

AGENDA

30 minutes / **Findings from the field visit, review of corridor options, opportunities and constraints mapping** (what are we missing?)

10 minutes **/ Findings from public feedback**

20 minutes / **Decision matrix (what factors will help us choose the preferred alignment), exercise to prioritize criteria.**

15 minutes / **Discussion on preferred alignments** (pros and cons of each)

15 minutes / **Next steps**

- **Meet with MPO and NCDOT Division 3**, discuss options within NCDOT ROW
- **Meet with MOTSU** for feedback on trail alignment options

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MEMORANDUM

Findings from the field visit, review of the corridor options, opportunities, and constraints mapping?

- Overview
  - Focus on starting at Alabama Ave
  - Dow Road: MOTSU dependent
  - Settlers Lane: Consider an on-road greenway route on Settlers Lane, but that could not be qualified as an official ECG route because it would have to be separated/protected
  - Definition of the path for ECG designation:
    - Protected route
    - Separated bike lanes buffered and sidewalk, SUP with 5 ft buffer, off road greenway
    - There must be separation between road and the trail (5 ft minimum or vertical separation/curb)
  - Fort Fisher Blvd
    - South of K Avenue is more open and feasible
  - There are two routes within MOTSU boundaries and would both require approval
  - Don't want to start adding more routes, so alternative would be needed now if MOTSU may be an issue
  - The exact alignments have not been flushed out, the lines on the maps are generalized locations
    - The most important step for the northern section is talking to MOTSU
    - Environmental data will be needed, National Wetlands Inventory data is not always accurate, this might be procured in the next phase
    - Issues with Settlers Ln- moving alignment further into the MOTSU tree line 30-40 yards would be preferred
      - Carolina Beach worked with MOTSU to go around stormwater ponds and neighborhoods, because of this MOTSU may be willing to discuss doing something similar to avoid environmentally sensitive areas
      - Could follow the Carolina Beach precedent
  - Multi-step process
    - There may be revisions based on feedback from stakeholders: Especially MOTSU
    - Need to narrow down the options based on restrictions
  - Feasibility study is not scoped to do a full environmental study
    - Design phase will have full environmental analysis and the route will look slightly different based on that. The Army Corp of Engineers isn't typically consulted until the next phases of more detailed design
  - Fort Fisher Blvd from Alabama Ave to K Avenue is being kept on the table for now because of MOTSU constraints and the potential that they will not approve the use of their land for the other alignment options
    - Parking, driveways, and curb cuts make a path difficult
    - 50ft frontage for homes
    - On-road neighborhood greenway might be an option if we eliminate parking
    - Need to get ROW width

- There is already a Fort Fisher Blvd intersection project at K Avenue
    - Bring the trail through the intersection, improvements are planned to happen
    - May have big impacts to businesses
    - Looking at ROW for sidewalk through intersection, 10 ft wide separated path would be a challenge
    - Can incorporate it into the design if it is feasible
- Another option: Central medians
    - 6th Ave, H Avenue, E Avenue
    - 6th Ave is narrow in front of six homes, parking could change and be redesigned, the church would be impacted. Could look at a one-way configuration an option
    - In the future, if this is the preferred option, Alta can make an exhibit to see reduction in parking for the potential alignment options
- MOTSU allows use of property up to President Davis Rd, we can go along Fifth Ave or 6th Ave
- Wetlands in Fort Fisher along roadside
    - Federal rules changing, may not be jurisdictional but need to maintain flood control
    - Sidepath along road
    - Cross Fort Fisher Blvd near town limits line
    - Alta engineers will look at prime crossings and design options
    - Crossing may be best at the parking lot near the start of existing path
- There is no current plan for connection from west side of Fort Fisher alignment to the museum, parking planned only
- Opportunities on Dow Rd:
    - Flat, sides are cleared
    - Dow Rd seems like an attractive way to keep it out of Settlers Lane
- Issues with Dow Rd:
    - Adjacent routes along 17, 117, 421 in other jurisdictions
    - Huge sign that says to stay in car on MOTSU property, MOTSU has indicated they may not prefer this option
    - Existing facilities for connections are Ocean Blvd and Alabama Ave
        - Points of interest for connectivity are in town
    - Impacts gross explosive weight calculations area
    - MOTSU has final say
    - Carolina Beach greenway is fenced- anyone walking outside of a vehicle has to be contained- likely the same would apply
    - ROW for sidepath needs to be assessed with MOTSU, further into property is more of an issue
        - Referenced facility on Dow Rd in 2019 MOTSU Land Use Study
        - Environmental impacts and blast zone from them

What did we hear from the public?

