

**FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)
FINDING OF NO SIGNIFICANT IMPACT (FONSI)
CITY OF LUMBERTON, ROEBSON COUNTY, NORTH CAROLINA
LUMBERTON LOOP PROJECT
EMA-2020-BR-100-0009**

BACKGROUND

The Department of Homeland Security's (DHS) Federal Emergency Management Agency (FEMA) proposes to provide funding to the City of Lumberton, North Carolina (subrecipient) for the Lumberton Loop flood hazard mitigation project, which proposes to construct stream and floodplain restoration, wetland creation, as well as recreational and access enhancements. The purpose of the proposed project is to reduce flood hazards throughout Lumberton and increase the resilience of the community. The City of Lumberton applied for Building Resilient Infrastructure and Communities (BRIC) Grant Program funding. BRIC grant program is authorized under Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act).

The project is composed of four components as follows: Meadow Branch stream restoration, wetland creation, floodplain reforestation, road demolition, and trail construction along Meadow Branch from Interstate 95 (I-95) southeast to North Roberts Avenue; Walnut Street restriping for bicycle access from North Roberts Avenue south along North Walnut Street, Elm Street, and South Chestnut Street to the intersection with the Lumber River Trail; Scottish Packing Site wetland enhancement and boardwalk construction between the Lumber River Trail and the west bank of the Lumber River at the Scottish Packing Site; and Five Mile Branch walking trail and parking lot construction along the Five Mile Branch waterway from its intersection with North Roberts Avenue to West Carthage Road.

As described in the environmental assessment (EA), consultations per the National Historic Preservation Act, Endangered Species Act, and Wild and Scenic Rivers Act were completed in 2023 and 2024. A public notice of availability of the draft EA was published on June 26, 2024 on the City of Lumberton website: www.lumbertonnc.gov to notify the public and provide an opportunity to comment on the Proposed Action, potential alternatives, and environmental impacts. The draft EA was made available on FEMA's website and the City of Lumberton website: www.lumbertonnc.gov. A hardcopy was made available at the Lumberton City Hall and the Robeson County Public Library. The draft EA was available for public review for 30 days. No substantive comments were received; therefore, the draft EA is considered final.

FINDINGS

The Proposed Action as described in the EA would have negligible to minor short-term adverse impacts on topography and soils, visual quality and aesthetics, air quality, climate change, surface waters and water quality, wetlands, floodplains, the wild and scenic river, vegetation, fish and wildlife, migratory birds, threatened and endangered species, environmental justice populations, hazardous materials, noise, transportation, public services and utilities, and public health and safety because of construction activities. No short-term beneficial effects were identified. All potential short-term adverse impacts require conditions to avoid, minimize, and mitigate adverse effects. With the implementation of these conditions, none of the potential effects would be significant.

There would be no long-term adverse impacts from the Proposed Action. Long-term negligible to moderate beneficial effects are anticipated with respect to topography and soil, visual quality and aesthetics, air quality, climate change, surface waters and water quality, wetlands, floodplains, the wild and scenic river, vegetation, fish and wildlife, threatened and endangered species, environmental justice populations, hazardous materials, transportation, public service and utilities, and public health and safety. Long-term benefits result from the restoration of floodplain area and function, wetland creation, the use of native plants, and improvements in flood reduction, community resilience, and multimodal circulation and recreational opportunities.

In consideration of the overall impacts of the proposed action in relation to impacts from past, present and reasonably foreseeable future activities, the proposed action is not expected to have significant cumulative impacts on any resource. Development of other infrastructure projects throughout the City of Lumberton when considered together with the Proposed Action would be expected to result in negligible to minor cumulative adverse impacts related to construction activities and negligible to moderate long-term cumulative benefits related to climate resilience, water quality, wetlands, floodplains, terrestrial and aquatic environments, environmental justice populations, hazardous materials, transportation, public services and utilities (including recreation), and public health and safety.

CONDITIONS

General Project Conditions

- The subrecipient is responsible for obtaining and complying with all required local, state, and federal permits and approvals.
- If deviations from the proposed scope of work result in substantial design changes, the need for additional ground disturbance, additional removal of vegetation, or any other unanticipated changes to the physical environment, the subrecipient must contact FEMA so that the revised project scope can be evaluated for compliance with NEPA and other applicable environmental and historic preservation laws.

Physical Resources

- Implement standard erosion and sediment control BMPs during construction. Areas of exposed soils will be wetted or covered to reduce fugitive dust.
- Commit to the best available emissions control technologies for project equipment to meet the following standards:
 - On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses).
 - Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks).
 - The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available.
- To reduce the emissions of criteria pollutants, construction equipment engine idling will be minimized to the extent practicable, and engines will be kept properly maintained.
- Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- When hauling material and operating non-earthmoving equipment near and within the construction work areas, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.
- Complete construction work during daytime hours in compliance with the City of Lumberton's General Ordinance Chapter 14.1-1 (Noise) on daytime construction hours defined as between 7:00 a.m. and 11:00 p.m. local time.

Water Resources

- The subrecipient will obtain a permit for impacts on waters of the U.S. in accordance with Sections 401 and 404 of the Clean Water Act and adhere to all conditions as required in those permits.
- The subrecipient will comply with conditions of the NCDEQ Construction General Permit (Permit No. NCG010000).
- Comply with conditions in the Sedimentation Pollution Control Act under the NCG01 Permit.
- The subrecipient must obtain written approval or a floodplain permit from the local floodplain administrator before work begins and adhere to all conditions identified in the approval or permit.
- Implement erosion and sediment control BMPs and BMPs related to use of fill.
- Dewater construction area by taking protective measures within the stream channel while the water is flowing, or by diverting water around the construction.
- Construction activities, equipment staging, and storage activities are not to be located within or adjacent to any nearby wetlands. All materials and equipment should be staged outside of wetlands on paved or previously disturbed areas.

Biological Resources

- The following avoidance and minimization measures (AMM) will be implemented to avoid and minimize potential effects on the tri-colored bat (TCB).
 - TCB Roosting Habitat AMM 1. Ensure all operators, employees, and contractors working in areas of known or presumed bat roosting habitat are aware of all applicable AMMs.
 - TCB Tree Removal AMM 1. Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to the extent practicable to avoid removing more trees than required to implement the project safely.
 - TCB Tree Removal AMM 2. Apply time-of-year restrictions for tree removal when bats are not likely to be present (October 1 through March 30).
 - TCB Tree Removal AMM 3. Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how the limits are marked in the field (e.g., install brightly colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
 - TCB Culvert AMM 1. If applicable, a culvert survey would be conducted by a qualified biologist before any culvert modifications to identify the presence or absence of hibernating or roosting TCBs. If TCBs are found to be present, humane exclusion efforts would be conducted outside of the pup season (April 15 to July 31) and the winter months (generally December 1 to February 14).

- The following AMMs will be implemented to avoid or minimize effects on wood stork.
 - Wood Stork Foraging AMM 1. There should be no human intrusion into feeding sites when storks are present. Depending upon the amount of screening vegetation, human activity should be no closer than between 300 feet (where solid vegetation screens exist) and 750 feet (no vegetation screen).
 - Wood Stork Foraging AMM 2. Feeding sites should not be subjected to water management practices that alter traditional water levels or the seasonally normal drying patterns and rates. Sharp rises in water levels are especially disruptive to feeding storks.
 - Wood Stork Foraging AMM 2. The introduction of contaminants, fertilizers, or herbicides into wetlands that contain stork feeding sites should be avoided, especially those compounds that could adversely alter the diversity and numbers of native fishes, or that could substantially change the characteristics of aquatic vegetation. Increase in the density and height of emergent vegetation can degrade or destroy sites as feeding habitat.
 - Wood Stork Roosting AMM 1 (modified). If an active roost site is identified within the AA, human activities within 1,000 feet of active roost sites would be avoided to the maximum extent possible and would not take place after dark.
 - Wood Stork Roosting AMM 2 (modified). Protect the vegetative and hydrological characteristics of potential roosting sites.
- Listed below are conservation measures to be utilized during the construction activities for the Proposed Action with the goal of reducing impacts on birds and their habitats protected under the Migratory Bird Treaty Act (MBTA).
 - To the extent practicable, schedule all vegetation removal, trimming, and grading of vegetated areas from September 1 – March 31, which is outside of the peak breeding season for migratory birds.
 - Educate contractors of relevant rules and regulations that protect wildlife. Prior to the onset of construction activities, the contractor's designated lead will conduct a briefing with all construction staff to instruct them on the potential presence of species protected under the MBTA.
 - Do not collect birds (live or dead) or their parts (e.g., feathers) or nests without a valid permit.
 - To the extent practicable, limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat areas.
 - To minimize the spread of invasive species, it is recommended that construction equipment be washed prior to contact with waters and unpaved areas.

- Removed vegetation should be disposed of properly to avoid incidentally dispersing invasive plants.
- Disturbed green spaces that will be revegetated shall use North Carolina and region native species.

Cultural Resources

- If human remains or intact archaeological features or deposits (e.g. arrowheads, pottery, glass, metal, etc.) are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The subrecipient will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The subrecipient's contractor will provide immediate notice of such discoveries to the applicant. The subrecipient shall contact the North Carolina State Archaeologist and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with North Carolina North Carolina Statutes, Section 70-29.
- All borrow or fill material must come from pre-existing stockpiles or commercially procured material from a pre-existing source. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed and FEMA approval will be required prior to beginning ground disturbing activities.

Socioeconomic Resources

- To the greatest extent practicable, transport of materials to and from the construction area shall avoid school zones and areas with low income and minority populations.
- The construction area will be secured from public access and signage indicating that it is a closed site and that only authorized personnel are allowed will be posted at all entrances and exits.
- For ground disturbing activity, if contaminated soil is encountered during construction, it should be treated, stored, and disposed of according to applicable federal, state, and local regulations.
- Any hazardous materials discovered, generated, or used during construction of the Proposed Action will be disposed of and handled by the subrecipient in accordance with applicable federal, state, and local regulations.
- Construction equipment will be kept in good working order, any equipment to be used over, in, or within 100 feet of water will be inspected daily for fuel and fluid

leaks. Any leaks will be promptly contained and cleaned up, and the equipment will be repaired.

- All construction activities will use qualified personnel trained in the proper use of equipment, including all safety precautions with all activities in accordance with the standards specified in OSHA regulations.
- Contractor adherence to a Transportation Management Plan as defined by NCDOT with clarification provided by the State of North Carolina “Manual on Uniform Traffic Control Devices.

CONCLUSIONS

Based on the findings of the EA, coordination with the appropriate agencies, comments from the public, and adherence to the project conditions set forth in this FONSI, FEMA has determined that the proposed project qualifies as a major federal action that will not significantly affect the quality of the natural and human environment, nor does it have the potential for significant cumulative effects. As a result of this FONSI, and in accordance with FEMA Instruction 108-1-1, an environmental impact statement will not be prepared, and the proposed project as described in the attached EA may proceed.

APPROVAL

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Final Environmental Assessment

Lumberton Loop Project

EMA-2020-BR-100-0009

City of Lumberton, Robeson County, North Carolina

July 2024



FEMA

Federal Emergency Management Agency
Region 4
Department of Homeland Security
3005 Chamblee Tucker Road
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Acronyms and Abbreviations

AMM	avoidance and minimization measures
APE	Area of Potential Effect
BMP	best management practice
BRIC	Building Resilient Infrastructure and Communities
CBS	Columbia Broadcasting System
CDBG	Community Development Block Grant Disaster Recovery Grant Program
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
dBA	A-weighted decibels
DHS	Department of Homeland Security
EA	Environmental Assessment
EJ	Environmental Justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GHG	greenhouse gas
HUD	U.S Department of Housing and Urban Development
I-95	Interstate 95
IPaC	Information for Planning and Consultation tool

MBTA	Migratory Bird Treaty Act
NAAQS	National ambient air quality standards
NCDEQ	North Carolina Department of Environmental Quality
NCDOT	North Carolina Department of Transportation
NCGS	North Carolina Geological Survey
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OSHA	Occupational Safety and Health Administration
PM	Particulate matter
ROW	right-of-way
SHPO	North Carolina State Historic Preservation Office
TCB	tri-colored bat
UNC	University of North Carolina
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WSR	Wild and Scenic River

SECTION 1. Introduction

The City of Lumberton proposes to implement the Lumberton Loop Project to mitigate flood hazards in the City of Lumberton within Robeson County, North Carolina (**Figure 1.1**). The City of Lumberton applied to the Federal Emergency Management Agency (FEMA) through the North Carolina Department of Public Safety for a grant under FEMA's Building Resilient Infrastructure and Communities (BRIC) program. The BRIC program is authorized under Section 203 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 United States Code (U.S.C.) 5133, as amended by the Disaster Recovery Reform Act of 2018, with a 75-percent federal and 25-percent state/local match for funding.

The Proposed Action includes stream and floodplain restoration, wetland creation, as well as recreational and access enhancements. **Figure 1.2** shows an overview of the project area. Under the Proposed Action, the City would implement the following components:

- **Meadow Branch** channel and floodplain restoration and wetland creation
- **Walnut Street** re-striping for a bike lane
- **Scottish Packing Site** wetland creation
- **Five Mile Branch** trail and parking area creation

The four components included in the Proposed Action are elements of the larger, citywide Lumberton Loop Plan, which would connect more than 108 parcels of land to create a contiguous trail system through a series of nature-based infrastructure projects throughout the city. The trail system would be predominately within the 100-year (1-percent annual chance) floodplain and would protect the associated floodplain values for the benefit of the entire community. Other parts of the Lumberton Loop Plan are being implemented under different projects with different funding. These other projects are discussed further in Section 5. The plan provides a citywide framework for the implementation of connected, tangible, and flood-adapted projects.

FEMA prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508), and FEMA guidance for implementing NEPA (U.S. Department of Homeland Security [DHS] Instruction 023-01-001 and FEMA Instruction 108-01-1). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of the EA is to analyze the potential environmental impacts of the proposed project and alternatives, including a No Action alternative. FEMA will use the findings in this EA to determine whether to prepare an environmental impact statement or to issue a Finding of No Significant Impact (FONSI).

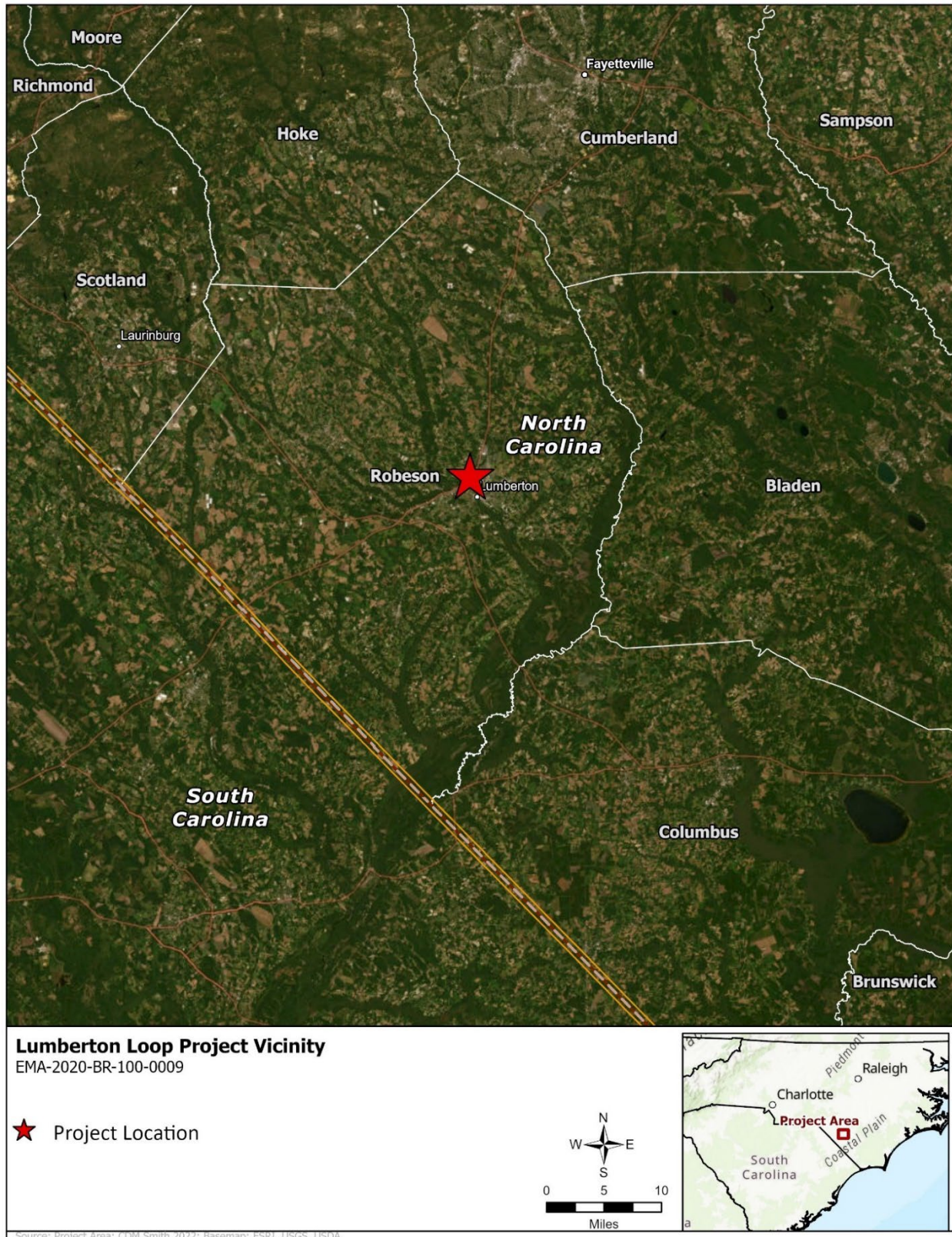


Figure 1.1. Project Vicinity

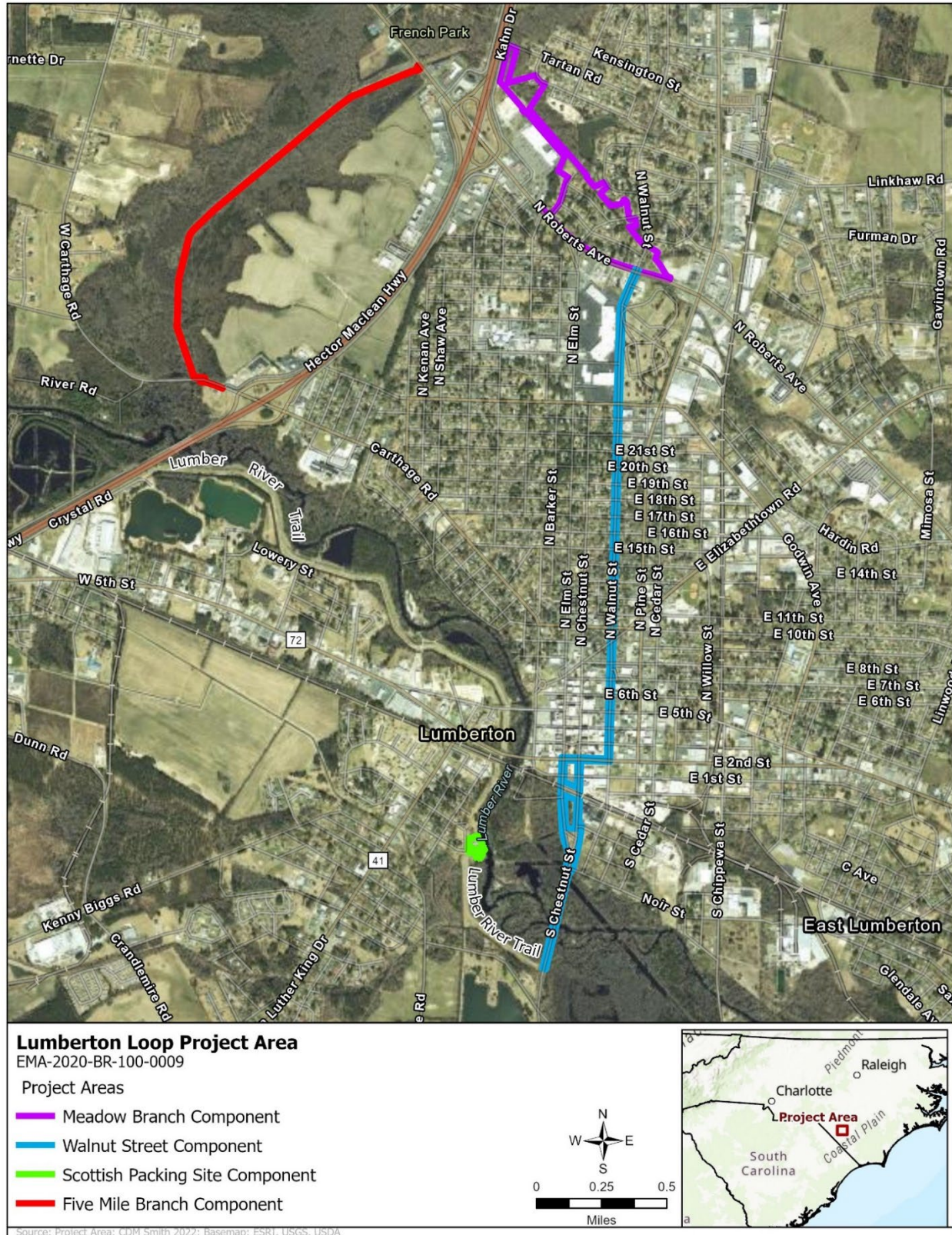


Figure 1.2. Proposed Project Area

SECTION 2. Purpose and Need

FEMA's BRIC Program provides funds to eligible state and local governments, federally recognized tribal governments, and nonprofit organizations to implement natural hazard mitigation projects that are cost-effective and designed to reduce injuries, loss of life, and damage and destruction of property. The objectives of FEMA's BRIC grant program are to shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience to reduce overall risk to populations and structures from future hazard events. The purpose of the proposed project is to reduce flood hazards throughout Lumberton.

The City of Lumberton has been impacted by multiple flood events over the past several decades. Because of its topography and proximity to waterways within the Lumber River Basin, the city is prone to inland flooding. In 2016, Hurricane Matthew dropped over 10.4 inches of rain within 12 hours, inundating the land within the 500-year (0.2-percent annual chance) floodplain and causing more than \$290 million in damage. In 2018, Hurricane Florence produced approximately 22.8 inches of rain within 72 hours; the resulting flooding exceeded the 500-year floodplain and caused more than \$410 million in damage. Flood mitigation efforts and abandonment of properties as a response to these flood events has resulted in a number of vacant parcels throughout the central portion of the city, creating an opportunity to convert the land to flood-resilient uses.

Although flood hazards historically have been more prevalent in the floodplain south of the Lumber River, recent hurricanes have caused extensive flooding along the Lumber River's smaller tributaries north of downtown Lumberton. This pattern of flooding is expected to continue to worsen because future storm events are expected to be more frequent and severe. Climate change is increasing temperatures and atmospheric water vapor content, which is increasing the frequency and intensity of extreme precipitation events in North Carolina (Kunkel et al. 2020).

SECTION 3. Alternatives

This section describes the No Action alternative, the Proposed Action, and alternatives that were considered but dismissed.

3.1. No Action Alternative

The No Action alternative is included to describe potential future conditions if no action is taken to provide flood mitigation. Under this alternative, no FEMA-funded flood mitigation work would be conducted in the project area. The city is in Robeson County, which has a Tier 1 designation as North Carolina's third most distressed county in the state (Economic Development Partnership of North Carolina n.d.; Robeson County Economic Development 2019). Given the economic position of the county, it is unlikely that funds would be readily available to implement the flood reduction actions that would otherwise be completed under the Proposed Action with FEMA funding. Therefore, additional minor flood risk reduction elements proposed in the Lumberton Loop Plan—such as individual structure acquisitions, elevations, and wet floodproofing the Scottish Packing facility—would be implemented under separate funding sources over time, those projects would not substantially mitigate flooding within the project area. Under the No Action alternative, the community's resilience to climate change would not be improved.

3.2. Proposed Action

There are four discontinuous components of the Proposed Action:

- **Meadow Branch** – this component extends southeast from Interstate 95 (I-95) and encompasses residential areas northeast of North Roberts Avenue.
- **Walnut Street** – this component extends from North Roberts Avenue south along North Walnut Street, westward along NC-72, then extends south along Elm Street and South Chestnut Street to the intersection with the Lumber River Trail.
- **Scottish Packing Site** – this component is located between the Lumber River Trail and the west bank of the Lumber River.
- **Five Mile Branch** – this component extends along the Five Mile Branch waterway from its intersection with North Roberts Avenue at the north end to West Carthage Road at the south end.

3.2.1. PROJECT COMPONENTS

Meadow Branch

The Meadow Branch component (**Figure 3.1**) includes stream restoration, wetland creation, floodplain reforestation, road demolition, and trail construction. Stream restoration, wetland creation, and floodplain reforestation would include the following activities:

- The Meadow Branch streambed would be widened along approximately 4,338 feet from about I-95 to Jerry Giles Park. The stream would be designed to meander on both sides of the existing channel except where adjacent private property would constrain the meandering. The stream restoration work would extend approximately 6 to 8 feet deep.
- Approximately 2.2 acres of wetlands would be restored by excavating depressions that range from 0 to 8 feet deep, depending on topography. Wetland creation areas would be adjacent to Meadow Branch.
- Fast-growing annuals (grasses, legumes, and forbs) would be seeded under woven coir mats for immediate stabilization. Woven coir is a biodegradable matting made from coconut palm fibers for erosion control on newly graded and exposed soils.
- Live stakes would be installed through the woven coir within bank and overbank zones. Live stakes are cuttings of dormant shrub branches (likely willow [*Salix* spp.] and dogwood [*Cornus* spp.]) that are 2 to 3 feet long with a diameter of about 0.5 to 1 inch and are installed by hand or using a small hammer.
- Woody vegetation would be planted within overbank zones. Planting would be accomplished with hand tools and result in ground disturbance approximately two to three times the diameter of the root ball and no deeper than the depth of the root ball; therefore, the depth of disturbance depends on the size of the plants and would range from 6 inches to 2 feet.
- Native herbaceous perennial vegetation would be planted within the overbank zones. This would not occur on the streambank.
- Salvaged vegetation (likely shrubs and bushes) would be reinstalled.
- Tree root wads would be installed for erosion control and habitat enhancement. This would require excavating the streambank and channel bottom before placing the root wads using heavy equipment within the excavated areas.

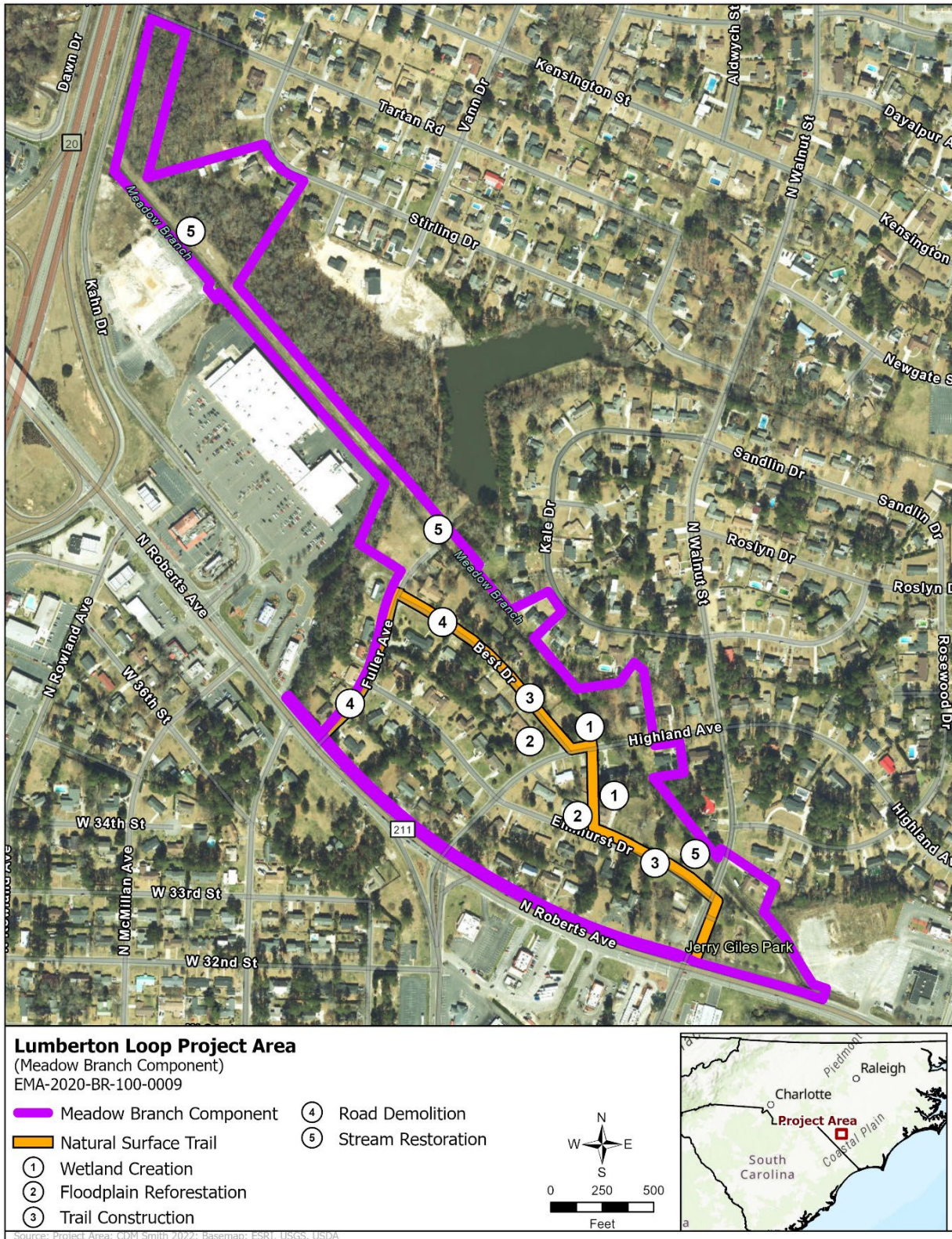


Figure 3.1. Meadow Branch Component

Approximately 11.12 acres of floodplain would be revegetated in areas where residential structures were purchased and demolished under separate funding sources. Parcels that would be revegetated are shown on Page 2 of Appendix A. Planting would cause minor ground disturbance approximately two to three times the diameter of the root ball and no deeper than the depth of the root ball; therefore, the depth of disturbance depends on the size of the plants that would be used. The Proposed Action would not alter the existing tree canopy along the northeastern side of the stream; thus, replanting would not be required in this area.

A playground, walking path and dog park would be constructed in the southeastern part of the Meadow Branch project area and would not contain features that would be at risk from flooding. Excavation in this area would be less than 1 foot and some areas may be filled to achieve the desired grades.

In the area south of Meadow Branch where residential houses in the floodplain were purchased and demolished under other grants (described in more detail in Section 5), the road infrastructure would be removed as part of the Proposed Action. The existing asphalt street, Best Drive, would be demolished and replaced by a natural surface trail featuring an elevated overlook. Additionally, approximately 200 feet of the northern part of Fuller Avenue (from its intersection with Best Drive to its terminus at Meadow Branch) would be demolished, as shown on Page 4 of Appendix A. Fuller Avenue would terminate at a newly constructed cul-de-sac within the existing right-of-way (ROW) just south of the realigned Meadow Branch. The asphalt would be removed and fill from the stream restoration work would be used to bring the roadbed back to the existing grade. Gravel or mulch would be applied to the former road alignment to create a trail surface. Hazardous materials would be removed, but other utility infrastructure would be abandoned in place as much as possible.

From the intersection of North Walnut Street and North Roberts Avenue, the trail would extend along the east side of North Walnut Street, encircling a parking lot. The trail would turn and cross North Walnut Street, following the north side of Elmhurst Drive until turning to extend to Highland Avenue. After crossing Highland Avenue, the trail would follow the same path as the demolished Best Drive (described above). The natural surface trail would cross Fuller Avenue near the new cul-de-sac and turn south along the western side of Fuller Avenue until it reaches North Roberts Avenue. At this junction, a concrete sidewalk would be constructed along the north side of North Roberts Avenue, starting northwest of the intersection of North Roberts Avenue and Fuller Avenue (where it would connect with sidewalk improvements to be constructed by the North Carolina Department of Transportation [NCDOT]) and extending south to the intersection of North Roberts Avenue and North Walnut Street. Crosswalk striping would occur wherever the trail or sidewalk crosses a roadway (Page 8 of Appendix A).

All staging areas for restoration of the Meadow Branch component are anticipated to be within the project area boundary. Work areas within Jerry Giles Park would be accessed via the Walnut Street ROW. Work areas between the Walnut Street and Highland Avenue crossings of Meadow Branch would be accessed via the Walnut Street, Elmhurst Drive, and Highland Avenue ROWs using city-owned properties and/or easements. Project work areas between the Highland Avenue crossing of Meadow Branch and Fuller Avenue would be accessed from the Highland Avenue, Best Drive, and

Fuller Avenue ROWs via city-owned properties and/or easements. Work between the end of Fuller Avenue and the Kahn Drive crossing of Meadow Branch would be accessed from the Fuller Avenue and Kahn Drive ROWs.

Walnut Street

The Walnut Street component extends from North Roberts Avenue south along North Walnut Street and then across to Elm Street via NC-72 (East 2nd Street). It then continues south along Elm Street and South Chestnut Street to the intersection with the starting point of the Lumber River Trail. This component would include new striping along the roadway from North Roberts Avenue to accommodate a bike lane that would connect to the Lumber River Trailhead. The road would not be demolished, expanded, or widened to incorporate the bike lane. The work would occur predominately along Walnut Street starting at Jerry Giles Park and extending through the central business district before ending at the trailhead of the Lumber River Trail (**Figure 3.2**). No ground disturbance would occur as part of this component.

All staging areas would be within the existing road ROWs. The project would be accessed directly from within the public ROW.

Scottish Packing Site

The Scottish Packing Site component (**Figure 3.3**) would include the enhancement of a 0.55-acre wetland and the construction of a boardwalk and a sidewalk. This project component would also include crosswalk striping and signage within the project area. The Proposed Action would not include modifications to the top of the levee that runs along the west edge of the project area. Minimal excavation would be required for plantings and to remove old concrete pavement for the wetland creation. The footing depths would not exceed a depth of 36-inches of ground disturbance for the boardwalk and sidewalk construction.

Staging for this project component would occur in the grassy area north and west of the Scottish Packing Site. The new parking lot or vehicle roundabout, being constructed under a different project (Section 5), would not be used for staging because it would need to remain open for public parking. The Scottish Packing Site would be accessed via the existing point of entry to the site at the intersection of Campbell Street and Kinlaw Street.

Demolition of the existing on-site buildings is not part of the Proposed Action, nor is the construction of any public recreational facilities outside of the boardwalk and sidewalk as described above. Details about the other projects that are planned to occur in the immediate vicinity of the Scottish Packing Site are presented in Section 5. The vehicles anticipated to be used to implement the Proposed Action would include standard excavation and earth-moving equipment such as excavators, dump trucks, scrapers, motor graders, and skidsteers. Plantings would be installed with hand tools by ground crews. No seasonal restrictions are anticipated, and all contracted construction activities would be required to comply with daytime construction hours pursuant to city General Ordinance Chapter 14.1 (Noise), which are between 7:00 a.m. and 11:00 p.m. local time.



Figure 3.2. Southern Section of Walnut Street Component and Scottish Packing Site

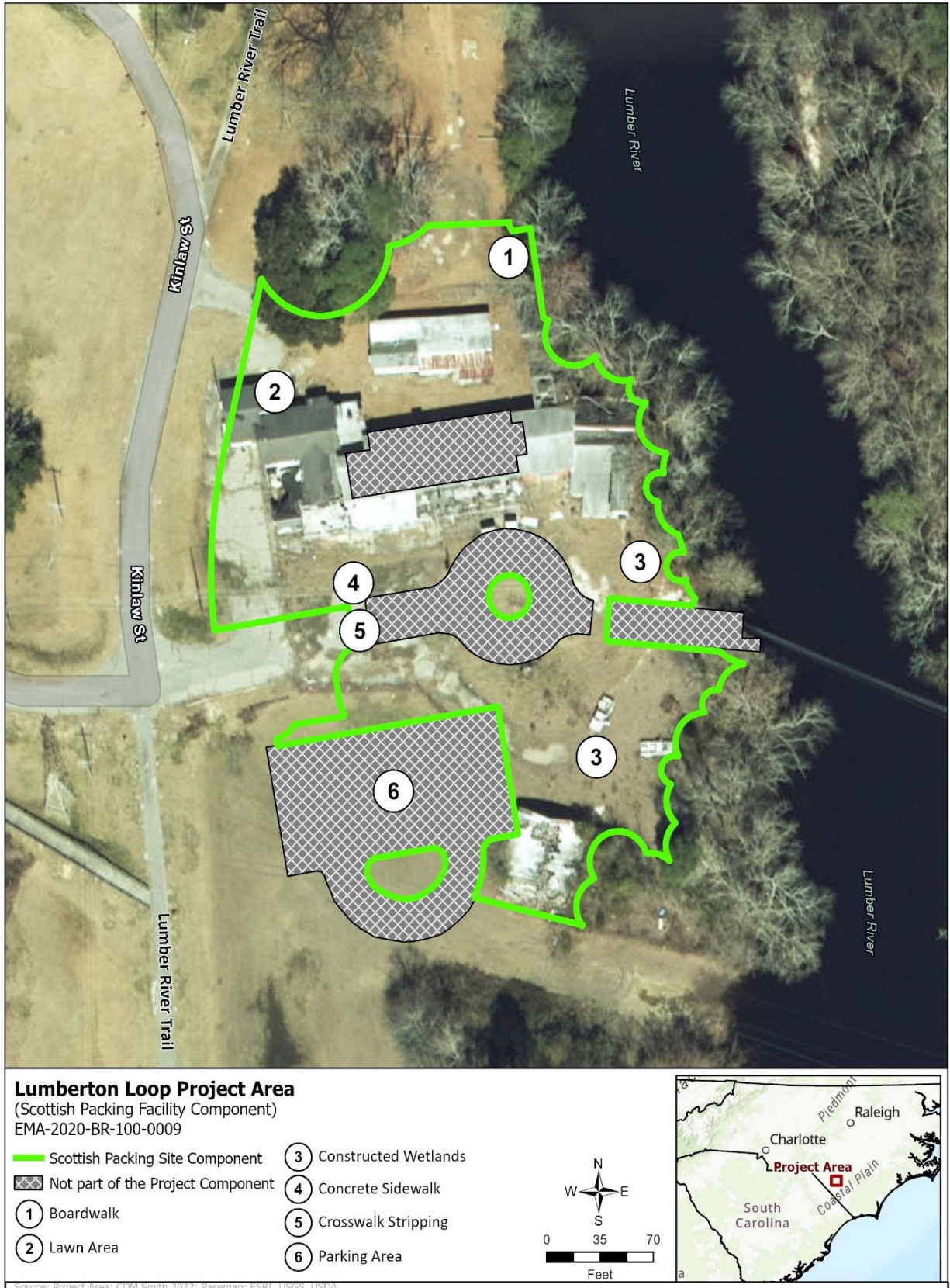


Figure 3.3. Scottish Packing Site Component

Five Mile Branch

The Five Mile Branch component would include the creation of a walking trail and a parking area along the east side of the Five Mile Branch within a city access easement along the creek (**Figure 1.2**). The proposed trail would extend from Roberts Avenue in the north to West Carthage Road in the south where it would then extend approximately 400 feet eastward before terminating southeast of the proposed gravel parking area.

The majority of construction work for this project component would be conducted where the proposed trail meets the proposed multimodal trail along North Roberts Avenue in the north (**Figure 3.4** and Page 7 of Appendix A), which is part of NCDOT's road improvement project along I-95. Additional construction would occur where the trail intersects with West Carthage Road and extends approximately 400 feet east before its southern terminus (**Figure 3.5** and Page 8 of Appendix A). Within the Roberts Avenue construction area, a proposed natural surface trail along the creek would transition to a boardwalk and then to a concrete sidewalk where it would end at the existing multimodal trail parallel to Roberts Avenue. In the Carthage Road construction area, the proposed natural surface trail along the creek would turn east and transition to a boardwalk that would cross an existing wetland area and then to a concrete sidewalk that would connect to a gravel parking area. A pedestrian crossing would be provided across Carthage Road, and the new sidewalk would extend along the south side of the road east to meet up with the NCDOT sidewalk improvements at the intersection with Lackey Street. Additional drawings that show this component are on Page 8 of Appendix A.

Fill material would be added, as needed, to smooth and level the existing maintenance access to create the proposed walking path. Ground disturbance would be less than one foot deep along most of the path as needed to level and smooth the surface and remove herbaceous vegetation. Ground disturbance would not exceed a maximum depth of 36-inches within the parking lot areas where the boardwalks and concrete sidewalks would be constructed. Two staging areas would be used for the construction of this project component. One staging area would be within a grassy area in the ROW west of Roberts Avenue and north of the proposed boardwalk and sidewalk. The second staging area would be within the proposed gravel parking area near Carthage Road. The site would be leveled and graveled first and then used for staging during construction of the other elements at the south end of the Five Mile Branch trail component. Construction access to the Five Mile Branch component would be provided from Carthage Road and Roberts Avenue where they intersect Five Mile Branch and along the existing maintenance route along the stream.



Figure 3.4. Five Mile Branch Component – North Roberts Avenue



Figure 3.5. Five Mile Branch Component – West Carthage Road

3.2.2. VEGETATION REMOVAL AND RESTORATION

In all areas where construction activities would disturb existing vegetation (primarily associated with work in the Meadow Branch area), the project area would be replanted with native species appropriate to the surrounding physiographic region of North Carolina (Inner Coastal Plain). Natural plant communities in the Inner Coastal Plain region include Cypress-Gum Swamp, Coastal Plain Bottomland Hardwood, and Coastal Plain Small Stream Swamp. Common plant species from these communities that may be used in the project include bald cypress (*Taxodium distichum*), river birch (*Betula nigra*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), willow oak (*Quercus phellos*), red maple (*Acer rubrum*), loblolly pine (*Pinus taeda*), and black willow (*Salix nigra*). The wetland areas along the northwestern bank of Five Mile Branch contain examples of these plant communities, and the areas would serve as a reference site for the plant species to be used in restoration.

3.2.3. DURATION

The Proposed Action would be completed within 36 months. Stream restoration work and trail construction in the Meadow Branch project area would take approximately 21 months. Sidewalk improvements would take approximately 12 months to complete. Striping and pedestrian safety signage installation along Walnut Street would require approximately 4 months. Wetland and trail construction within the Scottish Packing Site would be completed in approximately 6 months. Trail construction along Five Mile Branch would take approximately 4 months and would be completed around the same time as the Walnut Street work.

3.2.4. MAINTENANCE

Upon completion of construction activities, the city would perform regular monitoring and maintenance of the project components in accordance with existing parks and recreation maintenance schedules. The North Carolina State University Coastal Dynamics Design Lab would collect data from each of the project components to inform long-term maintenance decisions.

3.3. Additional Action Alternatives Considered and Dismissed

An additional alternative considered for the Lumberton Loop Project was the unprogrammed open space and reforestation alternative. Under this alternative, the vacant lots within the city that have been acquired through other flood mitigation funding would be reforested and maintained as open space. However, this alternative would not systematically mitigate flood hazards throughout the city, or provide a public benefit, nor would it present an opportunity for recreational enhancements. This alternative would not meet the purpose and need for the project nor did the stakeholders who participated in public outreach events on the plan prefer the alternative. Therefore, this alternative was dismissed from further consideration.

A 2018 Flood Analysis and Mitigation Strategies Study for the Lumber River Basin was conducted by the NCDOT and the North Carolina Emergency Management to explore alternative strategies in the Lumber River Basin that would impact the watershed area in the City of Lumberton (NCDOT 2018).

The first strategy considered was the construction of three dry reservoir projects located upstream from the City of Lumberton with the purpose of providing flood detention and downstream discharge reductions. Site 1: Drowning Creek: A dam was considered at the location where Drowning Creek becomes the Lumber River; Site 2: Raft Swamp: A dam was considered below Drowning Creek on the northern portion of Raft Swamp that is located upstream of Lumberton; Site 3: Raft Swamp 2: A second dam was considered on the southern portion of Raft Swamp upstream of Lumberton. These options were considered not feasible because of the large number of roads that would need to be elevated, the buildings and acreage that would need to be acquired and the additional challenge posed by the fact that a significant portion of the site is state-owned land managed by the Wildlife Resources Commission.

A second strategy considered was to retrofit existing detention structures. Currently, there are no existing flood detention structures along the Lumber River Basin within North Carolina. The approximate 120 dams along the river identified in the U.S. Army Corps of Engineers (USACE) National Dam Inventory are within South Carolina. This option was not pursued further.

A third strategy considered was to provide offline storage for floodwaters along the Lumber River. Currently, there are no significant quarries or other potential offline storage areas present along the Lumber River. This option was not pursued further.

A fourth strategy was to conduct channel modification by lining channels along the Lumber River. Hydraulic modeling suggested that water surface elevations could increase at other locations downstream as a result of this scenario, so this option was not pursued further.

Additional strategies that were evaluated included enhancing embankment structures, repairing existing levees, large scale wet floodproofing of structures, elevation/acquisition/relocation of structures impacted by flood events, or enhancing river corridor greenspaces. These additional strategies are not included in this analysis because the potential locations of the sites would not have a potential to provide flood reduction benefits to the areas affected by the Proposed Action and thus would not meet the purpose and need.

SECTION 4. Affected Environment, Potential Impacts, and Mitigation

This section describes the environment potentially affected by the alternatives, evaluates potential environmental impacts, and recommends measures to avoid or reduce those impacts in accordance with CEQ guidelines set forth in 40 CFR 1508.1. When possible, quantitative information is provided to establish potential impacts; the significance of potential impacts is based on the criteria listed in **Table 4.1**. The study area generally includes the project area and access and staging areas needed for the alternatives. If the study area for a particular resource category is different from the project area, the differences will be described in the appropriate subsection.

Table 4.1. Evaluation Criteria for Potential Impacts

Impact Scale	Criteria
None/Negligible	The resource area would not be affected, or changes or benefits would be either nondetectable or, if detected, would have effects that would be slight and local. Impacts would be well below regulatory standards, as applicable.
Minor	Changes to the resource would be measurable, although the changes would be small and localized. Impacts or benefits would be within or below regulatory standards, as applicable. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have either localized or regional-scale impacts/benefits. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary to reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on a local or regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

4.1. Resources Not Affected and Not Considered Further

The following resources (**Table 4.2**) would not be affected by either the No Action alternative or the Proposed Action because they do not exist within the project area or the alternatives would have no effect on the resource. These resources have been removed from further consideration in this EA.

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Table 4.2. Resources Eliminated from Further Consideration

Resource Topic	Reason for Elimination
Designated Farmland Soils (Farmland Protection Policy Act)	The City of Lumberton is designated as an Urban Area by the 2020 U.S. Census Bureau (U.S. Census Bureau 2020) and the Farmland Protection Policy Act does not apply to the project area. No conversion of farmland would occur per Title 7, Code of Federal Regulations (CFR), Part 658.2(a).
Sole Source Aquifers (Safe Drinking Water Act)	According to the U.S. Environmental Protection Agency’s (EPA) Sole Source Aquifer mapper, the project area is not located above a sole source aquifer; therefore, the alternatives would have no effect on a sole source aquifer (EPA 2023a).
Coastal Barrier Resources System (Coastal Barrier Resource Act)	The project area is not within a Coastal Barrier Resource Unit, an Otherwise Protected Area, or associated buffer zones, based on a review of the U.S. Fish and Wildlife Service (USFWS) Coastal Barrier Resource System mapper (USFWS 2023a).
Bald and Golden Eagle Protection Act	Although Bald eagles are known to occur regionally, individuals are not expected to occur within the project area because of a lack of prey resources and suitable nesting or perching sites. Similarly, Golden eagles are not expected to occur within the project area because of the lack of suitable resting or foraging habitat and the extent of human development and associated disturbance. Therefore, neither alternative would affect resources protected under the Bald and Golden Eagle Protection Act.
Essential Fish Habitat (Magnuson-Stevens Fishery Conservation and Management Act)	According to the National Marine Fisheries Service (NMFS) Essential Fish Habitat Mapper, the project area is not within or near waters that have been designated as essential fish habitat (NMFS 2023). Therefore, the Proposed Action and alternatives would not have any impact on essential fish habitat in accordance with the Magnuson-Stevens Fishery Conservation and Management Act.

4.2. Geology, Topography, and Soils

Robeson County is located in the southeastern portion of North Carolina in the Coastal Plain. The Coastal Plain is subdivided into two major sub-areas. The Outer Coastal Plain is the region closest to the ocean and is relatively flat, averaging less than 20 feet above sea level. The portion of the Inner Coastal Plain within the boundaries of Robeson County is higher in elevation (approximately 170 feet above mean sea level) and better drained (Robeson County 2022). Within the project area, the areas directly adjacent to the Lumber River waterways are approximately 20 to 30 feet lower in elevation than neighboring areas, creating conditions conducive to inland flooding in the areas directly adjacent to waterways.

More than half of the soils located in Robeson County’s planning jurisdiction are not suitable for intense development (Robeson County 2022). The majority of the soils in the project area are composed of Bibb soils and sandy loam soils. Bibb soils are very deep, poorly drained, and moderately permeable soils that are associated with floodplains and natural drainageways. The sandy loam soils in the project area are composed of sand, silt, and clay and are poorly drained.

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Sandy loam soils occur on stream terraces located along the Lumber River and other waterways in the project area (U.S. Department of Agriculture [USDA] Natural Resources Conservation Service [NRCS] 2023).

The Yorktown Formation and Duplin Formation comprise the geology of almost the entire project area (North Carolina Geological Survey [NCGS] 1985). These formations originated during the Tertiary Period and are characterized by fossiliferous clay with fine-grained sand, limestone, and shell material (NCGS 1985). The southernmost tip of the project area (where the Walnut Street component meets the Lumber River Trail) is situated on the Black Creek Formation, which originated during the Cretaceous period and is characterized by lignitic, gray or black clay and fine-grained sand (NCGS 1985).