- What are the options for ECG typologies?
    - People anticipated where typologies would be locally
    - People tend to prefer road separation and separated greenway
- Transparency of process is in question
    - Some people feel that people here from last night were not from Kure Beach (though sign-in sheet and colored stickers for Kure Beach residents tell us otherwise)
    - Some are unclear about the process timeline that Alta provided at entryway
    - Next Steps: Summarize and share feedback
- Route selection criteria:
    - Connectivity- getting to destinations
    - Traffic safety- least amount of crossings
    - Cost is an important aspect to compare
    - Property acquisitions- not much acquisition is required for any route
    - User experience- beautiful, how it feels
    - Other Factors:
        - Environmental
            - Wildlife/ecological (natural heritage zone)
            - Stormwater
        - Include effect to residents?
            - Used in Carolina Beach routing
- There isn't resistance to the trail, but resistance to current options based on the environment, proximity, and cost
- Issue with wetlands; we need to account for wetlands, wildlife species, etc
- Potential to get state representatives involved to convince MOTSU to approve use of their property
    - Not a typical path, requires fencing, explosive zone issues
    - State trails coordinator involved, three state agencies, MOTSU
    - ECG has prioritized funding from state

Decision matrix (what factors will help us choose the preferred alignment)

- Measure property impacts and privacy
- Address homeowner experience, community experience, and tradeoffs
- Measure economic development and tourism
    - 1.8 million visitors currently
- Evaluate "Community togetherness"
    - Bring community together rather than being divisive
    - Building community consensus
- Calculate traffic reduction
- Break alignments into southern and northern corridor alignments
- Anticipate user experience
    - Park experience versus transportation route

- Include public input criteria
- Include resident benefit criteria
    - Privacy and parking impacts
- Include stakeholder input criteria
    - MOTSU

Discussion on the preferred alignment

- Settlers Ln On-Street Route
    - Neighborhood greenway on low traffic street, would need signage, traffic calming as last alternative if MOTSU backs out
    - Residents don't want it on that street, though they may prefer it over fire break option
    - Work trucks blocking the street, etc make it difficult
    - Council wanted Settlers Ln as through-route
    - Would be a Spot Ln connector to Joe Eakes Park
    - Access for residents on Settlers Ln to Firebreak route a concern, if a greenway was there how would they get access?
- Neighborhood Greenway on Settlers Ln (or protected cycle track on Fort Fisher Blvd)
- Fort Fisher Blvd
    - May not be feasible or desirable on Fort Fisher Blvd, for the northern section, Alta engineers will look at the possibilities
- Dow Rd
    - Lower in connectivity
    - Farther away from destinations
    - Settlers Lane residents are in support of it
- Firebreak
    - More environmental concerns, wetlands
    - Not as many entry points
    - More convenient for residents, closer to destinations
    - More streamlines and direct connection to Carolina Beach Greenway which would provide a shorter connection and less path length

Next Steps

- Meet with MPO and NCDOT Division 3
    - ROW limits, data
- Meet with MOTSU
    - Alignment impacts
- Create online file upload for sharing public feedback letters
- Gather more feedback before decisions are made
    - Public feedback important for decisions

    - Survey- prioritization of routes, amenities, residence info
- Investigate environmental and human impact
    - Summary of key findings
    - Cost comparison
    - Maintenance consideration
- Share summary with the residents, including exact responses

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Cost Estimates

**Disclaimer on Order of Magnitude Costs Used to Compare Alternatives:* *These order of magnitude planning level costs were developed using the NCDOT Planning Cost Estimator Tool updated in 2023 for the SPOT Prioritization process. This should not be used for construction cost estimates and is only intended for a cost comparison between alternatives. A contingency of +/- $500,000 should be considered for any cost.*

This cost opinion does not include detailed estimates on: permitting, inspection, construction management, temporary or permanent easements, detailed utility analysis of conflicts and specific relocation needs or the cost for ongoing maintenance, detailed design layout or grading model for quantities, detailed drainage and water quality analysis, cost related to stream crossings, stormwater treatment, detailed utility relocation costs, structural/geotechnical analysis.

It does consider certain costs at a broad planning level, if needed: Design, construction, ROW acquisition cost, signalizations and road crossings, stream crossings, and broad utility relocation cost.