4.2.1. NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no FEMA-funded flood mitigation construction in the project areas. Therefore, there would be no short-term impacts on soils, geography, or topography. However, implementation of the No Action alternative would not reduce the risk of flooding in and around the project areas. Although flooding is not expected to meaningfully affect the geology or topography within the project areas, future flood events would continue to cause soil erosion, especially in the areas adjacent to the stream bed along Meadow Branch. Erosion along the stream bed would result in soil loss and undercut banks, which could damage or kill vegetation. Therefore, the No Action alternative would have long-term, negligible to minor impacts on soils in the project areas and vicinity, depending on the extent and duration of flood impacts.

4.2.2. PROPOSED ACTION

Construction of the Meadow Branch, Scottish Packing Site, and Five Mile Branch components would require excavation and grading, which would result in ground disturbance and soil impacts. However, construction would be temporary and, in compliance with the North Carolina Sedimentation Pollution Control Act of 1973 (1973, c. 392, s. 1.), the city would develop and implement an erosion and sediment control plan during construction to reduce erosion and dust creation. The Proposed Action would also include installing erosion-control coir mats as required and planting fast-growing annual plants through the mats for immediate soil stabilization. In the Meadow Branch project area, tree root wads would be installed in the reconfigured streambank and channel bottom at the Meadow Branch project area to slow flows and reduce erosion over the long term. The Proposed Action would require excavation to a maximum depth of 8 feet in the Meadow Branch project area and boardwalk footings would be installed to depths up to 3 feet in the Scottish Packing Site and the Five Mile Branch areas. Although bedrock may be encountered within 8 feet of the surface, the project would not excavate into bedrock. Thus, excavation and other ground-disturbing activities in the Meadow Branch, Scottish Packing Site, and Five Mile Branch project areas have the potential to cause short-term, minor impacts on topography, and soils with no effect on geology. No ground disturbance would occur in the Walnut Street project area; therefore, no changes to geology, topography, or soils associated with the Walnut Street component would occur.

Implementation of the Proposed Action components would reduce the risk of flooding and associated erosion in and around the project areas. Additionally, planting wetland and riparian vegetation in the Meadow Branch and Scottish Packing Site project areas would reduce soil erosion during future flood events by holding soil in place with their roots. There would be permanent changes to topography owing to the excavation required for stream restoration and wetland creation activities at the Meadow Branch site, as well as the negligible amounts of fill that would be placed to smooth the existing access easement within the Five Mile Branch project area. The permanent changes in the topography along the Meadow Branch would result in a more resilient and functional stream and floodplain system. Therefore, the Proposed Action would have a long-term, minor beneficial effect on topography and soils by reducing soil loss associated with flooding. The Proposed Action would have no long-term impacts on geology.

4.3. Visual Quality and Aesthetics

Visual quality is a qualitative analysis that considers the visual context of the project area, the potential for changes in character and contrast, an assessment of whether the project areas include any places or features designated for protection, the number of people who can view the site and their activities, and the extent to which those activities are related to the aesthetic qualities of the area.

The Meadow Branch component project area is primarily low-density commercial structures from I-95, along North Roberts Avenue to Fuller Avenue where it turns into a residential neighborhood between Fuller Avenue and Walnut Street on the southeast edge of the project area. Because of repetitive flooding along either side of Best Drive and the area between Highland Avenue, Elmhurst Avenue, and North Walnut Street, 27 individual structures were acquired and demolished by the city under a different project and separate funding. The acquisitions and demolitions have independent utility from this project; however, the Proposed Action would incorporate this newly created open space into the proposed restoration work. Along the northern bank of Meadow Branch, the project area dips in and out of wooded areas, edging into residential areas as it runs adjacent to the neighborhood on the south side of the stream. Jerry Giles Park, a small neighborhood park with a children's playground and picnic area, is located at the corner of Walnut Street and North Roberts Avenue.

The Walnut Street component project area extends through low-density commercial and residential areas. On the northern part of Walnut Street, the project area passes between the Biggs Park Mall and the Meadowbrook Cemetery. The middle section of the Walnut Street component, from approximately East 24th Street to East 10th Street, is in a low-density residential area. The southern section of the Walnut Street component project area is composed of primarily commercial structures moving from light industrial businesses into the wooded Lumber River floodplain and a wetland area that surrounds the off-road Lumber River Trailhead.

The entirety of the Scottish Packing Site component is former industrial development surrounded by low-density residential. The Scottish Packing Site is on the bank of the Lumber River, which is a designated wild and scenic river. The reach through Lumberton is classified as *recreational* because

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it offers outstanding recreational and scenic values and is largely free of impoundments but has urban development and an extensive road system along its banks.

The majority of the Five Mile Branch component is in a wooded area with the exception of the trailhead on the north end on North Roberts Avenue near I-95 and the proposed parking lot on the south end at West Carthage Road also near I-95.

4.3.1. NO ACTION ALTERNATIVE

No construction or restoration work would occur under the No Action alternative; therefore, there would be no short-term impact on visual resources within the project area. The No Action alternative would not alter existing baseline conditions; therefore, it is expected that the current conditions of repetitive flooding of residential properties could lead to blight, creating a minor, long-term impact on visual resources for the City of Lumberton.

4.3.2. PROPOSED ACTION

The Meadow Branch component is the project area most likely to incur temporary impacts on visual quality and aesthetics owing to demolition of structures, asphalt removal, construction equipment, and removal of vegetation, including trees. Given the variation of land uses, from commercial to residential to wooded area, the number of people who can view the site and their activities would vary greatly and include both residents of the neighborhood and visitors to the Jerry Giles Park. The potential impacts on visual quality and aesthetics would be most noticeable by people in the residential sections of the project area. Because construction on this component would be expected to last for 21 months, the impacts would be noticeable; however, a portion of the construction time would include low-impact activities such as replanting vegetation. Therefore, construction would have a minor, short-term impact on visual quality. Impacts would not be permanent as vegetation removed would be replanted with native grasses, shrubs, and trees similar to the natural habitats currently along the Five Mile Branch. In addition, park elements such as a nature trail, playground, and dog park would be added to the area, allowing new recreation visitors to enjoy the natural aesthetics of the restored area. Therefore, the proposed stream and floodplain restoration along Meadow Branch would result in a minor, long-term, and beneficial visual impact on the area.

The Walnut Street component would have no ground disturbance or vegetation removal; therefore, there would be no impacts on visual quality and aesthetics.

Work at the Scottish Packing Site component would include the use of construction equipment and some ground disturbance. However, only two to four residences have a viewshed of the Scottish Packing Site component project area and all of them are located behind an earthen levee from the proposed work. The site is more visible by recreationists traveling along the Lumber River Trail on the crest of the levee or by canoe and kayak along the river. Existing trees and shrubs along the river likely would screen most of the site from travelers on the river and these areas would not be disturbed by the proposed work. Therefore, the number of people who can view the site would be small, creating a negligible, short-term impact. The proposed boardwalk and wetland restoration

would be consistent with the scenic values of the wild and scenic river designation of the adjacent Lumber River. The Proposed Action would have a minor, long-term beneficial visual impact.

The only portions of the Five Mile Branch component that are currently visible to the public are the north and south ends where the proposed trail transitions and parking area would be constructed. These areas are adjacent to commercial/industrial land uses and on the edge of forested floodplains. Construction equipment would have a large visual contrast with the forested setting but would not be inconsistent with the nearby developed areas. The areas are only visible to people passing through along the established roads. Therefore, while the number of people who may see the site may be large, their activities would typically be unrelated to the aesthetic qualities of the area. Therefore, there would be a negligible short-term impact on visual quality. Following construction, the trail transitions would blend the natural surface trails to the hard-surface sidewalks along the existing roadways and the parking area would be in character with the nearby commercial development transitioning to the more natural setting of the forested floodplain. Therefore, the Proposed Action would have a negligible impact on the visual quality of the project area.

4.4. Air Quality

The Clean Air Act of 1970 (42 U.S.C. § 7401–7661 [2009]), as amended, requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for six pollutants harmful to human and environmental health, including ozone, nitrogen dioxide, carbon monoxide, sulfur dioxide, lead, and particulate matter (PM) (including PM that is less than 10 micrometers in diameter [PM₁₀] and fine PM less than 2.5 micrometers in diameter [PM_{2.5}]). Fugitive dust, which is considered a component of PM, can also affect air quality. Fugitive dust is released into the air by wind or human activities, such as construction, and can have human and environmental health impacts. Federally funded actions in nonattainment and maintenance areas for these pollutants are subject to conformity regulations (40 CFR Parts 51 and 93) to ensure that emissions of air pollutants from planned federally funded activities would not cause any violations of the NAAQS, increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS or any interim milestone. According to the EPA Green Book (2023), Robeson County is currently in attainment status for all criteria pollutants (EPA 2023b) and thus, not subject to conformity rules.

4.4.1. NO ACTION ALTERNATIVE

No construction would occur under the No Action alternative. Therefore, this alternative would have no short-term impacts on air quality. Additionally, the No Action alternative would not create a new permanent source of emissions; thus, there would be no long-term impacts on air quality.

4.4.2. PROPOSED ACTION

As described in Section 3.2, construction of the Proposed Action would require the use of vehicles and heavy equipment including bulldozers, excavators, and dump trucks. These have the potential to produce airborne dust from operation on unpaved surfaces and during ground-disturbing activities. Additionally, operation of vehicles and equipment would emit pollutants such as PM and carbon

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monoxide. Vehicles and equipment would be turned off when not in use, run times would be kept to a minimum, and best management practices (BMPs) such as covering soils and truck beds, watering exposed soils, and tire washing when leaving a construction site would be in place to manage fugitive dust produced by construction activities. Construction of the Proposed Action, specifically the Walnut Street component, may require lane closures or traffic detours to be implemented that would slightly increase emissions from vehicular delays. However, construction would be temporary and follow all local, state, and federal regulations. Therefore, the Proposed Action would have negligible, short-term impacts on air quality from the use of construction vehicles and equipment and the potential implementation of road closures and traffic detours.

The Proposed Action would not create a new source of permanent air emissions. Because the Proposed Action would connect more than 108 parcels of land to create a contiguous trail system throughout the city, the additional opportunities for multimodal transportation that would be created by the Proposed Action may reduce the amount of local vehicular travel in the future. Therefore, the Proposed Action would have a negligible, long-term beneficial effect on air quality throughout the city.

4.5. Climate Change

Climate change refers to changes in the Earth's climate caused by a general warming of the atmosphere. Its primary cause is emissions of greenhouse gases (GHG), including carbon dioxide and methane. Climate change can affect species distribution, temperature fluctuations, and weather patterns.

Executive Order (EO) 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, directs federal agencies to review and address regulations that conflict with national objectives, such as reducing GHG emissions, strengthening climate resilience, and prioritizing environmental justice (EJ) and public health. CEQ's NEPA Guidance on Consideration of Greenhouse Gas Emissions and Climate Change was published in the Federal Register on January 9, 2023. The new guidance provides best practices for climate change analyses, including actions such as considering GHG emissions and climate change impacts during the identification of alternatives, quantifying a proposed action's projected GHG emissions or reduction using best available data, and providing social cost of GHG estimates to translate climate impacts into a more accessible metric of dollars. Social cost of GHG estimates represent the societal value or cost of GHG emissions changes resulting from actions that impact cumulative global emissions in a small or marginal way. Federal agencies have used social cost of GHG metrics to estimate the impacts of their actions on the climate for over a decade. (Environmental and Energy Law Program 2022).

The climate in Robeson County is typically mild; summers can be hot and muggy, while winters are known to be cold, but short. Temperatures in the county can vary throughout the year from approximately 35 to 90 degrees Fahrenheit (°F). The average annual temperature is 61.7°F (Robeson County 2022). The average annual total precipitation in the county is 47.75 inches, with the highest precipitation levels occurring in late summer through fall (U.S. Climate Data 2023).

Impacts of climate change are already being felt in North Carolina and will continue to pose significant challenges for the foreseeable future for the 10.5 million people who inhabit the state. Over the next 80 years, North Carolina will likely experience disruptive sea level rise, increasingly hot nights, and more days with dangerous heat and extreme rainfall unless reductions in global GHG emissions are realized (Kunkel et al. 2020). Over the past 120 years, North Carolina has warmed by about 1 degree (less than the world as a whole, which has warmed by nearly 2 degrees); in the last 125 years of record-keeping the state's warmest year was 2019 and the state's wettest year was 2018, partially as a result of Hurricane Florence; it is expected that heavy rains from hurricanes and other weather systems will increase in both frequency and intensity (Kunkel et al. 2020).

4.5.1. NO ACTION ALTERNATIVE

No construction would occur under the No Action alternative; thus, there would be no GHG emissions associated with the No Action alternative and thus, no social costs. Therefore, this alternative would have no short-term impacts on climate.

As described in Section 4.5, climate change is expected to increase the frequency and intensity of precipitation events in North Carolina, resulting in an increase in flood events. Thus, flooding in the project area would be expected to increase in frequency and duration. The No Action alternative would not increase the resilience of Lumberton against these climate change-induced events; therefore, the No Action alternative would have negligible long-term adverse impacts.

4.5.2. PROPOSED ACTION ALTERNATIVE

The social cost of GHG emissions is an estimate, in monetary value, of the economic damage that would result from emitting one additional ton of GHG into the atmosphere. Evaluating the effects of climate change in economic terms allows decision makers to understand the magnitude of the economic impacts of projects that could either increase or decrease emissions released into the earth's atmosphere (Environmental and Energy Law Program 2022).

The use of gas-powered construction equipment and tools during the development of the Lumberton Loop Project would produce GHGs for all four components of the project. GHGs enter the atmosphere through the burning of fossil fuels (coal, natural gas, and oil) and some are removed from the atmosphere (or sequestered) when absorbed by plants as part of the biological carbon cycle. The construction activities that are anticipated for the Proposed Action would only generate GHGs for a short period of time. Additionally, the Proposed Action would include the benefit of carbon sequestration from the proposed stream and wetland restoration and plantings (**Table 4.3**).

Table 4.3. Carbon Sequestration

Project Component	Waterway	Wetland	Floodplain
Meadow Branch	4,338 feet of stream restoration with the installation of live shrub branch stakes, woody vegetation, and native herbaceous vegetation for bank stabilization.	2.2 acres of wetland restoration with annual grasses, legumes, and forbs seeded in coconut palm matting for soil stability until the plants become established.	11.12 acres of the floodplain would be restored on 27 former residential lots where dwellings were acquired and demolished.
Minor Scottish Packing Plant	N/A	Enhancement of a 0.55-acre wetland to be seeded with native wetland grasses and plants.	N/A

Although neither the social cost from an increase of GHG emissions from mechanical equipment nor the potential decrease of emissions by carbon sequestration through restoration of floodplain and wetland vegetation was calculated, it is anticipated that the Proposed Action would not increase or exacerbate climate impacts in the project area in the long term. In comparison to similar projects, the levels would not be expected to exceed a social cost of \$60,000. It is anticipated that the Proposed Action would increase the city’s resilience to climate change impacts, particularly increased precipitation events, by providing increased flood storage and increasing pervious areas.

The Proposed Action would result in temporary GHG emissions from construction activities. The construction equipment emissions from diesel and gasoline engines would be temporary and would not increase GHGs to the extent that the Proposed Action would contribute to regional climate change. Thus, the Proposed Action would have short-term negligible impacts on climate.

No long-term impacts on climate are anticipated because the Proposed Action would not be a source of long-term GHG emissions. The Proposed Action would increase the City of Lumberton’s resilience to impacts of climate change, particularly increased precipitation events, by creating wetlands and riparian areas that provide increased flood storage and area where stormwater may infiltrate into the ground. Thus, the Proposed Action would result in minor, long-term beneficial effects by increasing the city’s resilience to climate change impacts.

4.6. Surface Waters and Water Quality

The Clean Water Act (CWA) of 1977 (33 U.S.C. § 1251 *et seq.*), as amended, regulates the discharge of pollutants into water, with sections falling under the jurisdiction of the USACE and EPA. Section 404 of the CWA establishes the USACE permit requirements for discharging dredged or fill materials into waters of the United States. The National Pollutant Discharge Elimination System (NPDES) regulates both point and nonpoint pollutant sources, including stormwater and stormwater runoff,

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via a permitting system. Activities that disturb one or more acres of ground are required to apply for an NPDES Construction General Permit issued by the North Carolina Department of Environmental Quality (NCDEQ).

Relevant state regulatory agencies include the NCDEQ, which administers Section 401 of the CWA and issues water quality certifications for the discharge of dredged materials, dredging, and dredged material disposal in waters of the United States. As described in Section 4.2, the North Carolina Sedimentation Pollution Control Act of 1973 (1973, c. 392, s. 1.) establishes requirements for controlling erosion and sedimentation during construction activities to keep sediment from entering natural watercourses and from washing onto adjacent property, and requires an erosion and sedimentation control plan to be developed for projects that would disturb more than one acre.

CWA Section 303(d) requires states to identify waters that do not or are not expected to meet applicable water quality standards with current pollution control technologies alone. Under Section 303(d), states must develop Total Maximum Daily Loads for impaired waterbodies. A total maximum daily load establishes the maximum amount of a pollutant or contaminant allowed in a water body and serves as a planning tool for restoring water quality. In North Carolina, NCDEQ is responsible for compliance with Section 303(d) of the CWA.

Surface waters within the project areas are shown in **Figure 4.1** through **Figure 4.3**. The northern portion of the project area (**Figure 4.1, Figure 4.2**) is within the Saddletree Swamp watershed (HUC12 030402031001). Meadow Branch generally flows west across the northern portion of the project area, into Five Mile Branch which flows from north to south in the western portion of the project area and is a tributary to the Lumber River (discussed below). Five Mile Branch and Meadow Branch are not listed in the 303(d) list of impaired water bodies and no data is provided for the water quality of either stream (EPA 2023c; NCDEQ 2022). The southern portion of the project area (**Figure 4.1, Figure 4.3**) is within the Jacob Swamp-Lumber River watershed, which includes the Lumber River. The Lumber River flows southeast through the project area before turning to the southwest to cross the border of North Carolina and South Carolina where the Lumber River flows into Little Pee Dee River, Great Pee Dee River, Winyah Bay, and eventually into the Atlantic Ocean (National Park Service [NPS] 2023). The water quality in the segment of the Lumber River within the project area is considered good and it is not listed in the 303(d) list of impaired waters (EPA 2023c; NCDEQ 2022).

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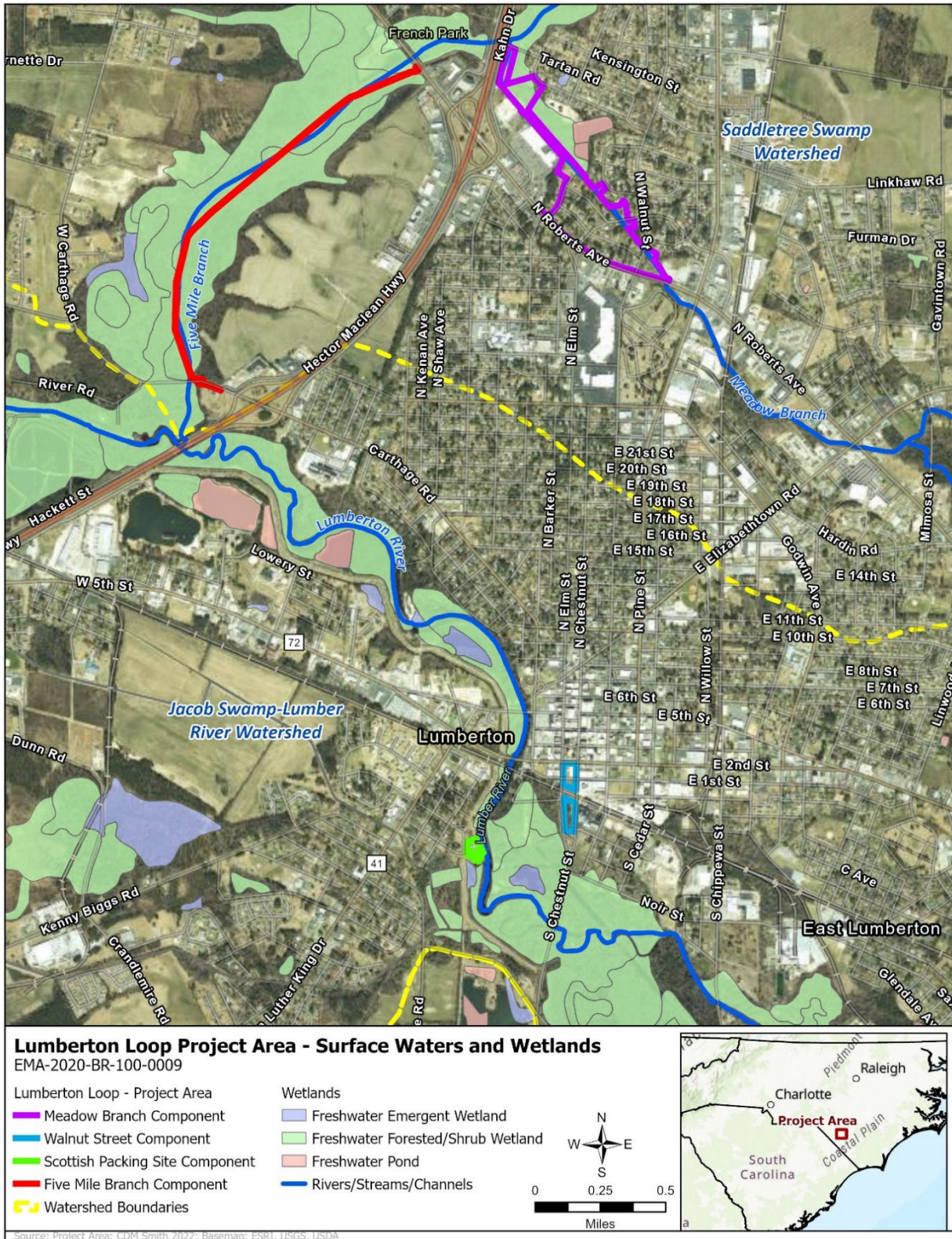


Figure 4.1. Surface Waters and Wetlands – All Project Areas

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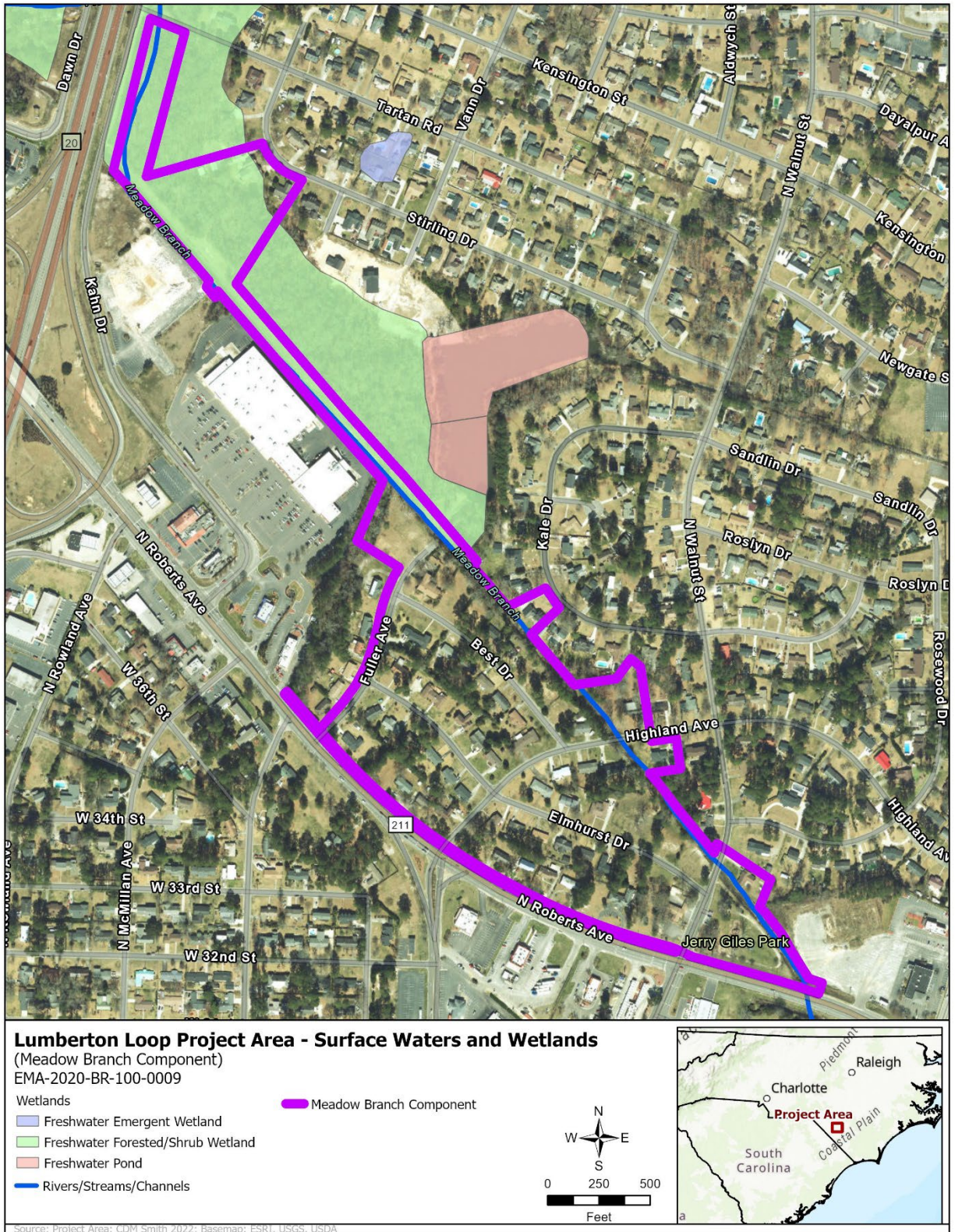


Figure 4.2. Surface Waters and Wetlands – Meadow Branch Project Area

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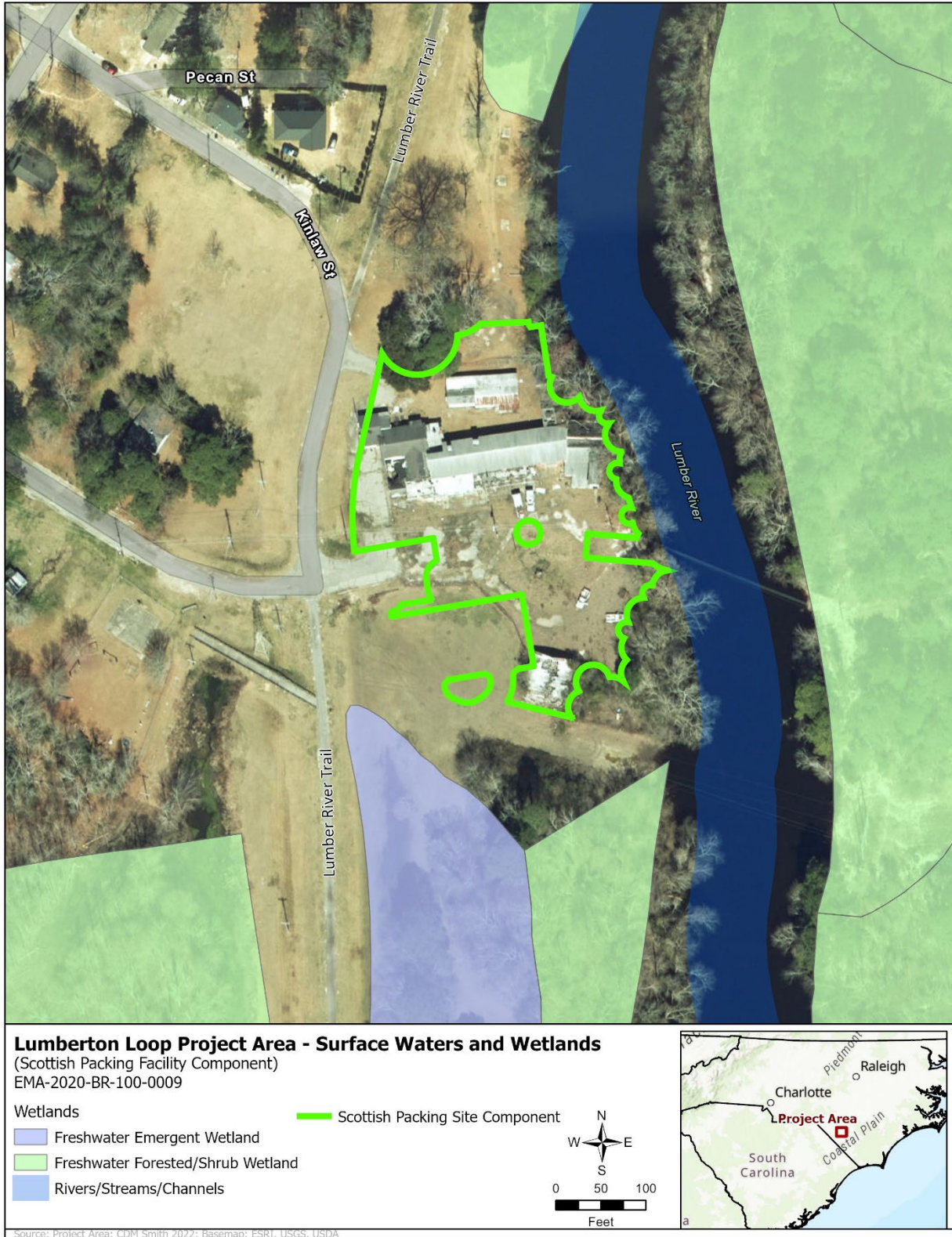


Figure 4.3. Surface Waters and Wetlands – Scottish Packing Site Project Area

4.6.1. NO ACTION ALTERNATIVE

Under the No Action alternative, no FEMA-funded construction of flood mitigation activities would occur; therefore, there would be no short-term impacts related to the No Action alternative. In the long term, the risk of flooding would not be substantially reduced within the City of Lumberton. Flood waters would erode soils and transport sediments and debris into surface waters including the Meadow Branch, Five Mile Branch, and Lumber River. While crossing pavement, floodwaters could pick up pollutants such as oil and grease and transfer them into waterbodies. If flooding causes sewer backups, there is the potential for pathogens to be released into floodwaters and transported into the waterbodies. Thus, repeated flood events under the No Action alternative could degrade the water quality of Meadow Branch, Five Mile Branch, and the Lumber River, resulting in long-term, minor impacts on water quality.

4.6.2. PROPOSED ACTION

Construction activities under the Proposed Action could result in the discharge of pollutants and sediments into waterbodies. The most common pollutant discharged to surface waters from construction sites is sediment resulting in turbidity; however, other contaminants, such as metals, trash and debris, and petroleum hydrocarbons can also enter nearby waterbodies from construction sites (EPA 2009). Construction activities would be temporary, and the city would manage construction activities to prevent pollutants and debris from entering stormwater runoff and thus from entering surface waters in compliance with the NCDEQ Construction General Permit (Permit No. NCGO10000). The city would implement an erosion and sediment control and stormwater management plan before construction, in accordance with the general permit for construction activity and the North Carolina Sedimentation Pollution Control Act of 1973, as the act would apply to the Proposed Action. Gravel or mulch applied to the former roadbed along Best Drive in the Meadow Branch project area would not be expected to wash away during flood events because flood velocities in that part of the restored floodplain would not be fast enough. Because of the nature of the project activities related to the stream restoration at the Meadow Branch area, a USACE CWA Section 404 Permit may be required for in-water work. The 404 permit would provide the requirements for the work including grading and contouring of the channel and restoration of the site. The city would be required to coordinate with USACE to determine the required permit authorization needed. Therefore, the Proposed Action would have short-term, minor impacts on water quality from construction-related activities.

Under the Proposed Action, the recontouring of Meadow Branch and creation of wetlands adjacent to the new stream channel would improve stream functions. The new meanders, wetlands, and native vegetation would slow floodwaters, provide more floodplain capacity, and improve water quality functions of the stream over the long term. Because wetlands function to improve water quality, the wetland restoration at the Scottish Packing Site would provide water quality benefits over the long term. Under the Proposed Action, the risk of flooding in the City of Lumberton would be reduced from the proposed stream restoration, floodplain revegetation, and wetland creation in the Meadow Branch and Scottish Packing Site project areas. Therefore, the Proposed Action would have long-term, minor beneficial effects on water quality by reducing the risk of flooding and associated

impacts, such as the transfer of sediments and contaminants into the stream as well as improving the capacity of the natural systems to provide water quality functions.

4.7. Wetlands

EO 11990, Protection of Wetlands, requires federal agencies to consider alternatives to work in wetlands and limits potential impacts on wetlands if there are no practicable alternatives. FEMA regulation 44 CFR Part 9, Floodplain Management and Protection of Wetlands sets forth the policy, procedures, and responsibilities to implement and enforce EO 11990 and prohibits FEMA from funding activities in a wetland unless no practicable alternatives are available. Activities that disturb wetlands may also require a permit from USACE under Section 404 of the CWA.

In the Lumber River Basin, wetlands make up nearly a fourth of the watershed areas. Degradation of wetlands over the years has predominately occurred from development and agricultural ditching (NCDOT 2018). A wetland delineation was conducted in 2007 along a portion of the Five Mile Branch component for the Meadow Branch Swamp Wetland Restoration project (The John R. McAdams Company, Inc. 2007). The wetland delineation encompassed the floodplain forested area east of Five Mile Branch from West Carthage Road north toward, but not quite all the way to, North Roberts Avenue. The delineation also characterized the wetland and habitat conditions in a reference site on the west side of Five Mile Branch. Because the Meadow Branch Swamp Wetland Restoration project has since been implemented, the proposed and reference wetland conditions described in the 2007 delineation report (The John R. McAdams Company, Inc. 2007) are considered to be representative of the existing conditions in the Five Mile Branch portion of the project area.

Because no recent wetland delineations have been conducted in the other project component areas, the National Wetland Inventory (NWI) mapper was reviewed to establish existing conditions throughout the project area. The NWI indicates that multiple wetlands occur in the vicinity of the project area including freshwater forested/shrub wetlands, freshwater emergent wetlands, and freshwater ponds (U.S. Fish and Wildlife Service [USFWS 2023b]). The NWI maps of the Five Mile Branch component is consistent with what is described in the 2007 wetland delineation report (The John R McAdams Company Inc., 2007, Appendix E). The wetlands that occur in the project vicinity are depicted in **Figure 4.1**, **Figure 4.2** and **Figure 4.3** present detailed views of the wetlands in the vicinity of the Meadow Branch component and the Scottish Packing Site component, respectively.

4.7.1. NO ACTION ALTERNATIVE

Under the No Action alternative, no FEMA-funded construction, including wetland creation or restoration, would occur. Therefore, the No Action alternative would have no short-term impact on wetlands. Future flood events would continue to periodically inundate the surrounding residential and urban areas and may result in sediments and other pollutants being deposited within the wetlands in and near the project areas, adversely impacting wetland functions. Existing wetland vegetation may be killed or damaged by flood-induced erosion and/or sediment deposition and the resulting disturbed areas would likely be colonized by rapid growing invasive species. Therefore,

implementation of the No Action alternative would have minor long-term impacts on wetlands in and around the project areas.

4.7.2. PROPOSED ACTION

The use of construction vehicles and equipment under the Proposed Action could result in accidental releases of hazardous wastes from leaks or spills that could be transported into nearby wetlands. Similarly, ground-disturbing activities within the Meadow Branch, Scottish Packing Site, and Five Mile Branch project areas may cause minor sedimentation within the wetlands in and near the project area. However, construction activities would be temporary, and the city would implement standard erosion and sediment control BMPs and would comply with the conditions described in the NCDEQ Construction General Permit (Permit No. NCG010000) to reduce the risk of contaminants being spread through runoff. Additionally, stream widening activities in the Meadow Branch project area would likely require the disturbance or removal of wetland vegetation. However, any wetland areas where vegetation is disturbed or removed would be replanted with regionally appropriate native species once construction is complete. Therefore, the Proposed Action would have minor, short-term impacts on wetlands resulting from the possible introduction of pollutants or sediments into wetlands and from the removal of vegetation.

Implementation of the Proposed Action would result in the construction of a new 2.2-acre wetland in the Meadow Branch project area and the restoration of a 0.55-acre wetland in the Scottish Packing Site project area. These new and restored wetlands would increase the potential of the project area to filter potential contaminants, attenuate floodwaters, and increase the habitat quality of the area (EPA 2002). Additionally, the implementation of all components of the Proposed Action would work in concert to reduce the severity and/or frequency of future flood events, therefore reducing the likelihood of pollutants or sediments to be transported into wetlands in and around the project area via floodwaters. Therefore, implementation of the Proposed Action would have minor, long-term beneficial effects on wetlands in and around the project area. The eight-step decision-making checklist regarding wetlands is provided in Appendix B.

4.8. Floodplains

EO 11988, Floodplain Management, requires federal agencies to avoid, to the extent possible, the short- and long-term impacts associated with the occupancy and modification of floodplains and avoid direct or indirect support of development within the floodplain whenever there is a practicable alternative. Each federal agency must take action to reduce the risk of flood loss; minimize the impact of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. FEMA uses an eight-step decision-making process to evaluate potential impacts on floodplains in compliance with EO 11988 and 44 CFR Part 9. EO 13690 Federal Flood Risk Management Standard as reinstated by EO 14030, encourages consideration of the effects of climate change in the design of federally funded projects within floodplains.

FEMA maintains a list of communities that participate in the National Flood Insurance Program called the Community Status Book. According to the Community Status Book, Robeson County participates in the National Flood Insurance Program (FEMA 2022). Under FEMA's regulation (44 CFR Part 9.7) the 1-percent annual chance flood is used as the minimal area for floodplain impact evaluation. Communities are required to regulate development in these floodways to ensure that there are no increases in upstream or downstream flood elevations. The project areas include FEMA Special Flood Hazard Area Zones AE and X, as shown on Flood Insurance Rate Map Panels 3710939200K and 3710939100K, both effective December 6, 2019 (**Figure 4.4** through **Figure 4.6**). Flood zones with an AE designation are areas with a 1-percent probability of flooding each year where predicted flood elevations have been established. Some portions of the Meadow Branch and Walnut Street components are in areas mapped with a 0.2-percent annual chance of flooding or a 500-year floodplain. Most of the Walnut Street alignment is in Zone X, an area with minimal flood risk. According to the FEMA floodplain maps, the Meadow Branch, Scottish Packing Site, and Five Mile Branch components of the Lumberton Loop Project are predominately within a regulatory floodway (**Figure 4.4**), which is defined as a channel of a river or other watercourse and the adjacent land areas that must be reserved to allow for flooding to occur without increasing the water surface elevation more than a designated height.

4.8.1. NO ACTION ALTERNATIVE

Under the No Action alternative, the risk to people and property from future flood events would remain and no short-term impacts on floodplains would occur as the proposed construction would not occur. In the long term, floodplain storage capacity would not be increased and there would be no implementation of various nature-based infrastructure components including proposed wetlands, restored stream channels, and reforested floodplain areas. Thus, the risk of flooding would not be reduced, and because of climate change risk, flood events may increase in intensity and duration as discussed in Section 2 and Section 4.5. The natural function of floodplains, including maintenance of water quality, as discussed in Section 4.6, and habitat values, as discussed in Section 4.7 and Section 4.11, would continue to be adversely affected by flooding. Structures and residences adjacent to the project area would continue to be at risk for loss of life and property damage during future storm events. Therefore, the No Action alternative would have moderate long-term adverse impacts on people and property near the project area.

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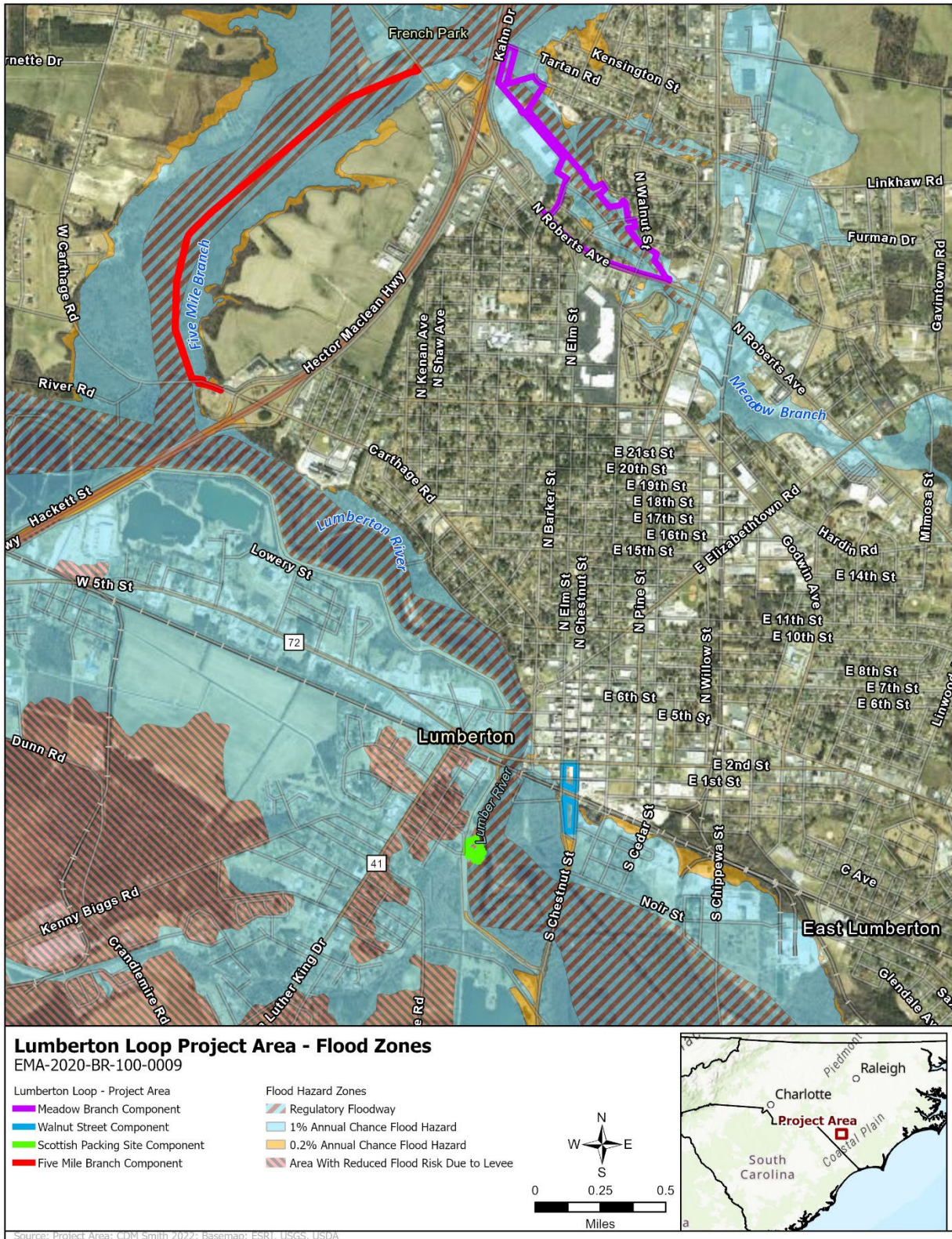


Figure 4.4. Flood Hazard Zones

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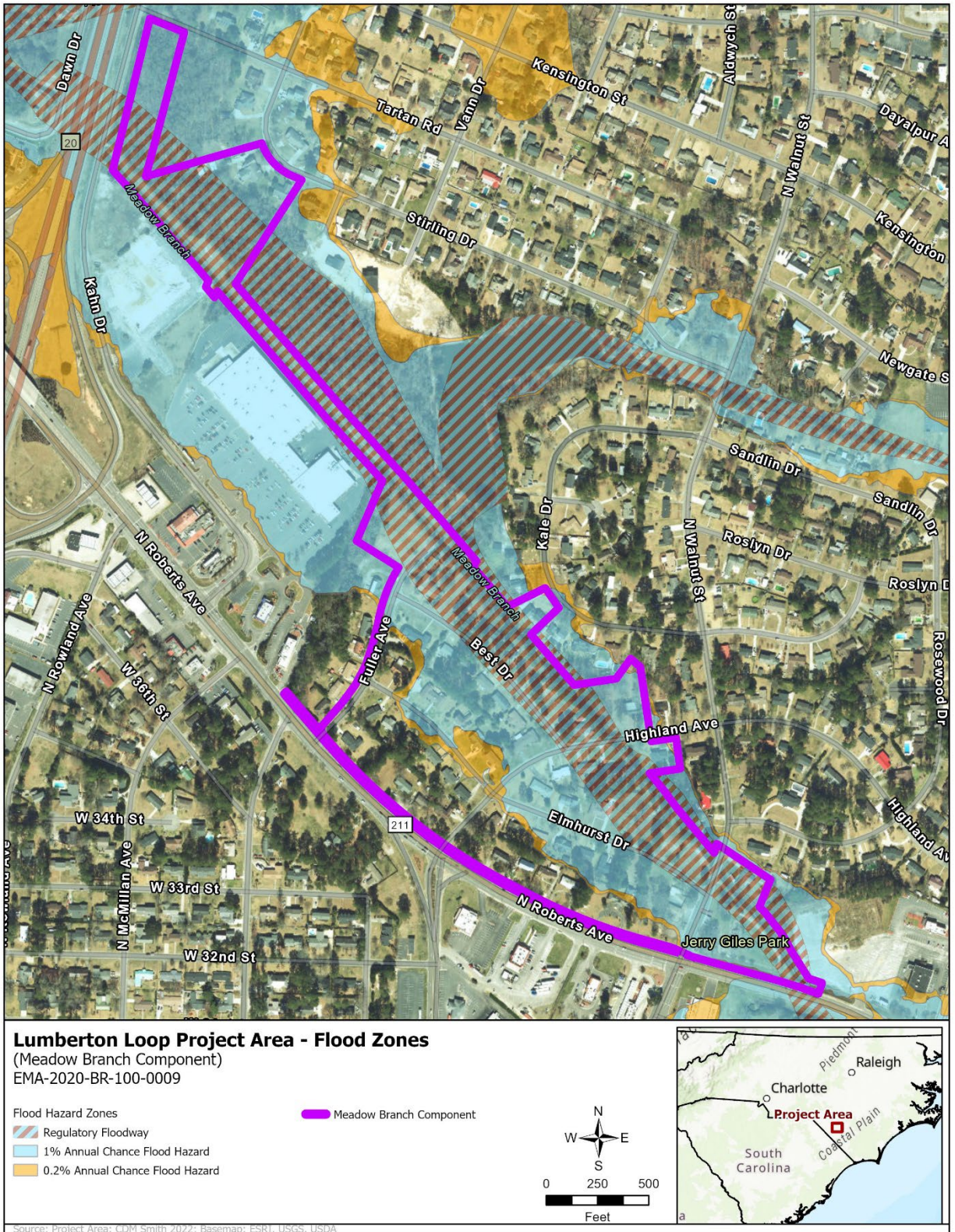


Figure 4.5. Meadow Branch Flood Zone

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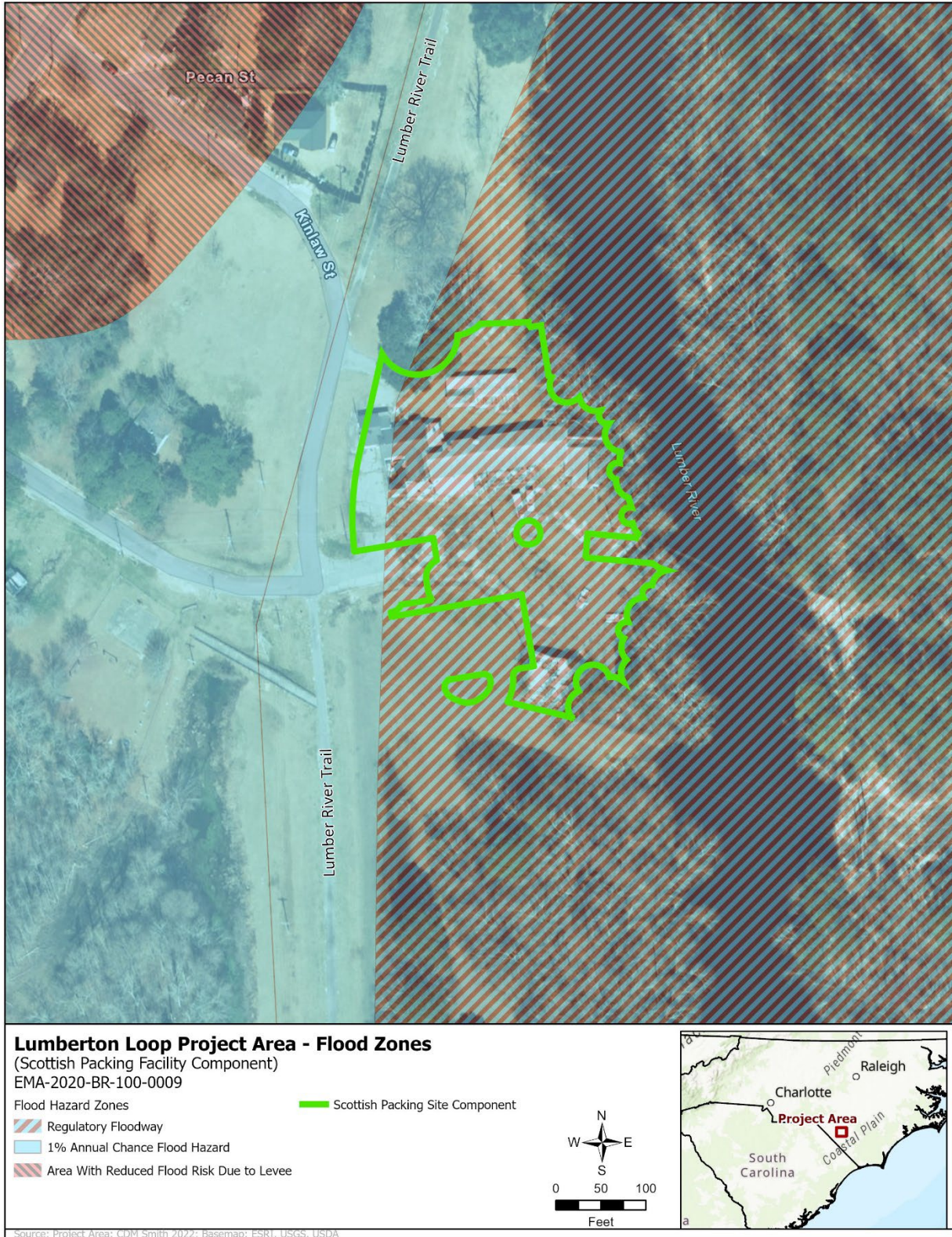


Figure 4.6. Scottish Packing Site Flood Zone

4.8.2. PROPOSED ACTION

Construction of the Proposed Action could have moderate short-term impacts on the 100-year floodplain at Meadow Branch because of grading, alteration of the stream channel, wetland creation in the floodplain, and restoration of floodplain vegetation. Construction activities could cause an accidental release of hazardous waste from minor leaks from construction equipment, and ground-disturbing activities could expose soils leading to erosion and result in sediment entering Meadow Branch, Five Mile Branch, and the Lumber River. However, construction activities would be temporary, and the city would implement erosion and sediment control BMPs as discussed in Section 4.6.2. Coordination with the local floodplain administrator regarding any necessary permits to conduct activities within the floodplain would be managed by the city. With implementation of all BMPs and permit conditions, there would be a minor short-term impact on the 100-year floodplain because of construction, including grading activities, that would occur within the floodplain.