The estimator tool assumes regional cost prices and average land values in North Carolina. This cost opinion is provided for cost comparison only and is adjusted for factors known at the time of preparation. Alta Planning + Design has no control over the cost of labor and material, competitive bidding, or market conditions; and makes no warranties, expressed or implied, concerning the accuracy of the opinion as compared to actual bids or cost.

SIT 7: Protected Linear Pedestrian Facility

Project Name

Island Greenway 1-A

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	9,504	ft
② Proposed Facility Width (Default is 10 feet)	12	ft
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Forested	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES	☑ NO
⑧ Number of FEMA Stream Crossings Impacted	5	
⑨ Percentage of ROW Area Needed	Minimal (1-15%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	0
Arterial	0	Total	0

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 15

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 6,175,000
Design	$ 1,035,000
ROW	$ 456,000
Utilities	$ 0
Construction	$ 4,684,000

Go to Calculation Tab

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Enter Any Desired Notes in the Box Below

All costs are based on 2023 prices and cost components are rounded up to the next $1,000.

This tool assumes established ecoregion typologies, construction market regions, and average land values specific to North Carolina. They are determined within the tool based on user inputs for project location. This location-based information is used in ROW, construction, and environmental mitigation calculations.

This tool assumes a project impact area for ROW and environmental mitigation calculations based on chosen SIT, facility type, project length, and project facility width.

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This tool does not estimate costs associated with the purchase or taking of buildings within its ROW estimate calculations. It is assumed that projects would require land acquisition only.

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 1-B

Facility Type: Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	8,448 ft	
② Proposed Facility Width (Default is 10 feet)	12 ft	
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Forested	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES	☑ NO
⑧ Number of FEMA Stream Crossings Impacted	5	
⑨ Percentage of ROW Area Needed	Minimal (1-15%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	0
Arterial	0	Total	0

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 5,525,000
Design	$ 955,000
ROW	$ 406,000
Utilities	$ 0
Construction	$ 4,164,000

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 1-C

Facility Type: Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	6,970 ft	
② Proposed Facility Width (Default is 10 feet)	12 ft	
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Forested	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES	☑ NO
⑧ Number of FEMA Stream Crossings Impacted	3	
⑨ Percentage of ROW Area Needed	Minimal (1-15%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	0
Arterial	0	Total	0

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 4,519,000
Design	$ 749,000
ROW	$ 335,000
Utilities	$ 0
Construction	$ 3,435,000

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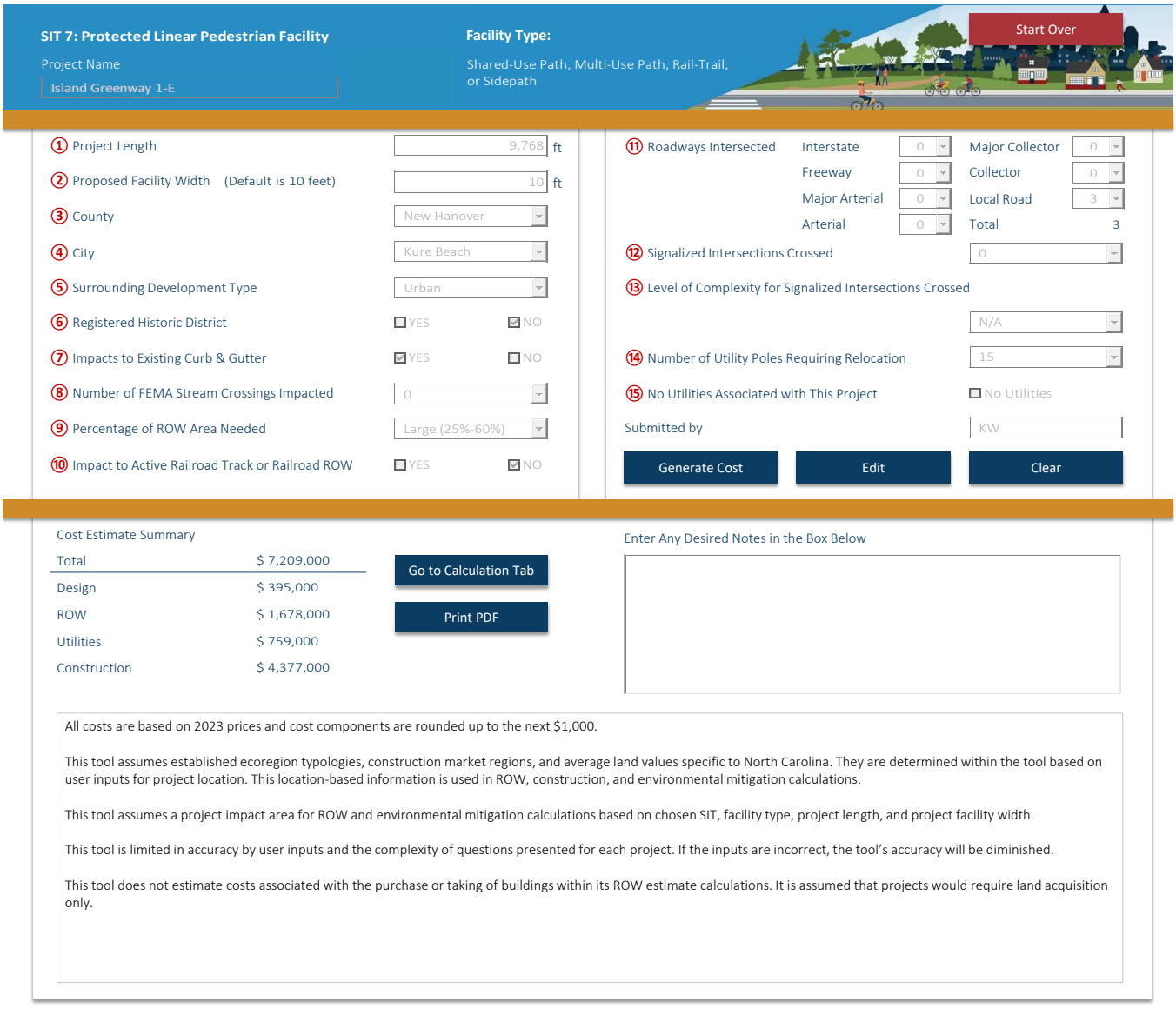

SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 1-E

Facility Type: Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	9,768 ft
② Proposed Facility Width (Default is 10 feet)	10 ft
③ County	New Hanover
④ City	Kure Beach
⑤ Surrounding Development Type	Urban
⑥ Registered Historic District	☐ YES ☑ NO
⑦ Impacts to Existing Curb & Gutter	☑ YES ☐ NO
⑧ Number of FEMA Stream Crossings Impacted	0
⑨ Percentage of ROW Area Needed	Large (25%-60%)
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES ☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	3
Arterial	0	Total	3

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 15

⑮ No Utilities Associated with This Project: ☐ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 7,209,000
Design	$ 395,000
ROW	$ 1,678,000
Utilities	$ 759,000
Construction	$ 4,377,000

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Note 1D (on-street greenway on Settlers Lane) was not included as a detailed estimate, rather a lump sum for traffic calming and wayfinding that could be used as an interim measure. If this option is chosen as an interim measure, a more detailed cost estimate will be developed with specific design details and design input from the Steering Committee.

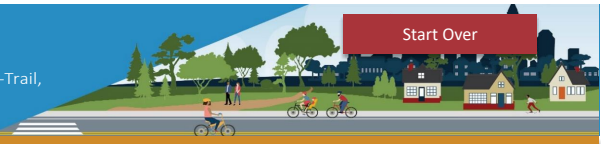
SIT 7: Protected Linear Pedestrian Facility

Project Name

Island Greenway 2-A

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath



Start Over

① Project Length	4,171 ft	
② Proposed Facility Width (Default is 10 feet)	12 ft	
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Forested	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES	☑ NO
⑧ Number of FEMA Stream Crossings Impacted	0	
⑨ Percentage of ROW Area Needed	None (0%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	0
Arterial	0	Total	0

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 2,427,000
Design	$ 371,000
ROW	$ 0
Utilities	$ 0
Construction	$ 2,056,000

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 2-C

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	4,540 ft
② Proposed Facility Width (Default is 10 feet)	12 ft
③ County	New Hanover
④ City	Kure Beach
⑤ Surrounding Development Type	Forested
⑥ Registered Historic District	☐ YES ☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES ☑ NO
⑧ Number of FEMA Stream Crossings Impacted	4
⑨ Percentage of ROW Area Needed	Minimal (1-15%)
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES ☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	1
Major Arterial	0	Local Road	0
Arterial	0	Total	1

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 3,076,000
Design	$ 518,000
ROW	$ 218,000
Utilities	$ 0
Construction	$ 2,340,000