Stream restoration in the Meadow Branch area and wetland creation and restoration in the Meadow Branch area and Scottish Packing Site would increase flood storage and attenuation of flood waters, thus reducing the risk of flooding. The revegetated areas would be planted with native vegetation that would hold soils in place and slow and distribute the force of floodwaters over the floodplain, reducing erosion. Thus, the Proposed Action would have moderate long-term benefits on flood reduction and natural floodplain functions and values in the project area and vicinity.

FEMA completed an eight-step checklist for the Proposed Action, which concluded that the implementation of this project would have more beneficial than detrimental impacts on floodplains and that there is no practicable alternative to conducting the project within the floodplain. The eight-step checklist is provided in Appendix B.

4.9. Wild and Scenic Rivers

The National Wild and Scenic Rivers (WSR) System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. § 1271 *et seq.*) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. Rivers may be designated for the National WSR System by Congress or, if certain requirements are met, by the Secretary of the Interior. NPS oversees the WSR program for the Lumber River in cooperation with the North Carolina Division of Parks and Recreation.

In 1998, the Secretary of the Interior, per recommendations by the NPS, added 81 miles of the Lumber River to the National WSR System. The Lumber River was designated as a WSR because it was found to have the following “outstandingly remarkable” resource values: recreation, fish, wildlife, scenery, and botany. The Lumber River is one of the most highly prized recreation sites in North Carolina. Popular recreational activities include canoeing and boating, fishing, hunting, picnicking, camping, nature study, swimming, biking, jogging, crafts, and fossil and artifact hunting. The Lumber River is managed by the NPS and the North Carolina Division of Parks and Recreation. In 1989, North Carolina also declared a portion of the river basin as a state park, and designated portions for preservation, and protection as a river without impoundments. The values recognized in the state designation were similar to those recognized by the federal designation and include

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natural, scenic, educational, geological, recreational, historic, fish and wildlife, scientific, and cultural values (NCDOT 2018).

4.9.1. NO ACTION ALTERNATIVE

No construction would occur under the No Action alternative; therefore, there would be no short-term impacts on the wild and scenic values of the Lumber River. Under the No Action alternative, the risk of flooding would not be substantially reduced. Repeated flooding along the Lumber WSR could damage access to the Lumber WSR and, therefore, limit the use of the river for recreational activities. As detailed in Section 4.6.1, repeated flooding would reduce water quality within the Lumber River, which may reduce the recreational and fish and wildlife habitat values of the river. Therefore, the No Action alternative would have long-term, minor impacts on the Lumber WSR.

4.9.2. PROPOSED ACTION

The Lumber WSR is directly adjacent to the work associated with the Walnut Street and the Scottish Packing Site components. Thus, there is a low potential for the Proposed Action to impact the WSR. For the Walnut Street component there would be no ground disturbance as this project area consists of re-striping of existing streets only to accommodate a bike lane. Re-striping along South Chestnut Street where it crosses the Lumber River would not affect the river or its wild and scenic values. The Scottish Packing Site is immediately adjacent to the Lumber River. As described in Section 3.2.1, the proposed ground disturbance is anticipated to be up to approximately 36 inches deep for the boardwalk and sidewalk construction and less for planting of wetland vegetation. All ground disturbance and other construction activities would be temporary and completed within 36 months. Therefore, the Proposed Action would have short-term, negligible impacts on the Lumber River and its associated remarkable values.

The Five Mile Branch component is approximately 1,000 feet from the Lumber River. The proposed work along the Five Mile Branch would not have an adverse impact because the improvement of the existing maintenance berm to create a trail would not have the potential to generate pollutants or sediments that could reach the Lumber River.

In the long term, all four components of the Proposed Action would increase the ability for residents and visitors of the City of Lumberton to access the recreational resources associated with this reach of the Lumber WSR. The Meadow Branch component would include new trails and trail connections to sidewalks and trails that would be constructed under other projects, contributing to a connected recreational network around the city. The Walnut Street component would increase access to the WSR for bicyclists and pedestrians throughout the city. The Scottish Packing Site component would introduce an additional sidewalk and boardwalk for walking, running, and hiking at the river, which are key recreational uses that the WSR was designated for. In addition to creating additional walking and hiking opportunities at the WSR, the creation of a sidewalk and boardwalk at the Scottish Packing Site would make this site the nearest point of access to the WSR for residents and visitors of downtown Lumberton, increasing the recreational utility of this reach of the river. Additionally, wetland creation activities related to the Scottish Packing Site component would occur adjacent to

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the wooded bank of the Lumber River, enhancing the visual quality of the area and providing additional habitat for birds and other wildlife in the area. The Five Mile Branch component would increase access to the river for pedestrians and bicyclists. All four components together would reduce the risk of flooding throughout the city, which would help to maintain accessibility to the WSR and reduce the amount of pollutants that may be transported into the WSR via floodwaters. Therefore, the Proposed Action would have long-term, minor beneficial effects related to the WSR and its associated remarkable values.

FEMA consulted with NPS and the North Carolina Division of Parks and Recreation on August 8, 2023, with a finding of No Adverse Effect on the values for which the Lumber River is designated. The proposed project is also expected to result in long-term benefits through increased recreational access and wetland restoration, particularly at the Scottish Packing Site. NPS and the North Carolina Division of Parks and Recreation concurred with FEMA's findings on November 2, 2023 (Appendix D).

4.10. Vegetation

The proposed project area occurs within two ecoregions: the Atlantic Southern Loam Plains and the Southeastern Floodplains and Low Terraces (EPA 2023d). The predominant natural vegetation communities within these ecoregions consist of mesic pine flatwoods, pine/scrub oak sandhill, oak-hickory forest, mesic mixed hardwood forest, bottomland hardwood forest, and cypress-gum swamp (Griffith et al. 2002). The project area comprises a mix of naturally vegetated (the Five Mile Branch area and portions of the Meadow Branch area), maintained/disturbed (the Scottish Packing Site and portions of the Meadow Branch area), and developed areas (the Walnut Street area). Naturally vegetated areas primarily occur in the Meadow Branch portion of the project area along the north bank of Meadow Branch and throughout the Five Mile portion of the project area. Based on surveys conducted in the Five Mile portion of the project area in 2007, these naturally vegetated areas are expected to generally consist of bottomland hardwood forest and cypress-gum swamp (Ecosystem Enhancement Program 2007). Plant species that may occur in the naturally vegetated areas within the project area include river birch (*Betula nigra*), red maple (*Acer rubrum*), bald cypress (*Taxodium distichum*), loblolly pine (*Pinus taeda*), laurel oak (*Quercus laurifolia*), water oak (*Quercus nigra*), swamp titi (*Cyrilla racemiflora*), Chinese privet (*Ligustrum sinense*), common greenbrier (*Smilax rotundifolia*), and muscadine (*Vitis rotundifolia*) (Ecosystem Enhancement Program 2007). Maintained/disturbed areas within the project area, found at the Scottish Packing Site and in parts of the Meadow Branch component, include dirt access roads, road ROWs, and vacant lots. Vegetation in these areas is expected to primarily consist of ruderal species (e.g., common dandelion [*Taraxacum officinale*], dock [*Rumex* spp.], and annual grasses) as well as scattered naturalized ornamental shrubs and trees. Developed portions of the project area, which occur predominately within the Walnut Street portion of the project area, are largely composed of existing roads that are devoid of vegetation.

Federally listed plant species that may occur within the proposed project area are discussed in Section 4.12. No state-listed species, beyond those that are also federally listed, are anticipated to

occur in the project area based on a review of available species occurrence data (North Carolina Natural Heritage Program 2023; iNaturalist 2023a).

4.10.1. INVASIVE SPECIES

EO 13112 requires federal agencies to prevent the introduction of invasive species and provide for their control to minimize the economic, ecological, and human health impacts that invasive species cause. Invasive species often prefer disturbed habitats and generally possess high dispersal abilities, enabling them to outcompete native species.

The North Carolina Native Plant Society identifies 27 invasive plants as being a severe threat to native plant communities because of their ability to rapidly spread and displace native species (North Carolina Native Plant Society 2023). During a site visit conducted in September 2023, several invasive species were identified within the project area. These species include but are not limited to Chinese privet (*Ligustrum sinense*), Chinese bush-clover (*Lespedeza cuneata*), and American wisteria (*Wisteria frutescens*) (CDM Smith 2023).

4.10.2. NO ACTION ALTERNATIVE

Under the No Action alternative, no vegetation removal or disturbance related to FEMA-funded construction would occur. Therefore, there would be no short-term impacts on vegetation. However, under the No Action alternative, the risk of flooding within the project area would not be reduced and anticipated future flood events would result in varying degrees of erosion and/or sediment deposition in vegetated areas along existing watercourses. Existing vegetation in areas subject to erosion and/or sediment deposition could be killed or damaged and disturbed areas would be replaced by rapidly colonizing species, which are often invasive. Therefore, the No Action alternative would have long-term, negligible to minor impacts on vegetation within the project area, depending on the severity and spatial extent of flood impacts.

4.10.3. PROPOSED ACTION

Construction of the Meadow Branch, Scottish Packing Site, and Five Mile Branch components would involve vegetation removal, the majority of which would occur in association with the Meadow Branch component. However, work would predominantly occur in previously disturbed areas, and temporarily disturbed areas would be replanted with regionally appropriate native species once construction is complete. The Meadow Branch component of the Proposed Action would include the restoration of approximately 2.2 acres of wetland habitat, the revegetation of the newly created stream banks and overbank zones along Meadow Branch with a mix of native plant species, and the revegetation of approximately 11.1 acres of the adjacent floodplain. The Scottish Packing Site component would include the restoration of approximately 0.55 acre of wetland habitat. These restoration activities would ultimately result in increased plant species diversity and a decrease in the overall abundance of invasive plant species within the project area. Therefore, the Proposed Action would have a minor, short-term adverse impact on vegetation before revegetated areas become established and a moderate, long-term beneficial effect on vegetation within the project

area due to a decrease in the abundance of invasive plant species and an increase in the distribution and abundance of native plant species.

4.11. Fish and Wildlife

Fish and wildlife include the species that occupy, breed, forage, rear, rest, hibernate, or migrate through the project areas. Federal regulations relevant to fish and wildlife include the Migratory Bird Treaty Act (MBTA). State regulations include the North Carolina Endangered Species Act (ESA). Federally threatened and endangered fish and wildlife species are evaluated separately in Section 4.12.

The MBTA of 1918, as amended (16 U.S.C. § 703–711), provides protection for migratory birds and their nests, eggs, and body parts from harm, sale, or other injurious actions, except under the terms of a valid permit issued pursuant to federal regulations. All native birds are protected by the MBTA, and existing habitats within the project area have the potential to support a variety of native bird species.

The North Carolina ESA prohibits the taking—including the possession, sale, bartering, trading, exchange, exportation, or offer to do so—of state-listed species (G.S. Chapter 113, Article 25). Species may also be designated as “under review” or “of concern,” which indicates that they have not been formally listed under the North Carolina ESA, but their status is currently being considered.

4.11.1. TERRESTRIAL FAUNA

The project area comprises heavily developed urbanized areas (the Walnut Street component), maintained/disturbed areas (the Scottish Packing Site and portions of the Meadow Branch area), and naturally vegetated areas (the Five Mile Branch area and portions of the Meadow Branch area). Owing to existing levels of development, the Walnut Street portion of the project area is not expected to provide wildlife habitat. The maintained/disturbed portions of the project area are expected to be of minimal value to wildlife and likely only function as marginal foraging or dispersal habitat. Naturally vegetated portions of the project area have potential to support a variety of terrestrial wildlife including mammals, birds, reptiles, and amphibians. Mammals with potential to occur within the project area include regionally common species that readily exploit maintained/disturbed habitats such as the eastern gray squirrel (*Sciurus carolinensis*), raccoon (*Procyon lotor*), and Virginia opossum (*Didelphis virginiana*) (North Carolina Wildlife Resources Commission 2023a; iNaturalist 2023b). Other mammals with potential to occur within the more forested parts of the project area (e.g., Five Mile Branch) include white-tailed deer (*Odocoileus virginianus*), gray fox (*Urocyon cinereoargenteus*), and eastern cottontail (*Sylvilagus floridanus*) (North Carolina Wildlife Resources Commission 2023a, iNaturalist 2023b). Reptiles and amphibians that may occur within the project area include regionally common species such as the green anole (*Anolis carolinensis*), eastern rat snake (*Pantherophis alleghaniensis*), five-lined skink (*Plestiodon fasciatus*), squirrel tree frog (*Dryophytes squirellus*), southern toad (*Anaxyrus terrestris*), and Atlantic Coast slimy salamander (*Plethodon chlorobryonis*) (North Carolina Wildlife Resources Commission 2023; iNaturalist 2023c, 2023d). Additionally, the timber rattlesnake (*Crotalus horridus*), a state Species of Special Concern,

was recently (2021) observed less than 5 miles west of the Five Mile Branch project area (iNaturalist 2023e). Birds protected under the MBTA that may occur within the project area include similarly common, widespread species such as the yellow-rumped warbler (*Setophaga coronata*), dark-eyed junco (*Junco hyemalis*), and common grackle (*Quiscalus quiscula*) (eBird 2023). The nesting season for these species is generally March through July. Although there are many state-listed wildlife species that are known to occur within Robeson County, there are no recorded occurrences of these species in or adjacent to the City of Lumberton (North Carolina Natural Heritage Program 2023; iNaturalist 2023a).

4.11.2. AQUATIC FAUNA

Aquatic habitats within or directly adjacent to the project area include approximately 0.9 mile of Meadow Branch within the Meadow Branch component, approximately 1.4 miles of Five Mile Branch along the Five Mile Branch component, and approximately 0.1 mile of the Lumber River along the Scottish Packing Site component, as depicted in **Figure 4.1**. All of these waters are identified as perennial streams in the U.S. Geological Survey National Hydrography Dataset (U.S. Geological Survey 2023). The section of Meadow Branch within the project area is narrow, channelized, and lacking in habitat complexity. Additionally, the channel banks generally lack sufficient riparian vegetation to provide shade. Consequently, fish species with potential to occur in Meadow Branch are expected to be those found locally that are capable of exploiting shallow-water habitats and tolerating poor water quality conditions, such as bluegill (*Lepomis macrochirus*) (Rachels and Fisk 2021). Five Mile Branch is also channelized but is generally wider and deeper than Meadow Branch and is largely shaded by a dense riparian corridor. Fish species with potential to occur in Five Mile Branch include regionally common species that may be found in relatively shallow waters such as largemouth bass (*Micropterus salmoides*), redbreast sunfish (*Lepomis auritus*), and redear sunfish (*Lepomis microlophus*) (Rachels and Fisk 2021). The Lumber River is generally characterized as a deep, free-flowing blackwater river. Fish species with potential to occur in the Lumber River near the project area include those listed above in addition to species that typically inhabit larger waterbodies such as bowfin (*Amia calva*), longnose gar (*Lepisosteus osseus*), and American eel (*Anguilla rostrata*) (Rachels and Fisk 2021). Although there are many state-listed fish species that are known to occur within Robeson County, there are no occurrences of these species recorded in or adjacent to the City of Lumberton (North Carolina Natural Heritage Program 2023; iNaturalist 2023a).

4.11.3. NO ACTION ALTERNATIVE

Under the No Action alternative, no short-term impacts on terrestrial or aquatic fauna, including migratory birds, would result from FEMA-funded construction activities. During future flood events, urban-adapted wildlife, including migratory birds, with the potential to occupy the marginal habitat present within the project area could drown, become displaced, be harmed while fleeing submerged habitats, lose food resources and shelter, and/or experience increased competition and predation due to temporarily decreased habitat availability. Furthermore, expected future floods within the project area could result in pollutants being transported from temporarily inundated developed portions of the floodplain to adjacent aquatic habitats thereby impacting extant aquatic fauna through degraded water quality. Therefore, under the No Action alternative, repetitive flooding within

the project area would have a negligible to minor, long-term impact on fish and wildlife, including migratory birds, occurring within the project area, depending on the frequency and severity of future flooding.

4.11.4. PROPOSED ACTION

Under the Proposed Action at the Meadow Branch, Scottish Packing Site, and Five Mile Branch components, there is the potential for direct harm to terrestrial and aquatic fauna to result from the use of heavy equipment during construction. Vegetation removal and construction disturbance would cause some extant urban-adapted terrestrial fauna to leave existing marginal habitat within the project area in search of refuge, which could make them susceptible to injury, predation, energetic stress, and increased competition for remaining resources. However, the number of individuals that would be displaced because of project-related disturbance is expected to be relatively small owing to the limited extent and marginal nature of existing wildlife habitat. Further, displaced individuals would be able to relocate to comparable habitats in the vicinity and would be able to return to newly created wetland and riparian habitats as well as revegetated areas once construction is complete. Stream restoration and wetland creation work along the Meadow Branch component would involve dewatering the existing channel stream flows. This could be managed by either taking protective measures within the stream channel while the water is flowing or working “in the dry” by diverting water around the area of construction, which can be achieved by either diverting smaller stream segments during various phases of construction (typically moving upstream to downstream) or by temporarily diverting the entire channel being affected by the project all at once. The dewatering strategies could exclude extant aquatic species from preferred habitat areas or result in the injury or mortality of individuals if they are unable to leave the work areas before they are dewatered. Therefore, the Proposed Action would cause a temporary loss of both terrestrial and aquatic habitats during construction. Work at the Scottish Packing Site and along Five Mile Branch would not require dewatering, so there would be no direct effects on aquatic species. Should any state-listed species occur within or near the project area that could be affected by the Proposed Action, the city would be responsible for obtaining any necessary permits and complying with state laws that protect these species. In the long-term, stream restoration, wetland creation and restoration, and floodplain reforestation activities at the Meadow Branch and Scottish Packing Site areas would increase both the quality and quantity of aquatic and terrestrial habitats within the project area. For these reasons, the Proposed Action would have a minor, short-term adverse impact and a minor long-term beneficial effect on fish and wildlife within the project area.

Birds are mobile and can readily fly away from construction noise and disturbance. However, if construction occurs during the migratory bird breeding season (i.e., March 15 through July 31), related activities could impact bird species protected by the MBTA because vegetation removal could result in nest destruction and loss of eggs and young. Given the potential for take of migratory birds to occur, the Proposed Action would be subject to the prohibitions of the MBTA, and the city would be responsible for obtaining and complying with federal and state laws for the protection of birds before initiating work. Because tree removal would be restricted between March 30 and October 1 to protect the tricolored bat, which is proposed for listing under the federal ESA, the potential to impact nesting birds would be minimized. Given that the city would comply with the MBTA, the Proposed

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Action would have a negligible, short-term impact on species protected under the MBTA if vegetation removal were to occur during the nesting season. Following construction activities, any disturbed areas would be restored with native vegetation, which would potentially increase the quality and abundance of suitable nesting habitat for migratory species in the long-term. Therefore, the Proposed Action would have minor, long-term beneficial effects on species protected under the MBTA.

4.12. Threatened and Endangered Species and Critical Habitat

The ESA of 1973 (16 U.S.C. § 1531-1544) gives USFWS and the National Marine Fisheries Service (NMFS) authority for the protection of threatened and endangered species. This protection includes a prohibition on direct take (e.g., killing, harassing) and indirect take (e.g., destruction of habitat).

The ESA defines the action area as “all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action” (50 CFR 402.02). Therefore, the action area where effects on listed species must be evaluated may be larger than the project area where project activities would occur. The action area extends beyond the project area to encompass potential effects of noise generated during construction from the use of heavy equipment, which is expected to be the farthest-reaching effect of the Proposed Action. Therefore, to account for potential impacts from construction-related noise, the action area includes a 0.2-mile buffer around the project area. This corresponds to the distance at which construction-related noise would be expected to attenuate to background levels.

Based on the USFWS Information for Planning and Consultation tool (IPaC) and the NMFS Threatened and Endangered Species List for North Carolina, both accessed April 16, 2024, there are four listed species and one proposed species with the potential to occur within the action area (USFWS 2024, NMFS 2022) (Table 4.4). All of these species are under the jurisdiction of USFWS. The likelihood of each species to occur within the action area is briefly discussed below. The action area does not overlap any designated critical habitat.

Table 4.4. Federally Listed or Proposed Species with the Potential to Occur Within or Near the Project Area

Common Name	Scientific Name	Status
Mammals		
Tricolored Bat	<i>Perimyotis subflavus</i>	Proposed Endangered
Birds		
Red-cockaded Woodpecker	<i>Picoides borealis</i>	Endangered
Wood Stork	<i>Mycteria americana</i>	Threatened
Plants		
Michaux’s Sumac	<i>Rhus michauxii</i>	Endangered

Source: USFWS 2024

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Tricolored Bat: During the spring, summer, and fall, tricolored bats typically roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees (USFWS 2021a). Additionally, tricolored bats have been observed roosting among pine needles and within human-made structures such as barns, bridges, and concrete bunkers (USFWS 2021a). During the winter, tricolored bats typically hibernate in caves or mines. However, in areas lacking caves, tricolored bats may hibernate in road culverts (USFWS 2021a). Tricolored bats feed on a variety of small invertebrates and most commonly forage over waterbodies and forest edges. The action area is within the geographical range of the tricolored bat. Based on available information, no known tricolored bat winter hibernacula exist within Robeson County, and suitable hibernation habitat is not present within the action area. However, the species was observed approximately 15 miles south of the action area in August 2017 (LeGrand et al. 2023). During a site visit conducted in September 2023 (CDM Smith 2023), suitable summer roosting habitat was observed throughout the project area. This habitat included deciduous and coniferous trees and human-made structures. Suitable foraging habitat occurs within the action area over water bodies and along the forested edges. The largest patches of suitable roosting and foraging habitat within the action area occurs along the Lumber River, Five Mile Branch, and Meadow Branch. Therefore, tricolored bats have the potential to roost and forage within the action area during the spring, summer, and/or fall.

Red-cockaded Woodpecker: Red-cockaded woodpeckers require open, mature pine woodlands and savannas with little or no hardwood midstory or overstory for nesting, roosting, and foraging. The trees used by red-cockaded woodpeckers for nesting and roosting are typically large, old pines in open stands with minimal hardwood encroachment. Although the action area is within the geographical range of the red-cockaded woodpecker, the action area lacks suitable habitat as all forested areas within the action area are densely stocked and dominated by hardwoods. Therefore, the red-cockaded woodpecker is not expected to occur within the action area and is not discussed further in this EA.

Wood Stork: Wood storks are a wetland-dependent species and use a wide variety of freshwater and estuarine wetlands for nesting, feeding, and roosting throughout their geographical range. In North Carolina, wood storks generally nest in cypress and black gum (*Nyssa sylvatica*) trees, over water, in various wetland habitats (USFWS 2021b). Wood storks are colonial nesting birds and typically nest with conspecifics and other wading bird species within a landscape containing sufficient foraging habitats. Wood storks primarily forage in inundated wetlands with a long hydroperiod that support sufficient prey (i.e., fish, crustaceans, amphibians, insects, snails, reptiles, birds, and mammals) (USFWS 2021b). There is an active wood stork colony in Robeson County (Matthews 2023), and marginally suitable nesting and foraging habitat is present within the bottomland hardwood forests and cypress-gum swamps along Five Mile Branch and at the Crossing of the Lumber River. Therefore, the species has some, albeit low, potential to use these areas for nesting and foraging.

Michaux's Sumac: Michaux's sumac occurs on basic soils in sandy or rocky open woodlands. This species is strongly associated with areas where open conditions have been created by some form of disturbance such as fire, wind throws, or clearing along roads, railroads, and utility ROWs. In North Carolina, several populations occur on highway ROWs, roadsides, or on the edges of artificially maintained clearings. According to the North Carolina Natural Heritage Program, this species is

currently extant in Robeson County (North Carolina Natural Heritage Program 2023). Additionally, multiple recent iNaturalist observations have been documented in the region (iNaturalist 2023e). Orthophotography and ground-level imagery indicate that suitable habitat for Michaux's sumac may occur within road ROWs and similar artificially created clearings throughout the project area. During a biological site survey conducted in September 2023 (CDM Smith 2023), Michaux's sumac was not observed within the action area. Potential suitable habitat was identified during the site visit; however, these habitats were dominated by invasive species that would likely outcompete and hinder the establishment Michaux's sumac. Therefore, because the species was not observed during the biological site survey and potential suitable habitat within the project area is dominated by invasive species, Michaux's sumac is not anticipated to occur within the action area.

4.12.1. NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no direct disturbance from FEMA-funded construction activities; therefore, there would be no short-term impacts on federally listed or proposed species. Under the No Action alternative, anticipated future flooding within the project area could result in the transportation of pollutants from temporarily inundated developed areas to adjacent wetland and shallow-water areas that may provide foraging habitat for the wood stork, which could result in direct exposure of wood storks to contaminated water or soil or indirect exposure through food web interactions. Therefore, the No Action alternative could have a negligible long-term impact on potential wood stork occurring in the vicinity from future floods and no effect on the tricolored bat.

4.12.2. PROPOSED ACTION

As discussed above, tricolored bats have the potential to roost within the action area during the non-hibernating seasons (i.e., spring, summer, and fall). Tree removal may be required as part of the Meadow Branch component; although, the number of trees that would be removed has yet to be determined. Potential tree removal could result in an incremental decrease in the availability of tricolored bat foraging and roosting habitat within the project area, and also could result in direct injury or mortality of tricolored bats if the trees are occupied at the time of their removal. However, it is anticipated that relatively few trees would be removed, and that tree removal would be limited to areas that are in close proximity to residential development and are unlikely to support roosting because of existing levels of human disturbance. Additionally, to minimize the potential for tricolored bats to be harmed or killed, tree and vegetation removal activities would be limited to the nonactive season (October 1 through March 30). Furthermore, while the creation of a walking trail on the existing maintenance access easement along Five Mile Branch would increase recreational use of an area with the potential to support tricolored bat roosting, the magnitude of resultant disturbance would be low and, as such, is not expected to appreciably diminish the suitability of tricolored bat roosting habitat in the vicinity. Therefore, the Proposed Action would have a negligible short-term impact and a negligible long-term impact on the species, and the project is not likely to jeopardize the continued existence of the tricolor bat.

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As discussed above, wood storks have low potential to occur in portions of the project area where suitable nesting and foraging habitat is present. Construction work within and along wetlands and shallow-water areas could exclude wood storks from nesting and foraging habitat, which would increase energetic stress associated with seeking alternative areas for nesting and foraging. However, given the abundance of comparable suitable habitats in relatively close proximity to the action area, the energetic stress associated with traveling to foraging habitat outside the action area would be minimal. Additionally, construction activities would be conducted in accordance with all measures identified during informal consultation with USFWS to minimize potential impacts on the wood stork. Furthermore, in the long term, stream restoration and wetland creation activities included in the Proposed Action would increase both the quality and quantity of wood stork nesting and foraging habitat within the action area. For these reasons, the Proposed Action would have a negligible short-term impact and a minor long-term beneficial effect on the wood stork.

As discussed previously, Michaux's sumac is not expected to occur within the action area. Therefore, there would be no short-term impacts on Michaux's sumac from implementation of the Proposed Action. In the long term, because restoration activities would ultimately result in increased plant species diversity and a decrease in the overall abundance of invasive plant species within the project area, the Proposed Action could have a minor beneficial effect on Michaux's sumac where invasive species are removed, and potentially suitable habitats become more conducive to the establishment of Michaux's sumac.

Consultation was initiated with USFWS on November 30, 2023, with FEMA's determination that the Proposed Action is "not likely to jeopardize the continued existence" of the tricolored bat; the Proposed Action "may affect but is not likely to adversely affect" the wood stork. On December 11, 2023, USFWS concurred with FEMA's determination (Appendix D).

4.13. Cultural Resources

As a federal agency, FEMA must consider the potential effects of its action upon cultural resources prior to engaging in any project. Cultural resources are defined as prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. There are several laws a federal agency must consider when working with and identifying cultural resources. For the Lumberton Loop Project, FEMA will meet this obligation through its Section 106 of the National Historic Preservation Act of 1966 (NHPA) consultation. Section 106 of the NHPA, as amended, 54 U.S.C. §§ 3001-1 - 307108, and its implementing regulation, 36 CFR Part 800, outlines the required process for federal agencies to consider a project's effects on historic properties. The NHPA defines a historic property as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register." Eligibility criteria for listing a property in the National Register of Historic Places (NRHP) are found in 36 CFR Part 60. While the definition of a cultural resource under NEPA can be broader, FEMA regularly uses Section 106 to meet its obligations to consider effects to cultural resources. For this project, FEMA determined that it was appropriate to use its NHPA review to fulfill its NEPA obligations.

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Cultural resources determined to be potentially significant under the NHPA are subject to a higher level of review and federal agencies must consider the potential effects of their projects on those resources and consider steps to avoid, minimize, or mitigate those effects. To be considered significant, a cultural resource must meet one or more of the criteria established by NPS that would make that resource eligible for inclusion in the NRHP. The term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Properties and sites that have not been evaluated at the time of the undertaking may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties. The North Carolina Department of Natural and Cultural Resources (NC DNCR), which is the Historic Preservation Office (SHPO) and the North Carolina Office of State Archaeology (NC-OSA) maintain databases of North Carolina’s historic properties including NC DNCR’s North Carolina Department of Natural and Cultural Resources via Geographic Information System (GIS) and the NC-OSA’s North Carolina Archaeological Site Files. FEMA coordinates with NC OSA, utilizes NC-DNCR’s GIS, along with the NRHP National Resources Information Service (NRIS), as part of its efforts to identify significant cultural resources that may be impacted by a project.

Pursuant to 36 CFR 800.4(a)(1), an Area of Potential Effects (APE) is defined as “the geographic area(s) within which the undertaking may directly or indirectly affect cultural resources.” FEMA evaluates impacts on cultural resources prior to the undertaking for both standing structures (aboveground resources) and archaeology (belowground resources) within the APE. The APE for this undertaking consists of all areas of ground disturbance, including staging and access areas not on existing hardened surfaces.

The APE for this undertaking also includes areas where there would be visual impacts on surrounding historic properties. Areas of ground disturbance and areas of visual impacts are described below.

- 1) **Meadow Branch:** Channel and floodplain restoration, and wetland creation would impact approximately 29.1 acres with a maximum depth of disturbance of 8 feet.
- 2) **Walnut Street:** The APE for the re-striping of an existing road for a bike lane is limited to the existing Walnut Street, NC 72, and SR 2289 pavement.
- 3) **Scottish Packing Site:** The APE consists of the buildings and structures of the Scottish Packing Site as well as all areas where ground-disturbing activities associated with wetland restoration, boardwalk construction and sidewalk improvements. This area encompasses approximately 1.3 acres with a maximum depth of disturbance of 1 foot.
- 4) **Five Mile Branch:** The APE encompasses the trailhead area on North Roberts Avenue, a 50-foot-wide trail corridor along Five Mile Branch to a depth of disturbance of 1 foot, and the parcels on the north and south sides of West Carthage Road adjacent to, and in the viewshed of, the proposed sidewalk on the south side of West Carthage Road serving the

south trailhead. This area encompasses approximately 2.9 acres with a maximum depth of disturbance of 4 feet.

In order to fulfill its Section 106 responsibilities, FEMA has initiated consultation on this project in accordance with the North Carolina Disaster Specific Historic Preservation Programmatic Agreement (2014 Disaster Specific Agreement) executed on September 10, 2014, and subsequently amended, among the North Carolina Historic Preservation Officer (SHPO), NCDPS, and participating Tribal Nations. In addition to identifying historic properties that may exist in the proposed project's APE, federal agencies must also determine, in consultation with the appropriate State Historic Preservation Officer (SHPO) and interested Tribal Historic Preservation Officers (THPO), what effect, if any, the action will have on historic properties.

4.13.1. HISTORIC AND ARCHAEOLOGICAL RESOURCES

FEMA evaluated potential resources in the Area of Potential Effects (APE) utilizing the National Park Service (NPS) National Register of Historic Places (NRHP) GIS resource, NC DNCR's North Carolina Department of Natural and Cultural Resources via Geographic Information System (GIS) and the NC-OSA's North Carolina Archaeological Site Files, and previous cultural resource investigations. One hundred and eighty-four (184) previously recorded historic properties within a 1-mile radius of the project areas. These properties include individual resources as well as two historic districts, the NRHP-listed Lumberton Commercial District, listed in the NRHP in 1989, and the Tanglewood Historic District, determined eligible for the NRHP in 2020.

As part of FEMA's consultation process, a Phase I Archaeological Survey of the APE was conducted by CDM Smith's subcontractor, Richard Grubb & Associates, in November of 2023. The survey was conducted followed the North Carolina Office of State Archaeology's *Archaeological Investigation Standards and Guidelines* (2017). The field survey concluded that the APE has been heavily disturbed by residential, commercial, and infrastructure construction. Based on the results of the above survey, no archaeological sites were identified.

4.13.2. NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no FEMA-funded flood mitigation construction in the project areas. Therefore, there would be no short-term impacts on standing structures that are listed in, or eligible for listing in, the NRHP. Because the No Action alternative would not mitigate the risk of flooding in the city, anticipated future flooding within the project area could result in long-term impacts on cultural resources through damage or destruction. There would be no impact on archaeological resources because there is no potential for them in the project APE.

4.13.3. PROPOSED ACTION

Under the proposed action, there would be no historic properties affected. Under the Proposed Action, there would be no impacts on standing structures or belowground archaeological resources in any of the project areas. There would be no direct effects from construction and no viewshed impacts in the Meadow Branch, Scottish Packing Site, and Five Mile Branch APEs because no NRHP-

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listed or NRHP-eligible standing structures or viewsheds were identified in these areas. NRHP-listed, NRHP-eligible, and unevaluated standing structures and historic districts (i.e., the Lumberton Commercial District and the Tanglewood Historic District) were identified in the Walnut Street area viewshed. However, because this component is limited to re striping the existing pavement, there would be no visual impact on the historic properties in the Walnut Street viewshed. On February 27, 2024, FEMA consulted with the North Carolina State Historic Preservation Officer (SHPO) and federally recognized Tribes with an ancestral interest in the project area: Catawba Indian Nation, Seminole Nation of Oklahoma, Shawnee Tribe with a finding No Adverse Effect to Historic Properties for this project in accordance with 36 CFR 800.5(b) In addition, FEMA notified the Lumbee Tribe. Responses were received from the Catawba Indian Nation on April 10, 2024, and the North Carolina SHPO office on April 15, 2024. All consulting parties concurred with FEMA's determination of No Historic Properties Affected.

To ensure that FEMA-funded activities will not adversely affect archaeological resources, FEMA is placing the following condition(s) on the project for the treatment of fortuitous finds or unexpected discoveries during ground disturbing activities within the project area:

- If human remains or intact archaeological features or deposits (e.g. arrowheads, pottery, glass, metal, etc.) are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The subrecipient will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The subrecipient's contractor will provide immediate notice of such discoveries to the applicant. The subrecipient shall contact the *North Carolina State Archaeologist* and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately and the proper authorities notified in accordance with North Carolina Statutes, Section 70-29.
- Any changes to the approved scope of work will require submission to, and evaluation and approval by, the State and FEMA, prior to initiation of any work, for compliance with Section 106.

(Please see Appendix D for copies of consultation sent to the SHPO).

4.14. Environmental Justice

EJ is defined by EO 12898 and CEQ guidance (1997). Under EO 12898, demographic information is used to determine whether minority populations or low-income populations are present within the areas potentially affected by the range of project alternatives. EPA defines minority populations (people of color) as individuals who list their racial status as a race other than white-alone and/or list their ethnicity as Hispanic or Latino (all people other than non-Hispanic white-alone individuals). Low-income populations are measured as households with an income that is less than or equal to twice the federal poverty level. If EJ populations are found to be present, a determination must be made

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whether implementation of the project alternatives may cause disproportionately high and adverse human health or environmental impacts on those populations.

In January 2021, President Biden issued EO 13985 on Diversity, Equity, Inclusion, and Accessibility in the Federal Workforce, and EO 14008, Tackling the Climate Crisis at Home and Abroad, to further address the need to achieve environmental justice and equity across the federal government. These new executive orders direct federal agencies to renew their energy, effort, resources, and attention to implement environmental justice and underscore the administration’s commitment to environmental justice.

The study areas included in this analysis are where project-related impacts would occur, including noise, transportation, and water and air quality impacts, potentially causing disproportionately high and adverse impacts on neighboring minority and low-income populations. Therefore, the study areas for the EJ analysis include the discrete project component areas and the surrounding 0.25 mile around each of those project areas. For the purposes of this analysis, environmental justice populations are identified using demographic indicators and EJ Indexes. The EJ Indexes combine environmental indicators with socioeconomic indicators to identify areas where there may be a disproportionate exposure to environmental pollution.

In accordance with FEMA’s *EO 12898 Environmental Justice: Interim Guidance for FEMA EHP Reviewers*, EJ populations are defined as meeting either or both of the following criteria:

- The population within the project study area contains a minority or low-income population that is equal to or exceeds the 50th percentile compared to the average of the state where the affected environment is located.
- One or more EJ Index (e.g., air quality pollutants, traffic proximity and volume, proximity to hazardous waste sites) equals or exceeds the 80th percentile compared to the average of the state.

Table 4.5 and **Table 4.6** depict the demographic indicators and EJ Indexes for the study areas and the state and identify if EJ populations are present based on the criteria described above.

Demographic indicators and Indexes for Robeson County are also presented to provide context regarding how the demographic indicators within each study area compare to the surrounding county. Appendix C provides the complete EJ Screen reports for each components’ study area.

Table 4.5. Environmental Justice Population Demographic Indicators

Demographic Indicators	Meadow Branch	Walnut Street	Scottish Packing Site	Five Mile Branch	Robeson County
People of Color/Minority Population					
Percent	20	56	91	70	76
Percentile in State	35	73	95	83	87
Low-Income Population					
Percent	18	48	64	30	53

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Demographic Indicators	Meadow Branch	Walnut Street	Scottish Packing Site	Five Mile Branch	Robeson County
Percentile in State	26	74	90	46	80

Source: EPA 2023e

Note: Bolded values indicate that the criteria for identifying the presence of an EJ population have been met.

Table 4.6. Environmental Justice Indexes

EJ Index	Meadow Branch ¹	Walnut Street ¹	Scottish Packing Site ¹	Five Mile Branch ¹	Robeson County ¹
Particulate Matter	23	47	65	49	60
Ozone	50	75	87	77	85
Diesel Particulate Matter	66	86	90	67	70
Air Toxics Cancer Risk	48	77	92	76	86
Air Toxics Respiratory Hazard Index	51	85	57	45	60
Toxic Releases to Air	22	41	31	49	54
Traffic Proximity	74	86	90	76	59
Lead Paint	24	91	90	62	82
Superfund Proximity	23	49	61	54	65
Risk Management Plan Facility Proximity	71	91	98	82	84
Hazardous Waste Proximity	13	27	32	38	54
Underground Storage Tanks	68	88	88	79	72
Wastewater Discharge	20	56	68	30	63

Source: EPA 2023e

Notes: **Bolded** values indicate that the criteria for identifying the presence of an EJ population have been met.

¹ Values in columns are percentiles of the study areas compared to the State of North Carolina.

As shown in **Table 4.5** and **Table 4.6**, the Meadow Branch study area is not expected to contain EJ populations. This finding was supported by a review of the NCDEQ's Community Mapping System (NCDEQ 2023).

The populations of the affected environments associated with the Walnut Street, Scottish Packing Site, and Five Mile Branch components all meet or exceed the demographic criteria for either minority or low-income populations or both; thus, EJ populations are expected to be present within all three of these areas (**Table 4.5**). Reviews of aerial imagery, home prices, and the NCDEQ's Community Mapping System support this conclusion (Zillow 2023; NCDEQ 2023).

As presented in **Table 4.6**, multiple EJ Indexes within the Walnut Street, Scottish Packing Site, and Five Mile Branch study areas meet or exceed the 80th percentile compared to the state. This indicates that one or more of the populations of those study areas contains EJ populations that have a greater exposure to air pollutants including ozone, diesel PM, and other pollutants that pose

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cancer risks than most other non-EJ populations within North Carolina. Additionally, the EJ populations within one or more study areas are in closer proximity to traffic and sources of hazardous materials from sources such as risk management plan facilities and underground storage tanks than most other non-EJ populations in North Carolina. A high risk-index related to lead paint is an indicator of older housing stock that may still have lead paint present and does not account for upgrades or remodeling that may have occurred.

In addition to the localized analyses of the study areas presented above, a county-level analysis was conducted. The North Carolina Department of Commerce annually ranks the state's 100 counties based on economic well-being and assigns each a tier designation. The 40 most distressed counties are designated as Tier 1, the next 40 as Tier 2, and the least distressed as Tier 3. Robeson County is designated as a Tier 1 County, indicating that it is one of the 40 most economically distressed counties in North Carolina (Economic Development Partnership of North Carolina n.d.; Robeson County Economic Development 2019).

4.14.1. NO ACTION ALTERNATIVE

Under the No Action alternative, no FEMA-funded construction of flood mitigation measures would occur; thus, there would be no impacts related to construction, such as increased noise or temporary reductions in air quality. Therefore, the No Action alternative would have no short-term impacts on EJ populations. However, the populations present throughout the study areas would continue to be at risk from floods. Periodic flooding could result in the disruption of utilities, the damage or loss of homes and properties, or the need for evacuation, all of which would place disproportionately high burdens on EJ populations that are unlikely to have the same capacity to protect themselves or recover from flood events as compared to other populations. Therefore, the No Action alternative could result in minor to moderate adverse effects on EJ populations in the long-term, depending on the frequency and intensity of flooding; however, these effects are not expected to be disproportionately high and adverse, since all populations within the community would be affected by periodic flooding.

4.14.2. PROPOSED ACTION

EJ populations are not considered to be present in the Meadow Branch study area; thus, construction of the Meadow Branch component would not result in any short-term impacts on EJ populations. However, EJ populations are present in the Walnut Street, Scottish Packing Site, and Five Mile Branch study areas. Construction of these three components would result in temporary impacts on residents in close proximity to the project work, including EJ populations. Impacts associated with the project work in the Walnut Street study area would mostly be related to traffic and transportation, as no ground-disturbing activities or loud equipment would be necessary to implement the Proposed Action in this region. Any traffic impacts or possible road closures associated in the Walnut Street study area would be short-term and temporary, and a Transportation Management Plan would be developed and implemented to reduce impacts. Impacts associated with the construction of the Scottish Packing Site and Five Mile Branch components would likely result from increased noise levels and construction-related emissions. However, these impacts

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would be temporary, and implementation the BMPs described in Section 4.4.2 and Section 4.16.2 would minimize air quality and noise impacts during construction. In addition, there are very few residences (two to three) within 0.2 mile of the proposed construction work along Five Mile Branch. Work at the Scottish Packing Site would involve minor mechanized equipment for boardwalk construction and the work would be separated from nearby residences by the levee, which would provide some attenuation of sound and activity. Therefore, the Proposed Action would have negligible, short-term impacts on environmental justice populations, and these impacts would not be disproportionately high and adverse for EJ populations.

Implementation of the Proposed Action would not result in any residential or business displacements (the acquisition of residential properties in the Meadow Branch area are not in an area with EJ populations and would be funded separately). The Proposed Action also would not create long-term impacts related to noise or air quality. The new bike lane that would be incorporated on Walnut Street and the creation of the multimodal trail along Five Mile Branch would create additional recreational and multimodal transportation opportunities, potentially reducing vehicular traffic surrounding the study areas in the long term and increasing transportation opportunities for those who do not own cars. Additionally, implementation of the Proposed Action would reduce the risk of flooding in the City of Lumberton, benefiting the entire city population, including EJ populations. Thus, the Proposed Action would have moderate long-term beneficial effects on EJ populations.

4.15. Hazardous Materials

Hazardous materials are those substances defined by the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. §§ 9601 *et seq.*), as amended by the Superfund Amendments and Reauthorization Act, and the Toxic Substances Control Act (15 U.S.C. §§ 2601 *et seq.*). The Solid Waste Disposal Act of 1965, as amended by the Resource Conservation and Recovery Act (42 U.S.C. §§ 6901 *et seq.*), which was further amended by the Hazardous and Solid Waste amendments, defines hazardous wastes. In general, both hazardous materials and waste include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or to the environment when released or otherwise improperly managed.

Hazardous materials may be encountered during the course of a project, or they may be generated by the project activities. To determine whether any hazardous waste facilities exist in the vicinity or upgradient of the proposed project area, or whether there is a known and documented environmental issue or concern that could affect the proposed project area, a search for Superfund sites, toxic release inventory sites, industrial water dischargers, hazardous facilities or sites, and multiactivity sites was conducted using EPA's NEPA Assist website (EPA 2023f). According to the database, there are hazardous waste generators (any facility that generates, transports, treats, stores, and/or disposes of hazardous waste), facilities that release toxins, water dischargers (any facility that discharges pollutants into waters of the United States and has an NPDES permit), and brownfields (properties that have been potentially exposed to hazardous materials) present within a 0.5-mile radius of the project area (EPA 2023f). There are no known contaminated soils or hazardous materials where ground disturbance and excavation are proposed. According to the

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Phase I Environmental Site Assessment that was performed at the Scottish Packing Site in June 2021, no hazardous substances or petroleum product storage or disposal areas, hazardous and/or unidentified substance containers, or aboveground/underground storage tanks were noted in the area.

4.15.1. NO ACTION ALTERNATIVE

No construction would occur under the No Action alternative; therefore, there would be no impacts related to hazardous materials either from the use of construction equipment or from the exposure of contaminated materials through ground-disturbing activities. Thus, the No Action alternative would have no short-term impacts related to hazardous materials. However, this alternative would not reduce the risk of flooding within the city. Periodic flooding could inundate adjacent regulated sites near the project area, potentially releasing and transporting hazardous materials into the project areas. Additionally, floodwaters flowing over roadways and pavements may transport oils and other hazardous materials into waterways as they recede. Therefore, there could be long-term, minor impacts from the release of hazardous materials caused by periodic flooding.

4.15.2. PROPOSED ACTION

The Proposed Action would involve the use of mechanical equipment, such as bulldozers, excavators, dump trucks, scrapers, motor graders, and skidsteers, which could release fuels, oils, and lubricants through inadvertent leaks and spills. Construction activities would be temporary, and the use of well-maintained equipment in good condition and adherence to BMPs and conditions specified in the NPDES permit would reduce the threat of leaks and spills. Any spills during construction would be contained and cleaned up. Construction is not expected to impact the hazardous waste generators, toxic release sites, water dischargers, or brownfields in the project vicinity. Therefore, there would be a short-term, negligible impact from the use of vehicles and equipment or from the potential for inadvertent exposure to previously unknown hazardous materials.

In the long-term, implementation of the Proposed Action would reduce the risk of flooding throughout the City of Lumberton, reducing the potential for flood-related spills and release of hazardous materials from the sites in the city that store and use hazardous materials or from other structures. Thus, the Proposed Action would result in long-term, negligible beneficial effects related to hazardous materials.

4.16. Noise

The Noise Control Act of 1972 (42 U.S.C. §§ 4901, *et seq.*) required the EPA to create a set of noise criteria. In response, EPA published Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety in 1974, which explains the impact of noise on humans. The EPA report found that keeping the maximum 24-hour day-night average sound level below 70 A-weighted decibels (dBA) would protect most people from hearing loss. EPA recommends an outdoor average sound level of 55 dBA to prevent interference with daily human activities such as sleeping, working, and recreation. The Federal Highway Administration has

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identified noise levels and ranges for construction equipment that typically would not need noise attenuation measures (Federal Highway Administration 2006), and the Occupational Safety and Health Administration (OSHA) has adopted a standard of 140 dBA for maximum impulse noise exposure for workers in noisy environments.

The city regulates noise levels through the City of Lumberton Code of Ordinances, Chapter 14.1 – *Noise*, Section 14.1-3 *Sound emission standards and limitations* and Section 14.1-4 *Exception to limitation standards*. Section 14.1-4 states that the maximum noise limitation standards as defined in Section 14.1-3 do not apply to equipment being used for construction, provided that all equipment is operated with all standard equipment manufacturers' mufflers and noise reducing equipment while in use and is in proper operating conditions (City of Lumberton 2022). Additionally, noises emitted from any source or sources on public ROWs are excused from the noise limitation standards described in Section 14.1-3 (City of Lumberton 2022). The city identifies daytime hours to be between 7:00 a.m. and 11:00 p.m., local time.

Assessment of noise impacts includes the proximity of the Proposed Action to sensitive receptors, which are defined as an area of frequent human use that would benefit from a lowered noise level. Typical sensitive receptors include residences, schools, churches, hospitals, nursing homes, and libraries. The land uses surrounding the project areas include residential, commercial, undeveloped and/or agriculture, and public/industrial uses (City of Lumberton 2015). Typical noises associated with these land uses include vehicular sounds (especially at the Walnut Street project area) and recreational and natural sounds (especially at the Meadow Branch, Scottish Packing Site, and Five Mile Branch project areas). Sensitive receptors within 0.25 mile of the project area include multiple residences, a library, and park-like natural areas. A few residences are located within 50 feet of the Meadow Branch and Walnut Street project areas, and the Robeson County Public Library is situated directly adjacent to the Walnut Street project area. Both the Scottish Packing Site and Five Mile Branch project areas are in natural, park-like areas in which lower noise levels likely contribute to the enjoyment and recreational use of the areas.

4.16.1. NO ACTION ALTERNATIVE

Under the No Action alternative, no construction for flood reduction measures would occur that could result in an increase of noise levels. Thus, the No Action alternative would have no short-term impacts related to noise. In the long term, however, the risk of flooding would not be reduced. Construction activities to repair flood damage would temporarily increase noise levels in the immediate vicinity of the work. Any construction activities that may occur would be required to comply with local construction noise ordinances. Therefore, there could be long-term minor, recurring noise impacts as periodic flooding would generate associated construction noise from repairs.