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 2-D

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	2,481 ft
② Proposed Facility Width (Default is 10 feet)	12 ft
③ County	New Hanover
④ City	Kure Beach
⑤ Surrounding Development Type	Forested
⑥ Registered Historic District	☐ YES ☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES ☑ NO
⑧ Number of FEMA Stream Crossings Impacted	4
⑨ Percentage of ROW Area Needed	Minimal (1-15%)
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES ☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	1
Major Arterial	0	Local Road	0
Arterial	0	Total	1

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 1,886,000
Design	$ 442,000
ROW	$ 120,000
Utilities	$ 45,000
Construction	$ 1,279,000

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 2-E

Facility Type: Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	7,973 ft	
② Proposed Facility Width (Default is 10 feet)	12 ft	
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Downtown	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☑ YES	☐ NO
⑧ Number of FEMA Stream Crossings Impacted	0	
⑨ Percentage of ROW Area Needed	Large (25%-60%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	1
Freeway	0	Collector	0
Major Arterial	0	Local Road	15
Arterial	0	Total	16

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 10

⑮ No Utilities Associated with This Project: ☐ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 7,169,000
Design	$ 376,000
ROW	$ 1,531,000
Utilities	$ 618,000
Construction	$ 4,644,000

Go to Calculation Tab

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Enter Any Desired Notes in the Box Below

Rounded off to $7.2 million, due to need for some stormwater utilities along road.

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SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 3-B

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

Start Over

① Project Length	2,640 ft	
② Proposed Facility Width (Default is 10 feet)	10 ft	
③ County	New Hanover	
④ City	Kure Beach	
⑤ Surrounding Development Type	Urban	
⑥ Registered Historic District	☐ YES	☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES	☑ NO
⑧ Number of FEMA Stream Crossings Impacted	0	
⑨ Percentage of ROW Area Needed	None (0%)	
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES	☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	0
Arterial	0	Total	0

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 0

⑮ No Utilities Associated with This Project: ☐ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 1,392,000
Design	$ 209,000
ROW	$ 0
Utilities	$ 0
Construction	$ 1,183,000

Go to Calculation Tab

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Enter Any Desired Notes in the Box Below

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DRAFT

SIT 7: Protected Linear Pedestrian Facility

Project Name: Island Greenway 3-E

Facility Type:

Shared-Use Path, Multi-Use Path, Rail-Trail, or Sidepath

① Project Length	2,640 ft
② Proposed Facility Width (Default is 10 feet)	10 ft
③ County	New Hanover
④ City	Kure Beach
⑤ Surrounding Development Type	Rural
⑥ Registered Historic District	☐ YES ☑ NO
⑦ Impacts to Existing Curb & Gutter	☐ YES ☑ NO
⑧ Number of FEMA Stream Crossings Impacted	5
⑨ Percentage of ROW Area Needed	None (0%)
⑩ Impact to Active Railroad Track or Railroad ROW	☐ YES ☑ NO

⑪ Roadways Intersected

Interstate	0	Major Collector	0
Freeway	0	Collector	0
Major Arterial	0	Local Road	1
Arterial	0	Total	1

⑫ Signalized Intersections Crossed: 0

⑬ Level of Complexity for Signalized Intersections Crossed: N/A

⑭ Number of Utility Poles Requiring Relocation: 25

⑮ No Utilities Associated with This Project: ☑ No Utilities

Submitted by: KW

Generate Cost | Edit | Clear

Cost Estimate Summary

Total	$ 2,420,000
Design	$ 512,000
ROW	$ 0
Utilities	$ 873,000
Construction	$ 1,035,000

Go to Calculation Tab

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Enter Any Desired Notes in the Box Below

All costs are based on 2023 prices and cost components are rounded up to the next $1,000.

This tool assumes established ecoregion typologies, construction market regions, and average land values specific to North Carolina. They are determined within the tool based on user inputs for project location. This location-based information is used in ROW, construction, and environmental mitigation calculations.

This tool assumes a project impact area for ROW and environmental mitigation calculations based on chosen SIT, facility type, project length, and project facility width.

This tool is limited in accuracy by user inputs and the complexity of questions presented for each project. If the inputs are incorrect, the tool's accuracy will be diminished.

This tool does not estimate costs associated with the purchase or taking of buildings within its ROW estimate calculations. It is assumed that projects would require land acquisition only.

DRAFT

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