4.16.2. PROPOSED ACTION ALTERNATIVE

Construction of the Proposed Action, including the road demolition and grading activities at the Meadow Branch and Five Mile Branch project areas and the boardwalk construction at the Scottish Packing Site project area, would cause temporary increases in noise levels in the project vicinity.

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Residences and other sensitive receptors would likely experience a temporary increase in noise levels as a result of construction. The Meadow Branch area would experience the biggest noise effects because of the extent of the excavation and grading activities and the proximity of some residences to the proposed work. Paint striping work along the Walnut Street component would also be in proximity to multiple residences. The work in front of each residence would be of a relatively short duration and noise levels for painting and stripe removal equipment, if needed, would be equivalent to other typical construction equipment. Work at the Scottish Packing Site would include excavation of boardwalk support posts, but the work would be buffered from nearby residences by the levee, which would help to attenuate the sound levels. There are no sensitive receptors close enough to the proposed work on the Five Mile Branch to experience noise effects. Noise impacts would be minimized through compliance with local noise ordinances especially as it pertains to the use of only well-maintained vehicles and equipment with muffled exhaust and sound-control devices no less effective than those provided by the manufacturer. With the implementation of these BMPs, and compliance with the city’s noise ordinance, the Proposed Action would have short-term, minor noise impacts in the project areas. The Proposed Action would not include the creation of a new permanent source of noise; therefore, the Proposed Action would have no long-term noise impacts.

4.17. Transportation

Regional access to the area is provided by I-95. The segment of I-95 between Exits 19 and 20, between the Five Mile Branch and Meadow Branch components, has an average annual daily traffic count of 55,000 vehicles per day (NCDOT 2023). Other main roadways in the project vicinity include NC 211 (North Roberts Avenue) and NC 41 (East Elizabethtown Road). **Table 4.7** shows all roadways, large and small, that could be used for access to the project sites. The *Component Access* column indicates which project component or components would be accessed using the roadway indicated in the row. In the *Access* column, those roads labeled *Direct* indicate a road that is directly adjacent to a project site; roads labeled *Indirect*, indicate a road that is not directly adjacent to any of the project sites but would be a secondary route feeding into the direct roads to a project component.

Table 4.7. All Roadways Providing Direct or Indirect Access to the Project Area

Road	Component Access	Access Type
I-95	I-95 provides regional access to all of the project sites	Indirect
NC 211 (North Roberts Avenue)	Meadow Branch Component North end of the Five Mile Branch Component. North end of the Walnut Street Component	Direct
Fuller Avenue	Meadow Branch Component	Direct
Highland Avenue	Meadow Branch Component	Direct
Elmhurst Drive	Meadow Branch Component	Direct
Best Drive	Meadow Branch Component	Direct
Kahn Drive	Meadow Branch Component	Direct

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Road	Component Access	Access Type
Walnut Street	Meadow Branch Component Walnut Street Component	Direct
NC-72 (East 2nd Street)	Direct Access to the Walnut Street Component Indirect Access to the Scottish Packing Site Component	Direct/ Indirect
South Chestnut Street	Walnut Street Component	Direct
South Elm Street	Walnut Street Component	Direct
NC 41 (East Elizabethtown Road)	Low Capacity Regional Bisects the Walnut Street Component	Indirect
North Pine Street	Runs parallel approximately 500 feet east of the North Walnut Street Component	Indirect
Kinlaw Street	Scottish Packing Site Component	Direct
Campbell Street	Scottish Packing Site Component	Direct
NC 41 (Martin Luther King Junior Drive)	Scottish Packing Site Component	Indirect
West Carthage Road	South end of the Five Mile Branch Component	Direct

Source: Google Maps

The South East Area Transit System is Robeson County’s Community Transportation Program that provides human service agency and rural general public transportation for Robeson County residents. This is a reservation bus service to assist rural residents in reaching social services, many of which are in Lumberton. The 2016 NCDOT Lumberton Comprehensive Transportation Plan includes several recommended local bus routes (NCDOT 2016). However, as of 2023, there is no evidence of general service local bus or rail public transportation in Lumberton, North Carolina.

Intercity bus services are provided by various private companies. The Lumberton bus station of the most prominent provider, Greyhound DBA Southeastern Stages is at 301 East 2nd Street, Lumberton, at the intersection of Walnut Street and 2nd Street, just a few feet from the Walnut Street component project area and just outside the floodway boundaries (Southeastern Stages 2023). All buses enter and exit the city through major arterial roads and highways, some of which are in the floodplain.

Passenger rail services do not serve Lumberton directly. The closest station is in Dillon, South Carolina, 25 miles southeast of Lumberton, followed by Fayetteville, North Carolina, 55 miles to the north of Lumberton (Amtrak 2023).

The Lumberton Municipal Airport, which is open to the public and serves as a refueling and rest stop, is approximately 2.5 miles southwest of the project area.

Freight railroad services on tracks through Lumberton are provided by CSX Transportation as part of the North Carolina Railroad Company (North Carolina Railroad Company 2023). These tracks run

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northwest to/from southeast, branching apart 0.4 miles from the southwest tip of the project area at the intersection of Noir Street and Walnut Street. From there, one set of tracks heads northward, running parallel to Walnut Street approximately 0.25 miles east of the Walnut Street and Meadow Branch components. The other set of track heads in a northwest direction from the split, approximately parallel to the NC 72 E, crossing the Walnut Street component at Walnut Street and Town Common Street. Parts of both sets of tracks are in the floodplain Zones AE and AH.

4.17.1. NO ACTION ALTERNATIVE

Under the No Action alternative, there would be no construction activity for flood reduction measures that could cause delays to traffic or rerouting of bus services because of full or partial street closures. Thus, the No Action alternative would have no short-term impacts related to transportation. However, flooding from storm events would continue to inundate parking lots and roads, particularly the commercial business and residential neighborhoods located within the four project components. Flooded roadways would require detours and roadway closures until floodwaters recede, potentially increasing traffic along detour routes, causing delays for bus services and on ground movement of goods in and out of the city, as well as freight rail rerouting and/or delays. Additionally, construction activities to repair flood-related damage may result in detours or minor road closures with associated traffic impacts. As mentioned in Section 2, climate change is expected to increase the frequency and intensity of precipitation events in North Carolina, which would exacerbate flooding and associated impacts. These disruptions could result in residents and emergency responders being unable to access homes and facilities. Therefore, the No Action alternative would result in moderate long-term recurring, intermittent impacts on transportation.

4.17.2. PROPOSED ACTION

Under the Proposed Action, the majority of the transportation-related impacts would be at the Meadow Branch component. Construction activities and staging of equipment along the Meadow Branch tributary would primarily occur on the Fuller Avenue, Best Drive, and Highland Avenue asphalt surfaces. The work areas within the Jerry Giles Park would be accessed via the Walnut Street ROW. Work areas between the Walnut Street and Highland Avenue crossings of Meadow Branch would be accessed via the Walnut Street, Elmhurst Drive, and Highland Avenue ROWs using city-owned properties and/or easements. Project work areas between the Highland Avenue crossing of Meadow Branch and Fuller Avenue would be accessed from the Highland Avenue, Best Drive, and Fuller Avenue ROWs via city-owned properties and/or easements. Work between the end of Fuller Avenue and the Kahn Drive crossing of Meadow Branch would be accessed from the Fuller Avenue, and Kahn Drive ROWs. Construction access and truck trips could potentially increase traffic along North Roberts Avenue, North Walnut Street, and Highland Avenue; however, work within the project area would not result in detours. Project work on Roberts Drive would be accessed via the Roberts Drive ROW.

For the Walnut Street component, the work areas would be accessed from the public ROW directly on Walnut Street. There would likely be construction-related impacts on Walnut Street such as possible partial road closures to accommodate the bike lane striping. While all construction would be

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temporary, impacts on Walnut Street would likely be less than a few hours for any one segment and no staging would be necessary.

For the Scottish Packing Site component, access to the site would be via the existing point of entry to the site at the intersection of Campbell Street and Kinlaw Street ROWs and staging of equipment would be in the grassy area north and west of the Scottish Packing Site. There would be no potential for roadway closures.

For the Five Mile Branch component, construction access would be from Carthage Road and North Roberts Avenue ROWs where they intersect Five Mile Branch and along the existing maintenance route along the creek. On the north end, staging would be on the grassy ROW just northwest of the proposed concrete sidewalk leading to the northern entrance of the Five Mile Branch trailhead. On the south end, staging would be on the gravel parking lot to the east of the proposed concrete sidewalk leading to the southern entrance of the Five Mile Branch trailhead. Roadway closures on either end of the Five Mile Branch component would be unlikely. For all components, construction activities would be temporary, and the contractor would use traffic control devices, such as flag people and signs, to mitigate and guide traffic as needed during construction. Placement and maintenance of traffic control devices would be described in a Transportation Management Plan as defined by NCDOT with clarification provided by the State of North Carolina “Manual on Uniform Traffic Control Devices” (NCDOT 2009). Therefore, the Proposed Action is expected to have minor short-term impacts on transportation.

Pedestrian access to and within the project components would be increased under the Proposed Action owing to new natural surface trails within the Meadow Branch and Five Mile Branch components and proposed sidewalks and boardwalks within the Meadow Branch, Scottish Packing Site, and Five Mile Branch components. Active transportation access within and to the project components would be increased by construction of a designated bike path from the intersection of North Roberts Avenue to where South Chestnut Street intersects with the beginning of the Lumber River Trail. Therefore, the Proposed Action would have a moderate beneficial effect on multimodal transportation within and between the project areas.

Implementation of the Proposed Action would reduce the risk of flooding in the project area by increasing flood storage, reducing the likelihood of storm and flood-related road closures and detours. Residents and emergency responders would have more reliable access to homes and facilities. In addition to the benefits of flood reduction on transportation systems and users, the proposed project would connect people to existing public parks, conservation easements, and city-owned parcels. Therefore, the Proposed Action would have moderate, long-term transportation benefits.

4.18. Public Services and Utilities

The City of Lumberton provides all local utility services that include electrical, water, sewer, garbage, and stormwater utility services to the project area (City of Lumberton 2023b). A review of aerial and street-level imagery suggests that overhead power and communication lines are present throughout

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the project area. Stormwater is conveyed by the Lumber River, and both the Meadow Branch and Five Mile Branch channels.

The Meadow Branch component of the project includes the neighborhood Jerry Giles Park which provides a children's playground and picnic area (City of Lumberton 2023e). Additional recreational features of the Meadow Branch project, that include a walking path and a dog park (Section 3.2.1), would connect to the Jerry Giles Park creating a continuous public amenity located adjacent to the restored Meadow Branch channel.

Because of its location within the floodplains of the Lumber River and inadequate stormwater infrastructure, Lumberton has experienced multiple flood events (Section 2) that have resulted in impacts on structures and utilities. A local Columbia Broadcasting System (CBS) news report from October 11, 2016, shows the inundation of Lumberton after Hurricane Matthew hit Robeson County and stated that 26,000 people were without power because of downed lines (CBS 2016).

4.18.1. NO ACTION ALTERNATIVE

No construction would occur under the No Action alternative; therefore, no short-term impacts on public services and utilities would occur. In the long term, the No Action alternative would not mitigate the recurring flooding experienced within the project area vicinity; thus, public utilities would continue to experience disruption due to storm induced downed power lines and power outages. Therefore, the No Action alternative would have minor to moderate long-term adverse impacts on utilities and services depending on the severity of a flood event.

4.18.2. PROPOSED ACTION

During the construction of the Proposed Action, excavation and grading activities have the potential to damage existing utilities in the project area. The contractor would be responsible for the protection of all utilities. Therefore, the Proposed Action would have negligible, short-term impacts on public services and utilities in the project area.

In the long term, the Proposed Action would reduce the risk of flooding in the project area and vicinity, thus increasing the likelihood that utility infrastructure and services would not be disrupted by floodwaters and associated damage.

The Proposed Action would provide recreational opportunities through the striping of 2.35 miles of bike path along Walnut Street, the construction of 98 linear feet of boardwalk at the Meadow Branch/Jerry Giles Park enlargement thereby creating public access to constructed wetlands, boardwalks, a playground and a dog park. Thus, the Proposed Action would have moderate, long-term beneficial effects on public services and utilities.

4.19. Public Health and Safety

EO 13045 *Protection of Children from Environmental Health Risks and Safety Risks* mandates that federal agencies identify and assess health risks and safety risks that may disproportionately affect

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children. Public health and safety are also related to accessibility to police, fire, medical services, and the response times for those providers to reach people in need.

Firefighting and emergency medical services within the project area are provided by the Lumberton Fire Department; additional emergency medical and rescue services are provided by Lumberton Rescue and EMS (City of Lumberton 2023b; Lumberton Rescue and EMS 2023). The Lumberton Fire Department's Central Station is located less than 0.25 mile from the Walnut Street project area, and the Department has three other district fire stations that serve residents in southwest, north, and east Lumberton (City of Lumberton 2023b). Police services within the project area are provided by the Lumberton Police Department (City of Lumberton 2023c). The closest hospital to the project area is the University of North Carolina (UNC) Health Southeastern Regional Medical Center Emergency Room, which is centrally located to all the project component areas (UNC Health 2023).

4.19.1. NO ACTION ALTERNATIVE

The No Action alternative would not include flood mitigation construction and would therefore have no short-term construction zone impacts on public health and safety. However, the risk of flooding would not be reduced, and community resilience would not change. As mentioned in Section 2, Hurricane Matthew in 2016 and Hurricane Florence in 2018 led to a combined \$410 million dollar in damage in Robeson County and climate change is expected to worsen conditions under extreme precipitation events in the future. As discussed in Section 4.5, flooding from storm events would periodically inundate parking lots and roads, resulting in temporary closures of roadways, potentially reducing the ability of police, fire, and medical personnel to respond in a timely manner to emergencies. Future flood-related repairs to infrastructure could also result in temporary road closures. In addition, flooding could cause public health and safety concerns including backup of sewer systems, disruption of utilities (Section 4.18.1), and the need to evacuate the area (Section 4.17.1). As such, the No Action alternative would have a moderate long-term impact on the community's public health and safety.

4.19.2. PROPOSED ACTION

Under the Proposed Action, construction activities have the potential to impact public health and safety from equipment use. The Walnut Street component work would likely require short-term temporary lane closures of no more than a few hours per block and emergency responders would be routed around the work zone, as needed. However, all lane closures would include appropriate warnings and traffic controls such as flaggers and construction activities would be performed using qualified personnel trained in the proper use of the appropriate equipment, including all appropriate safety precautions, to minimize risks to safety and human health. All activities would be conducted in a safe manner in accordance with the standards specified in OSHA regulations. The city would place appropriate signage and barriers prior to construction activities to alert pedestrians and motorists of project activities. Work on the Proposed Action would occur mostly off-road. With these measures in place, construction activities associated with the Proposed Action would result in negligible, short-term, impacts on public health and safety.

Implementation of the Proposed Action would reduce the risk of flooding, and therefore, reduce associated risks related to public health and safety such as backup of sewer systems, disruption of utilities, and the need to evacuate people over the long term. Critical services, such as fire, police, and first responders, would experience improved accessibility and emergency response times during storm events as fewer roadways would be flooded, or flooded to a lesser depth and duration. Improved stormwater capacity along the Meadow Branch would reduce the risk of floodwaters backing up sewage lines and releasing contaminants that could reduce water quality. Therefore, there would be minor, long-term beneficial effects from reduced flooding and associated public health and safety concerns.

4.20. Summary of Effects and Mitigation

Table 4.8 provides a summary of the potential environmental effects from implementing the Proposed Action, any required agency coordination efforts or permits, and any applicable proposed mitigation or BMPs.

Table 4.8. Summary of Impacts and Mitigation

Affected Environment	No Action Impacts	Proposed Action Impacts	Best Management Practices, Permits, and Conditions
Geology, Topography, and Soils	<ul style="list-style-type: none"> No short-term impacts on geology, topography, or soils. Negligible to minor impacts on soils. 	<ul style="list-style-type: none"> Minor short-term impacts on, topography and soils from ground-disturbing activities with no impact on geology. Minor long-term benefit on soils and topography because of the reduction in flood risk and associated erosion. 	<ul style="list-style-type: none"> Implement standard erosion and sediment control BMPs during construction.
Visual Quality and Aesthetics	<ul style="list-style-type: none"> No short-term impact. Minor long-term impact. 	<p>Meadow Branch:</p> <ul style="list-style-type: none"> Minor short-term impact. Minor, long-term and beneficial visual impact. <p>Walnut Street:</p> <ul style="list-style-type: none"> No impacts on visual quality and aesthetics. <p>Scottish Packing Site:</p> <ul style="list-style-type: none"> Negligible short-term impact. Minor, long-term beneficial visual impact. <p>Five Mile Branch:</p> <ul style="list-style-type: none"> Negligible impact on the visual quality of the project. 	<ul style="list-style-type: none"> N/A
Air Quality	<ul style="list-style-type: none"> No short- or long-term impacts on air quality. 	<ul style="list-style-type: none"> Negligible short-term impacts from construction. Negligible long-term benefit resulting from a decrease in local vehicular travel. 	<ul style="list-style-type: none"> Keep vehicles and equipment running as little as possible. Wet or cover areas of exposed soils to reduce fugitive dust.
Climate Change	<ul style="list-style-type: none"> No short-term impacts on climate. Negligible long-term adverse impacts resulting from insufficient protection against climate change-induced flood events. 	<ul style="list-style-type: none"> Negligible short-term impacts from construction. Minor long-term benefits from increasing the city's resilience to climate change impacts. 	<ul style="list-style-type: none"> Keep vehicles and equipment running as little as possible. Wet or cover areas of exposed soils to reduce fugitive dust.

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Affected Environment	No Action Impacts	Proposed Action Impacts	Best Management Practices, Permits, and Conditions
Surface Waters and Water Quality	<ul style="list-style-type: none"> No short-term impacts. Minor long-term impacts from periodic flooding. 	<ul style="list-style-type: none"> Minor short-term impacts from construction activities. Minor long-term benefit from a reduction in flood risk. 	<ul style="list-style-type: none"> Implement erosion and sediment control plan. Comply with the conditions of the NCDEQ Construction General Permit (Permit No. NCG010000) and CWA Section 404 permit, if applicable.
Wetlands	<ul style="list-style-type: none"> No short-term impacts. Minor long-term impacts related to periodic flooding. 	<ul style="list-style-type: none"> Minor short-term impacts from construction activities and vegetation removal. Minor long-term beneficial effects from wetland creation and reduced flood risk. 	<ul style="list-style-type: none"> Implement erosion and sediment control plan. Comply with the conditions of the NCDEQ Construction General Permit (Permit No. NCG010000) and CWA Section 404 permit, if applicable.
Floodplains	<ul style="list-style-type: none"> No short-term impacts. Moderate long-term adverse impact on people and property near the project area. 	<ul style="list-style-type: none"> Minor short-term impact at Meadow Branch on the 100-year floodplain from construction, including excavation and fill activities, that would occur within the floodplain. Moderate long-term benefits on flood reduction and natural floodplain functions and values in the project area and vicinity. 	<ul style="list-style-type: none"> Implement erosion and sediment control BMPs and BMPs related to use of fill. Comply with conditions in the Sedimentation Pollution Control Act under the NCG01 Permit Dewater construction area by taking protective measures within the stream channel while the water is flowing, or by diverting water around construction. Coordinate with the local floodplain administrator to receive a permit to conduct any activities that would occur within the floodplain.
Wild and Scenic River Act	<ul style="list-style-type: none"> No short-term impacts. Minor long-term impacts from reduced access to and recreational use of the Lumber WSR because of periodic flooding. 	<ul style="list-style-type: none"> Negligible short-term impacts from construction activities. Minor long-term benefits from increased access to and recreational use of the WSR. 	<ul style="list-style-type: none"> Implement erosion control and sedimentation plan.
Vegetation – Invasive Species	<ul style="list-style-type: none"> No short-term impacts. 	<ul style="list-style-type: none"> Minor, short-term impacts from construction-related vegetation removal. 	<ul style="list-style-type: none"> Use native plant species when restoring disturbed areas.

Affected Environment, Potential Impacts, and Mitigation

Affected Environment	No Action Impacts	Proposed Action Impacts	Best Management Practices, Permits, and Conditions
	<ul style="list-style-type: none"> Negligible to minor long-term impacts, depending on the severity and spatial extent of future flooding. 	<ul style="list-style-type: none"> Moderate, long-term benefits from an increase in the distribution and abundance of native plant species. 	
Fish and Wildlife	<ul style="list-style-type: none"> No short-term impacts on fish and wildlife, including migratory birds. Negligible to minor long-term impacts on fish and wildlife, including migratory birds, depending on the timing and severity of future flooding. 	<ul style="list-style-type: none"> Minor short-term impacts on fish and wildlife from construction activities. Negligible short-term impacts on migratory birds if vegetation removal were to occur during nesting season (generally March 15 through July 31). Minor long-term benefits on fish and wildlife from stream and floodplain restoration, wetland creation, and revegetation with native plants. Minor long-term benefits from revegetation with native plants and an anticipated reduction in future flood risk. 	<ul style="list-style-type: none"> Compliance with the Migratory Bird Treaty Act (MBTA)
Threatened and Endangered Species	<ul style="list-style-type: none"> No short-term impacts. Negligible to minor long-term impacts depending on the frequency and severity of future flooding. No long-term impacts on the tricolored bat. 	<ul style="list-style-type: none"> Negligible short-term impacts on the tricolored bat and wood stork from construction-related disturbances. Negligible to minor long-term beneficial effects from an anticipated reduction in future flood impacts on habitats, the restoration of the floodplain and stream in the Meadow Branch area, and wetland creation and restoration. Minor long-term beneficial effect on Michaux's sumac through removal of invasive species. 	<ul style="list-style-type: none"> Adherence to all measures identified during informal consultation with USFWS.

Affected Environment, Potential Impacts, and Mitigation

Affected Environment	No Action Impacts	Proposed Action Impacts	Best Management Practices, Permits, and Conditions
Cultural Resources	<ul style="list-style-type: none"> • No short-term impacts on historic standing structures. • Potential long-term impacts on cultural resources through damage or destruction from anticipated future flood events. • No impact on archaeological resources because there is no potential for them in the project area. 	<ul style="list-style-type: none"> • No impacts on cultural resources in any of the project areas. 	<ul style="list-style-type: none"> • If any archaeological resources are discovered during project implementation, work would immediately cease, the area would be secured, and the city would notify the SHPO and FEMA for further evaluation.
Environmental Justice	<ul style="list-style-type: none"> • No short-term impacts. • Minor to moderate long-term impacts, depending on the frequency and severity of periodic flooding; however, effects would not be disproportionately high on EJ populations. 	<ul style="list-style-type: none"> • Negligible short-term impacts related to construction. • Moderate long-term benefits related to reduced flooding and an increase in multimodal transportation opportunities and a possible decrease in traffic in areas near EJ populations. 	<ul style="list-style-type: none"> • Implement air quality, noise, and transportation BMPs described in Sections 4.4.2, 4.16.2, and 4.17.2.
Hazardous Materials	<ul style="list-style-type: none"> • No short-term impacts. • Long-term, minor impacts from the release of hazardous materials caused by periodic flooding. 	<ul style="list-style-type: none"> • Short-term, negligible impact from the use of vehicles and equipment. • Long-term, negligible beneficial effects related to hazardous materials. 	<ul style="list-style-type: none"> • N/A
Noise	<ul style="list-style-type: none"> • No short-term noise impacts. • Minor, recurring long-term noise impacts due to repairs of periodic flood damage. 	<ul style="list-style-type: none"> • Minor short-term impacts from construction. • No long-term impacts. 	<ul style="list-style-type: none"> • Keep heavy machinery and equipment well-maintained. Use sound muffling devices and equipment that is no less effective than that provided by the manufacturer. • Ensure equipment complies with pertinent equipment noise standards of EPA.

Affected Environment, Potential Impacts, and Mitigation

Affected Environment	No Action Impacts	Proposed Action Impacts	Best Management Practices, Permits, and Conditions
Transportation	<ul style="list-style-type: none"> • No short-term transportation impacts. • Moderate long-term recurring, intermittent impacts depending on the frequency and severity of future flooding. 	<ul style="list-style-type: none"> • Minor short-term impacts from construction-related traffic and potential road closures. • Moderate long-term transportation benefits primarily from an increase in multimodal transportation connectivity. 	<ul style="list-style-type: none"> • Traffic control devices, such as flag people and signs, to mitigate and guide traffic as needed during construction. • Contractor adherence to a Transportation Management Plan as defined by NCDOT with clarification provided by the State of North Carolina “Manual on Uniform Traffic Control Devices.”
Public Service and Utilities	<ul style="list-style-type: none"> • No short-term impacts. • Minor to moderate long-term adverse impacts on utilities and services depending on the severity of a flood event. 	<ul style="list-style-type: none"> • Negligible short-term impacts. • Minor, long-term beneficial effects. 	<ul style="list-style-type: none"> • N/A
Public Health and Safety	<ul style="list-style-type: none"> • No short-term impacts. • Moderate long-term impact. 	<ul style="list-style-type: none"> • Negligible short-term impacts from construction. • Minor, long-term beneficial effects on public health and safety. 	<ul style="list-style-type: none"> • Complete all construction activities using qualified personnel trained in the proper use of equipment, including all safety precautions. • Conduct all activities in accordance with the standards specified in OSHA regulations.

SECTION 5. Cumulative Effects

This section addresses the potential cumulative effects associated with the implementation of the Proposed Action. Cumulative effects are effects on the environment that result from the incremental effects of the Proposed Action when added to other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes those other actions (40 CFR 1508.1, 2022). Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time. CEQ's regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for federal projects.

In addition to NEPA, other statutes require federal agencies to consider cumulative effects. These include the CWA Section 404(b)(1) guidelines, the regulations implementing the conformity provisions of the Clean Air Act, the regulations implementing Section 106 of the NHPA and the regulations implementing Section 7 of the ESA.

5.1. Other Projects

There are several actions either recently completed or planned for future implementation that could result in cumulative effects when combined with the Proposed Action. These actions include widening of I-95, acquisitions of properties in the floodplain, replacement of affordable housing, and city strategies for resiliency and recovery, and other elements of the Lumberton Loop Plan. These actions have independent utility and are not dependent on the Proposed Action to be functional.

NCDOT I-95 Widening Project: This infrastructure project would construct two additional travel lanes in each direction of I-95 between mile markers 13 through 21. Construction would include improvement of existing bridges and on/off-ramps to increase resiliency against future flooding. The project would include the construction of new sidewalks along North Roberts Boulevard that would connect with the proposed natural surface trail at the intersection of North Roberts Avenue and Fuller Avenue (**Figure 3.1**) and the Five Mile Branch walking trail at North Roberts Boulevard (**Figure 3.4**). The new sidewalks would also connect to the Five Mile Branch trailhead on West Carthage Road (**Figure 3.5**). North Roberts Boulevard crosses I-95 at approximately mile marker 18 and West Carthage Road crosses I-95 at mile marker 19. A portion of this infrastructure project, along North Roberts Boulevard, is adjacent to the southwestern edge of the Meadow Branch component of the Proposed Action. Construction of the I-95 project started in September 2022 and is projected to be completed in late 2027. The construction of the Meadow Branch component and the proposed NCDOT sidewalk may thus occur at the same time. The I-95 project would result in a minor, short-term impact from construction related effects. Although the projects would not overlap geographically, they are close enough that there may be some cumulative effects related to air and water quality and noise where Meadow Branch is adjacent to I-95 and where the sidewalk extension along North Roberts Boulevard connects to the Meadow Branch component sidewalk near Fuller Avenue. There would be a minor, long-term beneficial effect from improved safety and access for pedestrians along North Roberts Boulevard and a cumulative benefit to recreation and pedestrian

circulation where the I-95 sidewalk improvements are proposed to connect to both the proposed Five Mile Branch trailhead and the Meadow Branch area.

Responses to Hurricane Matthew (2016) and Hurricane Florence (2018):

- **Acquisitions:** The City of Lumberton received funding under FEMA's Hazard Mitigation Grant Program to acquire and demolish approximately 27 structures located in the floodplain within the Meadow Branch area. These structures were inundated by floodwaters caused by Hurricane Matthew and flooding from the Lumber River. All environmental and historic preservation compliance reviews were completed in July 2022 with all impacts addressed in the Record of Environmental Consideration. The acquired properties are to be designated as open space in perpetuity. Under the Proposed Action, a portion of the resulting open land area would be revegetated (see Page 2 of Appendix A for a list of parcels acquired or proposed for acquisition). This project is within the Meadow Branch component but is anticipated to be completed prior to the start of the proposed action as acquisition and demolition has started and is currently on-going. The project would have a moderate, long-term beneficial effect through the removal of structures prone to repetitive flooding, creating an opportunity to restore the wetlands within the floodplain. Although the acquisitions and associated demolitions would overlap with the Proposed Action geographically, the work would be completed before the Proposed Action starts; therefore, there would be no cumulative construction-related impacts. The properties acquired would be dedicated to open space in perpetuity and would provide open space and floodplain benefits. The Proposed Action would create wetlands, restore floodplain connectivity, and replant floodplain vegetation in these areas, thus enhancing floodplain functions and providing cumulative benefits.
- **Replacement Construction:** The North Carolina Office of Recovery and Resiliency requested funding from U.S Department of Housing and Urban Development (HUD) for a project to construct new affordable housing units in low-income communities in the Lumberton, North Carolina area to replace units that were left uninhabitable by the effects of Hurricane Matthew in 2016. Under the HUD Community Development Block Grant (CDBG) Disaster Recovery Grant Program, 72 units would be constructed on an undeveloped 31-acre parcel of land on Caton Road/NC-72W 500 feet northwest of Glen Cowan Road. The new complex would replace the housing lost at the Hilton Heights and Myers Park apartment complexes. The proposed location is approximately 3 miles from the southern end of the Five Mile Branch component. HUD completed an EA in 2021 and all environmental and historic preservation compliance reviews were completed. Construction of the proposed complex has not started as of spring of 2024. The project would have minor, short-term impacts related to construction and would not have cumulative impacts with the Proposed Action because of its geographical distance from the project area. The CDBG project would have a minor, long-term benefit for EJ populations by replacing affordable housing damaged by the hurricane.
- **New Construction:** The North Carolina Office of Recovery and Resiliency requested funding from HUD for a project to provide new, affordable housing for individuals and families in the

Lumberton, North Carolina, area that were displaced due to the impact of Hurricanes Matthew and Florence. Under HUD's, CDBG Program, construction of the Northeast Pointe II apartment complex consisting of 72-units and a community center at 219 Harrill Road was proposed which is approximately 2.5 miles from the southeast end of Meadow Branch component. HUD completed an EA in 2022 and all environmental and historic preservation compliance reviews were completed. According to the property management website, construction is nearing completion and rental units are anticipated to be available for lease in the spring of 2024. This project would have minor, short-term construction impacts and would not have cumulative impacts because of its geographical distance from the project area. This CDBG project would have a minor, long-term benefit for EJ populations by increasing the availability of affordable housing.

- West Lumberton Flood Gate: The North Carolina Office of Recovery and Resiliency through HUD's CDBG -Mitigation program provided funding to the City of Lumberton to implement the West Lumberton Flood Gate at VFW Road and Railroad Underpass. The Flood Gate project includes the installation of a 35-foot mechanical flood gate system that would swing over the CSX tracks, concrete wing walls that would extend out from either side of the gate and connect to an earthen berm levee extension that ties the system into the I-95 road embankment. An approximately 800-foot earthen levee extension would be constructed from the existing I-95 bridge abutment to the flood gate. These flood improvements would mitigate against 100-year flood events flowing from the west side of I-95 overpass to the east side at this location. The proposed area is approximately 3.5 acres in size and is located west of I-95 in the vicinity of Cox Road, VFW Road, Hackett Street, and the CSX railroad crossing in the City of Lumberton. The FONSI was published in January 2024 by HUD. The location is approximately 0.8 miles from the southern end of Five Mile Branch component, 1.8 miles from the Scottish Packing Site, and 0.5 miles southwest from the proposed Luther Britt Park strategy project. This CDBG project would have minor, short-term construction impacts and would not have cumulative impacts because of its geographical distance from the project area. The CDBG project would have a minor, long-term benefit for the Luther Britt Park proposal because of the anticipated reduction in floodwaters reaching the east side of I-95.
- Legend Road Water Tank: The North Carolina Office of Recovery and Resiliency is reviewing a proposal for funding through the HUD CDBG Program that was submitted in January 2024 to implement the Legend Road Water Tank project. This project would construct a 500,000-gallon elevated water storage tank, altitude valve vault, fire hydrant, water mains, gravel access road, and associated improvements at 176 Legend Road. The water tank is approximately 3.5 miles southwest from the project area; therefore, there would not be any cumulative impacts when combined with the Proposed Action because of the geographical distance between the projects.

Lumberton Strategies for Resilient and Usable Open Space: The North Carolina State University developed landscape planning recommendations to address land-water relationships in Lumberton, including the destructive forces associated with flooding (Lumberton 2019). There are three focus

areas identified that would contribute to the Lumberton Loop Plan, in addition to the Proposed Action.

- Luther Britt Park is an existing 142-acre park with two lakes that offer fishing, swimming, paddle boarding, and canoeing. It is located at the northwestern end of the Lumber River Trail by I-95. The proposal would be to acquire and demolish six residential structures adjoining the park, regrade the sites, and revegetate them with native plants to create a functional wetland that would act as an educational stormwater amenity and enhance the entrance to the park. The park is located adjacent to the existing Lumber River Trail, 0.5 mile from the proposed West Lumberton Flood Gate, 0.5 mile from the trail entrance at the Five Mile Branch/Carthage Road component, and 1.3 miles from the Scottish Packing Site component. Currently, there is no identified funding for this project. Structure demolition and site grading would have minor, short-term construction impacts. Cumulative impacts would be unlikely because of its geographical distance from the Proposed Action and it would be unlikely to occur at the same time because of the uncertainty in funding. The Luther Britt Park project would have a minor, long-term benefit to floodplain functions because of the increase flood storage capacity and natural benefits of a created wetland.
- The Mayfair Recreation Expansion project was proposed in the 2018 Robeson County Hurricane Matthew Resilient Redevelopment Plan (Robeson County 2017) for the Mayfair neighborhood. The neighborhood is just west of the upper portion of the Five Mile Branch component, adjacent to the Five Mile/North Roberts Boulevard trailhead. The Mayfair project would increase the amount of floodplain land that is used for recreational purposes, provide trail access to the community along easements obtained for ditch and stream restoration, reforest strategic floodplain areas, and mark and maintain trails (Lumberton 2019). Areas would be reforested to create a continuous greenway from Meadow Branch to Mayfair, and then down Five Mile Branch to the Lumber River (moving north to south). This would connect the Lumberton Loop green infrastructure components and complete the "Loop." There is no funding identified for the Mayfair project. This project would have minor, short-term construction impacts and minor long-term recreation and floodplain benefits. Because the Mayfair project and the Proposed Action would occur at different times, there would not be cumulative construction impacts, but the projects would provide cumulative recreation and floodplain benefits.
- The Scottish Meatpacking Plant project proposes to retrofit the existing building and site to enhance recreational access and tourism. The project would repurpose the existing building as a pavilion with restroom facilities, canoe and kayak rental opportunity, and various outdoor learning centers, along with potential commercial retail space. The project would construct a boat launch and a new parking lot accessible from Campbell Street. The project would serve as a central destination point along the river, secure the long-term protection of the riverine property, remove impervious surfaces from the Lumber River floodway, allow for environmental enhancement and restoration activities to commence, and stabilize a portion of the shoreline to ensure safe, reliable public access to the river. The building would be

designed to allow for the expected floodwater intrusions during high water events and would operate as a water sport hub during dry seasons. This project is adjacent to the Scottish Packing Site component of the Proposed Action and both activities would occur on different parts of the same parcels. This project would have minor, short-term construction impacts and minor long-term recreation and floodplain benefits. The work has been proposed for completion by the North Carolina Wildlife Resources Commission in 2024 and would be completed before the Proposed Action would begin. Therefore, although the projects would overlap geographically, they would occur at different times and there would not be cumulative construction impacts. The projects would provide minor cumulative benefits for floodplain functions.

5.2. Cumulative Effects Summary

The Proposed Action would increase disaster resilience through flood reduction strategies that include green infrastructure that connect Lumberton residents to riverine ecosystems, restored streams, constructed wetlands, and recreational facilities through a connected greenway. It is not anticipated that the other actions discussed above would result in cumulative short-term construction impacts because the timing of construction and/or the location of the work for each project would not overlap with the Proposed Action. Where projects are adjacent to each other, the potential combined impacts would not be more than minor because the size and duration of the work at each location would be small. Therefore, there is little potential for cumulative short-term impacts related to construction.

The Proposed Action combined with the other infrastructure projects would result in negligible to moderate long-term cumulative benefits related to climate resilience, water quality, wetlands, floodplains, terrestrial and aquatic environments, EJ populations, hazardous materials, transportation, public services and utilities (including recreation), and public health and safety.

SECTION 6. Agency Coordination, Public Involvement, and Permits and Project Conditions

This section provides a summary of the agency coordination efforts and public involvement process for the proposed Lumberton Loop Project. In addition, an overview of the permits that would be required under the Proposed Action is included in Section 6.3.

6.1. Agency Coordination

Consultation under Section 106 of the NHPA was initiated with the North Carolina SHPO and Native American Tribes with ancestral ties to Robeson County. The Tribes consulted were the Catawba Indian Nation, Seminole Nation of Oklahoma, Shawnee Tribe and a notification was provided to the state recognized Lumbee Tribe. FEMA submitted its initial finding of “No Historic Properties Affected” to the SHPO and the Tribes on February 27, 2024. On April 15, 2024, the SHPO concurred with the finding of No Historic Properties Affected within the project area. The Catawba Indian Nation responded on April 10, 2024 with no concerns regarding traditional cultural properties. The Shawnee Tribe responded on March 18, 2024 that the project was outside the Shawnee Tribe’s area of interest. The Lumbee Tribe responded on April 4, 2024 with no concerns for the proposed action. The Seminole Nation of Oklahoma did not provide comments within 30 days or declined to comment. (Appendix D).

Consultation under Section 7(a)(2) of the ESA was initiated with USFWS on November 30, 2023, with FEMA’s determination that the Proposed Action is “not likely to jeopardize the continued existence” of the tricolored bat and the Proposed Action “may affect, but is not likely to adversely affect” the wood stork. On December 11, 2023, USFWS concurred with FEMA’s determination (Appendix D).

Consultation under the WSR Act was initiated with NPS and the North Carolina Division of Parks and Recreation on November 2, 2023, for the Lumber River, which is designated as a wild and scenic river. FEMA determined that the proposed action would not adversely affect the recreational values for which the reach of the Lumber River was nominated. Concurrence was received from both agencies on November 2, 2023 (Appendix D).

6.2. Public Participation

In accordance with FEMA’s NEPA procedures, FEMA released the Draft EA to the public and agencies for a 30-day public review and comment period on June 26, 2024. No substantive comments were received from the public and/or agency reviewers, this document will serve as the Final EA and a FONSI has been issued by FEMA.

The City of Lumberton made the Draft EA available on its website at www.lumbertonnc.gov in the ‘News Flash’ section. The Draft EA is also available on FEMA’s website at [National Environmental Policy Act Repository | FEMA.gov](https://www.fema.gov/national-environmental-policy-act-repository). Hard copies of the Draft EA were also made available at the Lumberton City Hall, 500 North Cedar Street, Lumberton, North Carolina, or at the Robeson County

Public Library, 101 N. Chestnut Street, Lumberton, North Carolina. T The public notice can be found in Appendix B.

6.3. Permits and Project Conditions

The subrecipient (City of Lumberton) is responsible for compliance with federal, state, and local laws and regulations including obtaining all required federal, state, and local approvals or permits prior to beginning constructions activities, and adhering to any conditions laid out in these approvals or permits. While a good faith effort was made to identify all necessary permits and approvals for this EA, the following list may not include all approvals or permit(s) required for this project. Before, and no later than, submission of a project closeout package, the subrecipient shall provide FEMA with a copy of the required permit(s) from all pertinent regulatory agencies.

The subrecipient must adhere to the following conditions should the proposed action be implemented. Failure to comply with FEMA grant conditions may jeopardize federal funding. FEMA requires the following standard conditions for the proposed action:

6.3.1. GENERAL PROJECT CONDITIONS

1. The subrecipient is responsible for obtaining and complying with all required local, state, and federal permits and approvals.
2. If deviations from the proposed scope of work result in substantial design changes, the need for additional ground disturbance, additional removal of vegetation, or any other unanticipated changes to the physical environment, the subrecipient must contact FEMA so that the revised project scope can be evaluated for compliance with NEPA and other applicable environmental and historic preservation laws.

6.3.2. PHYSICAL RESOURCES

3. Implement standard erosion and sediment control BMPs during construction. Areas of exposed soils will be wetted or covered to reduce fugitive dust.
4. Commit to the best available emissions control technologies for project equipment to meet the following standards:
 - a. On-highway vehicles should meet, or exceed, the EPA exhaust emissions standards for model year 2010 and newer heavy-duty, on-highway compression-ignition engines (e.g., long-haul trucks, refuse haulers, shuttle buses).
 - b. Non-road vehicles and equipment should meet, or exceed, the EPA Tier 4 exhaust emissions standards for heavy-duty, non-road compression-ignition engines (e.g., construction equipment, non-road trucks,).

Agency Coordination, Public Involvement, and Permits

- c. The equipment specifications outlined above should be met unless: 1) a piece of specialized equipment is not available for purchase or lease within the United States; or 2) the relevant project contractor has been awarded funds to retrofit existing equipment, or purchase/lease new equipment, but the funds are not yet available.
5. To reduce the emissions of criteria pollutants, construction equipment engine idling will be minimized to the extent practicable, and engines will be kept properly maintained.
6. Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
7. When hauling material and operating non-earthmoving equipment near and within the construction work areas, prevent spillage and limit speeds to 15 miles per hour. Limit speed of earth-moving equipment to 10 miles per hour.
8. Complete construction work during daytime hours in compliance with the City of Lumberton's General Ordinance Chapter 14.1-1 (Noise) on daytime construction hours defined as between 7:00 a.m. and 11:00 p.m. local time.

6.3.3. WATER RESOURCES

9. The subrecipient will obtain a permit for impacts on waters of the U.S. in accordance with Sections 401 and 404 of the Clean Water Act and adhere to all conditions as required in those permits.
10. The subrecipient will comply with conditions of the NCDEQ Construction General Permit (Permit No. NCG010000).
11. Comply with conditions in the Sedimentation Pollution Control Act under the NCG01 Permit.
12. The subrecipient must obtain written approval or a floodplain permit from the local floodplain administrator before work begins and adhere to all conditions identified in the approval or permit.
13. Implement erosion and sediment control BMPs and BMPs related to use of fill.
14. Dewater construction area by taking protective measures within the stream channel while the water is flowing, or by diverting water around the construction.
15. Construction activities, equipment staging, and storage activities are not to be located within or adjacent to any nearby wetlands. All materials and equipment should be staged outside of wetlands on paved or previously disturbed areas.

6.3.4. BIOLOGICAL RESOURCES

16. The following avoidance and minimization measures (AMM) will be implemented to avoid and minimize potential effects on the tri-colored bat (TCB).
- a. **TCB Roosting Habitat AMM 1.** Ensure all operators, employees, and contractors working in areas of known or presumed bat roosting habitat are aware of all applicable AMMs.
 - b. **TCB Tree Removal AMM 1.** Modify all phases/aspects of the project (e.g., temporary work areas, alignments) to the extent practicable to avoid removing more trees than required to implement the project safely.
 - c. **TCB Tree Removal AMM 2.** Apply time-of-year restrictions for tree removal when bats are not likely to be present (October 1 through March 30).
 - d. **TCB Tree Removal AMM 3.** Ensure tree removal is limited to that specified in project plans and ensure that contractors understand clearing limits and how the limits are marked in the field (e.g., install brightly colored flagging/fencing prior to any tree clearing to ensure contractors stay within clearing limits).
 - e. **TCB Culvert AMM 1.** If applicable, a culvert survey would be conducted by a qualified biologist before any culvert modifications to identify the presence or absence of hibernating or roosting TCBs. If TCBs are found to be present, humane exclusion efforts would be conducted outside of the pup season (April 15 to July 31) and the winter months (generally December 1 to February 14).
17. The following AMMs will be implemented to avoid or minimize effects on wood stork.
- a. **Wood Stork Foraging AMM 1.** There should be no human intrusion into feeding sites when storks are present. Depending upon the amount of screening vegetation, human activity should be no closer than between 300 feet (where solid vegetation screens exist) and 750 feet (no vegetation screen).
 - b. **Wood Stork Foraging AMM 2.** Feeding sites should not be subjected to water management practices that alter traditional water levels or the seasonally normal drying patterns and rates. Sharp rises in water levels are especially disruptive to feeding storks.
 - c. **Wood Stork Foraging AMM 2.** The introduction of contaminants, fertilizers, or herbicides into wetlands that contain stork feeding sites should be avoided, especially those compounds that could adversely alter the diversity and numbers of native fishes, or that could substantially change the characteristics of aquatic vegetation. Increase in the density and height of emergent vegetation can degrade or destroy sites as feeding habitat.

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- d. **Wood Stork Roosting AMM 1 (modified).** If an active roost site is identified within the AA, human activities within 1,000 feet of active roost sites would be avoided to the maximum extent possible and would not take place after dark.
 - e. **Wood Stork Roosting AMM 2 (modified).** Protect the vegetative and hydrological characteristics of potential roosting sites.
18. Listed below are conservation measures to be utilized during the construction activities for the Proposed Action with the goal of reducing impacts on birds and their habitats protected under the MBTA.
- a. To the extent practicable, schedule all vegetation removal, trimming, and grading of vegetated areas from September 1 – March 31, which is outside of the peak breeding season for migratory birds.
 - b. Educate contractors of relevant rules and regulations that protect wildlife. Prior to the onset of construction activities, the contractor's designated lead will conduct a briefing with all construction staff to instruct them on the potential presence of species protected under the MBTA.
 - c. Do not collect birds (live or dead) or their parts (e.g., feathers) or nests without a valid permit.
 - d. To the extent practicable, limit construction activities to the time between dawn and dusk to avoid the illumination of adjacent habitat areas.
 - e. To minimize the spread of invasive species, it is recommended that construction equipment be washed prior to contact with waters and unpaved areas.
 - f. Removed vegetation should be disposed of properly to avoid incidentally dispersing invasive plants.
 - g. Disturbed green spaces that will be revegetated shall use North Carolina and region native species.

6.3.5. CULTURAL RESOURCES

19. If human remains or intact archaeological features or deposits (e.g. arrowheads, pottery, glass, metal, etc.) are uncovered, work in the vicinity of the discovery will stop immediately and all reasonable measures to avoid or minimize harm to the finds will be taken. The subrecipient will ensure that archaeological discoveries are secured in place, that access to the sensitive area is restricted, and that all reasonable measures are taken to avoid further disturbance of the discoveries. The subrecipient's contractor will provide immediate notice of such discoveries to the applicant. The subrecipient shall contact the North Carolina State Archaeologist and FEMA within 24 hours of the discovery. Work in the vicinity of the discovery

may not resume until FEMA has completed consultation with SHPO, Tribes, and other consulting parties as necessary. In the event that unmarked human remains are encountered during permitted activities, all work shall stop immediately, and the proper authorities notified in accordance with North Carolina North Carolina Statutes, Section 70-29.

20. All borrow or fill material must come from pre-existing stockpiles or commercially procured material from a pre-existing source. If this is not the case, the subrecipient shall inform FEMA of the fill source so required agency consultations can be completed and FEMA approval will be required prior to beginning ground disturbing activities.

6.3.6. SOCIOECONOMIC RESOURCES

To the greatest extent practicable, transport of materials to and from the construction area shall avoid school zones and areas with low income and minority populations.

21. The construction area will be secured from public access and signage indicating that it is a closed site and that only authorized personnel are allowed will be posted at all entrances and exits.
22. For ground disturbing activity, if contaminated soil is encountered during construction, it should be treated, stored, and disposed of according to applicable federal, state, and local regulations.
23. Any hazardous materials discovered, generated, or used during construction of the Proposed Action will be disposed of and handled by the subrecipient in accordance with applicable federal, state, and local regulations.
24. Construction equipment will be kept in good working order, any equipment to be used over, in, or within 100 feet of water will be inspected daily for fuel and fluid leaks. Any leaks will be promptly contained and cleaned up, and the equipment will be repaired.
25. All construction activities will use qualified personnel trained in the proper use of equipment, including all safety precautions with all activities in accordance with the standards specified in OSHA regulations.
26. Contractor will adhere to a Transportation Management Plan as defined by NCDOT with clarification provided by the State of North Carolina "Manual on Uniform Traffic Control Devices.

SECTION 7. List of Preparers

The following is a list of preparers who contributed to the development of the Lumberton Loop Project Final EA for FEMA. The individuals listed below had principal roles in the preparation of this document. Many others contributed, including senior managers, administrative support personnel, and technical staff, and their efforts in developing this EA are appreciated.

CDM Smith

Preparers	Experience and Expertise	Role in Preparation
Bankston, Sam	Environmental Scientist, Biologist	Biological Assessment
Fogler, Wilson	Environmental Scientist, Biologist	NEPA Documentation
Gleason, Questa	Masters, Urban and Regional Planning, Planner	NEPA Documentation
Hales, Jason	Environmental Scientist, Biologist	Biological Assessment
Jadhav, Ajay	Geographic Information System Specialist	GIS
Looney, Mary	Environmental Scientist, Biologist	Biological Assessment
Nelson, Tracy	MPhil, Senior Cultural Resource Specialist, SOIS Qualified Reviewer	NEPA Documentation/NHPA Consultation
Stenberg, Kate	PhD, Senior Biologist, Senior Planner	Quality Control/Technical Review
Quan, Jenna	BS Ecology, Evolution, and Biodiversity; Planner	NEPA Documentation

Federal Emergency Management Agency

Reviewers	Role in Preparation
Helmuth, Cary	Technical Review
Rook, Whitney	Section 106 Consultation
Ducote, Dustin	Technical Review
Phillips, Angelika	Regional Environmental Officer Approval
Austin Watkins	Legal Approval

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